



Aurenne Mining

Mt Ida Gold Project

MINING PROPOSAL

Stage 3 Emu – VB, Boags and Single Fin Expansion and Additional Supporting Infrastructure

Reg ID: 500063

Project Code: J00028 EGS S0000817 Bottle Creek

Tenements: M 29/150, M 29/151, G 29/29, G 29/30, G 29/31, G 29/32, L 29/137, L 29/139, L 29/145, L 29/153, L 29/154, L 29/157, L 29/159, L 29/161, L 29/168, L 29/169,

January 2025

Company Details

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DOCUMENT CONTROL

Rev.	Date	DMIRS Reg. ID	Description	Author	Approved
0	9 Nov 2021	98744	Interim MP/MCP; non-mining early works	V Clarke	P Storey
0	26 Nov 2021	101557	Final; Submitted to DMIRS	V Clarke/D Fotakis	P Storey
1	28 Feb 2022		Revised to incorporate RFI1		P Storey
2	4 April 2022		Revised to incorporate RFI2		P Storey
3	20 April 2023	117952	Stage 1c Mining Proposal Revision	Astill Consultants	C Sinclair
4	7 Dec 2023	122042	Stage 2 Mining Proposal Revision	C Sinclair	P Storey
5	24 Jan 2024		Revised to incorporate RFI	C Sinclair	P Storey
6	18 Jan 2025	500063	Stage 3 Mining Proposal Revision	C Sinclair	P Storey
7	19 Mar 2025		Revised to incorporate RFI	C Sinclair	P Storey

MINING PROPOSAL CHECKLIST

NO.	MINING PROPOSAL (MP) CHECKLIST	Y/ N/ NA	CHANGES FROM PREVIOUS VERSION (Y/N)	PAGE NO.	SUMMARY
1	Has the checklist been endorsed by a tenement holder(s) or a senior representative authorised by the tenement holder(s), such as a Registered Manager or Company Director?	Y	Y	6	Updated checklist
2	Are you the tenement holder of all tenements associated with the Mining Proposal /group site? Mining Proposals which have not been submitted by the tenement holder must include an authorisation from the tenement holder or an explanation of the company linkage to the tenement holder (e.g. for subsidiary companies).	Y	Y	14	Multiple new tenements have been included in this MP iteration. All tenements are held by subsidiaries of Aurenne Group Holdings Pty Ltd.
3	For tenements with multiple tenement holders, have all of the other holders consented to this proposal being submitted? Mining Proposals which have not been submitted by the tenement holder must include an authorisation from the tenement holder or an explanation of the company linkage to the tenement holder (e.g. for subsidiary companies).	NA	N	14	All tenements are held by subsidiaries of Aurenne Group Holdings Pty Ltd.
4	Have contact details for questions on the Mining Proposal been provided?	Y	Y	14	Contact details have changed from previous version
5	Are all mining operations within granted tenement boundaries or does this Mining Proposal support a lease application?	Y	Y	14	All mine activities are within granted tenement boundaries
6	Is this the first Mining Proposal submitted for these tenements? If No , the version number of the revised Mining Proposal must be stated on the cover and a summary of changes included.	N	Y	14	No new tenements included.
7	Have all tenement conditions been reviewed to ensure activities proposed in the Mining Proposal are in compliance?	Y	N	14	
8	Has a Mine Closure Plan been provided? It is a requirement that every mining proposal include a mine closure plan.	Y	Y	158	A MCP has been submitted as a separate document.

NO.	MINING PROPOSAL (MP) CHECKLIST	Y/ N/ NA	CHANGES FROM PREVIOUS VERSION (Y/N)	PAGE NO.	SUMMARY
PUBLIC AVAILABILITY					
9	Are you aware that this Mining Proposal is publicly available?	Y			
10	Is there any information in this Mining Proposal that should not be publicly available? If Yes , refer to Appendix B, section 7 of the guidelines for more information. Note: A non-confidential version of all mining proposals will be made available to the public.	N			
11	If 'Yes' to Q10, has confidential information been submitted in a separate document?	NA			
MINING PROPOSAL DETAILS					
12	Does the Mining Proposal cover page include? - Environmental Group Site name - Environmental Group Site code - Company name (including telephone numbers and email addresses) - Contact details - Version number - Date of submission	Y	Y	Cover	
13	Has information regarding the Environmental Group Site (EGS) been provided in accordance with the requirements of Appendix G of the guidelines?	Y	Y	14	No new tenements
14	Has a disturbance table been provided in accordance with the requirements of Appendix G of the guidelines?	Y	Y	26 - 34	Updated disturbance tables to include new key mining activities
15	Has spatial data for all Mine Activity Types been provided in accordance with the specified properties and allowances (see section 3.5.3)?	Y	Y		Updated spatial data to include new disturbances.
16	Has a site plan, consistent with all spatial data and activity details, been provided? The site plan must show existing and proposed activities and other relevant information including tenement boundaries and other land tenure (e.g. Reserves and pastoral lease boundaries).	Y	Y	83 - 85	Updated site plans to include new disturbances.
17	Do you have and maintain an Environmental Management System?	Y	N	153	EMS manual attached as Appendix K.

NO.	MINING PROPOSAL (MP) CHECKLIST	Y/ N/ NA	CHANGES FROM PREVIOUS VERSION (Y/N)	PAGE NO.	SUMMARY
ENVIRONMENTAL LEGISLATIVE FRAMEWORK					
18	Does the Mining Proposal include a list of all relevant environmental approvals that have been sought or are required before the proposal may be implemented?	Y	N	107	
19	Does the Mining Proposal trigger any criteria for referral to the EPA within the DMP/EPA Memorandum of Understanding?	N	N		
20	Has the Mining Proposal been referred to the EPA? If Yes, indicate date of referral in comments.	NA			
21	Has the proposal been deemed to not warrant formal assessment under Part IV of the EP Act, is currently under assessment by the EPA, or has been approved via a Ministerial Statement? If Yes, ensure details of Ministerial Statement, assessment level and/or assessment number are provided within the Mining Proposal.	NA			
22	Is a clearing permit required? If 'No' then explain why in space below	Y	N	152	CPS 9383-3 granted
23	If 'Yes' at Q22 then has a clearing permit been applied for?	Y	N	152	CPS 9383-3 granted
24	Is the Mining Proposal located on reserve land? If "Yes" state reserve types.	N	N		
25	Is the Mining Proposal wholly or partially within Department of Parks and Wildlife (DPaW) managed areas?	N	N		
26	If 'Yes' at Q25 has DPaW been consulted?	NA			
27	Will any Threatened or protected flora and/or fauna be impacted by this proposal?	N	N	150	
28	Have the DAA/DPC 'Aboriginal Heritage Due Diligence Guidelines' been used to identify the risk of impacts to aboriginal heritage sites?	Y	N	113	No known Aboriginal heritage sites were identified during surveys.
29	If any aboriginal heritage sites will be impacted, has appropriate consent been sought under the <i>Aboriginal Heritage Act 1972</i> ?	NA		113	No known Aboriginal heritage sites were identified during surveys.

NO.	MINING PROPOSAL (MP) CHECKLIST	Y/ N/ NA	CHANGES FROM PREVIOUS VERSION (Y/N)	PAGE NO.	SUMMARY
30	Does the Mining Proposal include a tailings storage facility? Mining Proposals that include tailings storage facilities must include the relevant design reports outlined in the DMP's <i>Guide to the preparation of a design report for tailings storage facilities (TSFs)</i> , August 2015.	Y	Y	34	TSF Geotech Design Report attached as Appendix B3.
31	Does the Mining Proposal include the backfilling of mine voids? If Yes, the Mining Proposal must include a Sterilisation Report.	N	N		
32	Is the mining proposal located on pre-1899 Crown Grant lands? (not subject to the Mining Act).	N	N		
33	Has the construction of an airstrip been proposed? If Yes, indicate the date when Civil Aviation Safety Authority, Air services Australia and the Local Government Authority were advised (in writing) of the proposal to construct an airstrip.	Y	N	85	

AUTHORISATION

I hereby certify that to the best of my knowledge, the information contained within this Mining Proposal is true and correct and addresses all the requirements of the Department of Mines, Industry Regulation and Safety (DMIRS) *Statutory Guidelines for Mining Proposals* (2020) in Western Australia approved by the Director General of Mines. Corporate endorsement is provided below by tenement holder(s) or a senior representative authorised by the tenement holder(s), such as a Senior Site Executive or Company Director.

Name: Peter Storey	Signed: 
Role: Chief Operating Officer Aurenne Mining	Date: 24/01/2025

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APPENDICES

A. Company Information

B. Geotechnical Assessments

- 1 Open Pits Geotech Assessment (P O'Bryan 2021)
- 2 Waste Rock Landform Stability (P O'Bryan 2022)
- 3 IWL Geotech Design Report (CMW 2021)
- 4 IWL Geotech Design Addendum Memo (CMW 2023)
- 5 Processing Plant Geotech Assessment (CMW 2021)
- 6 Open Pits Geotech Assessment Cascade & Waste Rock Landform Stability (P O'Bryan 2023)
- 7 Open Pits Geotech Assessment Cascade & Waste Rock Landform Stability (P O'Bryan 2024)

C. Regulatory Approvals and Licensing

- 1 Clearing Permit (CPS 9383)
- 2 Stage 1 Works Approval (W6640/2022/1)
- 3 WWTP Works Approval (W6574/2021/1)
- 4 WWTP DoH Approval Letter
- 5 Groundwater Licenses

D. Waste Characterisation (Pendragon 2024)

E. Tailings Characterisation (G. Campbell 2021)

F. Soil Characterisation (Landloch 2021)

G. Groundwater

- 1 Groundwater Assessment (Pendragon 20231)
- 2 Groundwater Monitoring Plan (Pendragon 2022)

H. Surface Water Assessment (Hydrologia 2024)

I. Biodiversity

- 1 Flora & Fauna Survey Bottle Creek (Phoenix 2021)
- 2 Flora & Vegetation Survey – Access Road Bottle Creek (Morgan 2023)
- 3 Flora & Vegetation Survey Bottle Creek (NVS 2019)
- 4 Fauna Bottle Creek (Terr Ecosystems 2019)
- 5 Flora and Vegetation Survey Tim's Find (NVS 2019)
- 6 Fauna Survey Tim's Find (Terrestrial Ecosystems 2019)
- 7 Subterranean Fauna (Bennelogia 2021)
- 8 Biodiversity Online Database Results

J. Stakeholder Engagement

- 1 Stakeholder Consultation Register
- 2 Aboriginal Heritage Survey Reports

K. Environmental Management System (EMS)

L. DMIRS RFIs

1 INTRODUCTION

Aurene Mining is developing the **Mt Ida Gold Project** (MIG) (the Project), planned to be a 1.2-1.4 Mtpa gold mining operation using conventional carbon-in-leach technology. The Project is planned to be approved and constructed in stages with an expected life-of-mine (LoM) of 7-10 years.

The Project is in the Eastern Goldfields, 80 km west of Menzies, and 230 km north-northwest of Kalgoorlie-Boulder. Access to the area is via the sealed Kalgoorlie-Leonora Highway to Menzies, and then along the well-maintained, unsealed Menzies-Sandstone Road to 45 Mile Outcamp, and finally the Mt Ida Road just north of the Copperfield mining centre (**Figure 1**).

The MIG Project holds consolidated tenements for mining, exploration, and prospecting around Bottle Creek, Mt Ida, and Quinns project areas with ongoing exploration. This Mining Proposal is for the **Bottle Creek** project area.

The Project is being planned in stages. This Mining Proposal has been developed to reflect the following:

- **Stage 1 (Approved)** – Construction of the processing plant, run-of-mine (RoM) pad and integrated waste landform (IWL) and development of the **VB North & Emu** open pits and waste rock landforms (WRL). Other mine activities include access roads, topsoil stockpiles, buildings, accommodation facilities and landfill along with maintenance of the existing airstrip. These works were approved under existing Mining Proposal **Reg ID 98744**, approved on 9 November 2021 and **Reg ID 101557** approved on 21 April 2022.
- **Stage 1b Reg ID 117952 (Approved)** – Expansion to Emu Open Pit, development of Southwark Open Pit, amendment to the Emu waste dump design and minor changes to the TSF. Other proposed mine activities include transport and service infrastructure corridors, borefields, topsoil stockpiles, core yard and workshop.
- **Stage 2 Reg ID 122042** – Development of Emu - Cascade Expansion, amendment to the Emu waste dump capacity and footprint. Other proposed mine activities include additional topsoil stockpiles and pit laydown area.
- **Stage 3 Reg ID 500063** – Development of VB North , VB and Boags cutbacks, Single Fin pit and associated waste dumps. Inclusion of additional surface water management structures.

This Mining Proposal has been prepared in accordance with the *Statutory Guidelines for Mining Proposals 2020* (DMIRS, 2020) that identifies the form and content of information required in a Mining Proposal. A risk and outcome-based approach has been applied in assessing key risks, constraints and evaluating appropriate management controls for development and listed activities of the Project.

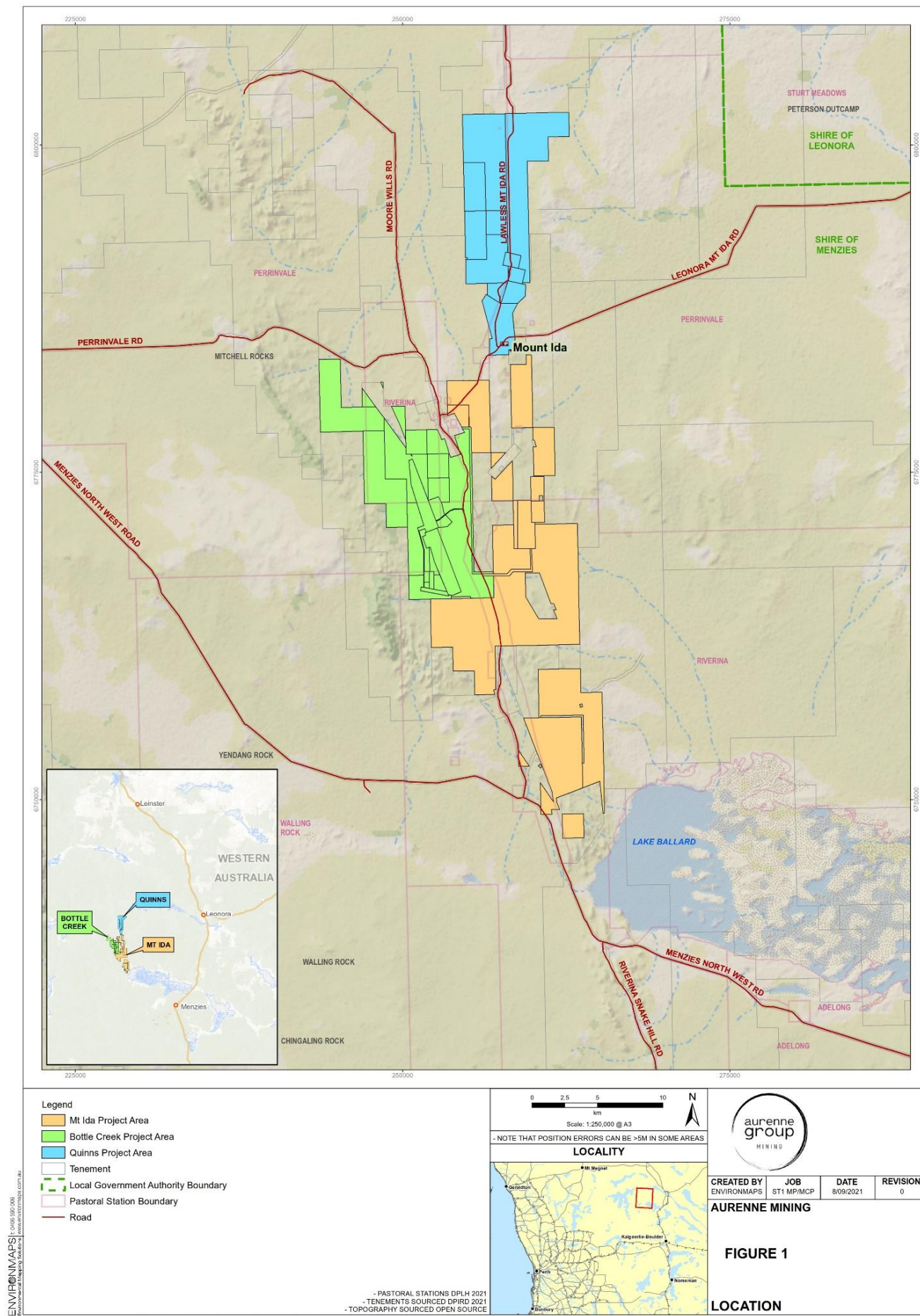


Figure 1: Mt Ida Gold Project, Bottle Creek Location



2 TENEMENT HOLDER AUTHORISATION

Aurenne Mining is a registered trading name of Aurenne Group Holdings Pty Ltd. The Aurenne Group of Companies hold Aurenne Mt Ida Pty Ltd (formerly Aurenne Alt Resources Pty Ltd) (ACN 168 928 416), which holds Aurenne MIT Pty Ltd (formerly MGK Resources Pty Ltd) (ACN 611 002 709). The recent company name changes and Letter of Authorisation is provided in **Appendix A**.

3 ENVIRONMENTAL GROUP SITE DETAILS

The works detailed in this Mining Proposal are part of the Bottle Creek Environmental Group Site (EGS). EGS, tenement and proponent details are provided in **Table 1**. Tenements in red text been added to this Mining Proposal iteration (stage 1b) and should be added to the EGS. A map of the tenements is provided in **Figure 2**.

Table 1: Environmental Group Site Details

ENVIRONMENTAL GROUP SITE DETAILS				
EGS Code and Name	S0000817 – Bottle Creek Group			
Description of Operation	Open pit mining operation. Operations comprise mine voids, waste rock landforms, process plant, tailings storage facilities, haul and access roads and other supporting infrastructure.			
Phase of Mining	Construction and operation			
Commodity Mined	Gold			
Commencement Date	2021			
Est. Completion Date	2031			
TENEMENT DETAILS				
Tenement	Tenement Holder	Area (ha)	Grant Date	Expiry Date
L 29/137	Aurenne MIT Pty Ltd	99.79	23/02/2021	23/02/2042
L 29/139	Aurenne MIT Pty Ltd	88.22	28/11/2019	27/11/2040
L 29/145	Aurenne MIT Pty Ltd	32.22	17/05/2021	17/05/2042
L 29/153	Aurenne MIT Pty Ltd	17.12	28/10/2021	28/10/2042
L 29/154	Aurenne MIT Pty Ltd	48.07	28/10/2021	28/10/2042
L 29/157	Aurenne MIT Pty Ltd	333.67	18/01/2022	17/01/2043
L 29/159	Aurenne MIT Pty Ltd	39.13	18/01/2022	17/01/2043
L 29/161	Aurenne MIT Pty Ltd	57.83	20/05/2022	19/05/2043
L 29/168	Aurenne MIT Pty Ltd	13.39	30/08/2022	29/08/2043
L 29/169	Aurenne MIT Pty Ltd	436.73	30/08/2022	29/08/2043
L 29/170	Aurenne MIT Pty Ltd	78.76	30/08/2022	29/08/2043
G 29/29	Aurenne MIT Pty Ltd	132.56	15/10/2021	14/10/2042
G 29/30	Aurenne MIT Pty Ltd	70.26	15/10/2021	14/10/2042
G 29/31	Aurenne MIT Pty Ltd	215.11	20/01/2022	19/01/2043
G 29/32	Aurenne MIT Pty Ltd	226.23	20/01/2022	19/01/2043
M 29/150	Aurenne Mt Ida Pty Ltd	571.30	24/06/1991	23/06/2033
M 29/151	Aurenne Mt Ida Pty Ltd	456.65	24/06/1991	23/06/2033
PROPONENT DETAILS				
Company Name	Aurenne MIT Pty Ltd			
ACN	611 002 709			
Address	Level 2, 3 Ord Street, West Perth WA 6005			
Postal Address	PO Box 155, West Perth WA 6872			
Key contact representative	Name	Campbell Sinclair		
	Position	Environment and Sustainability Manager		
	Phone	0414 580 947		
	Email	campbell.sinclair@aurenne.com		

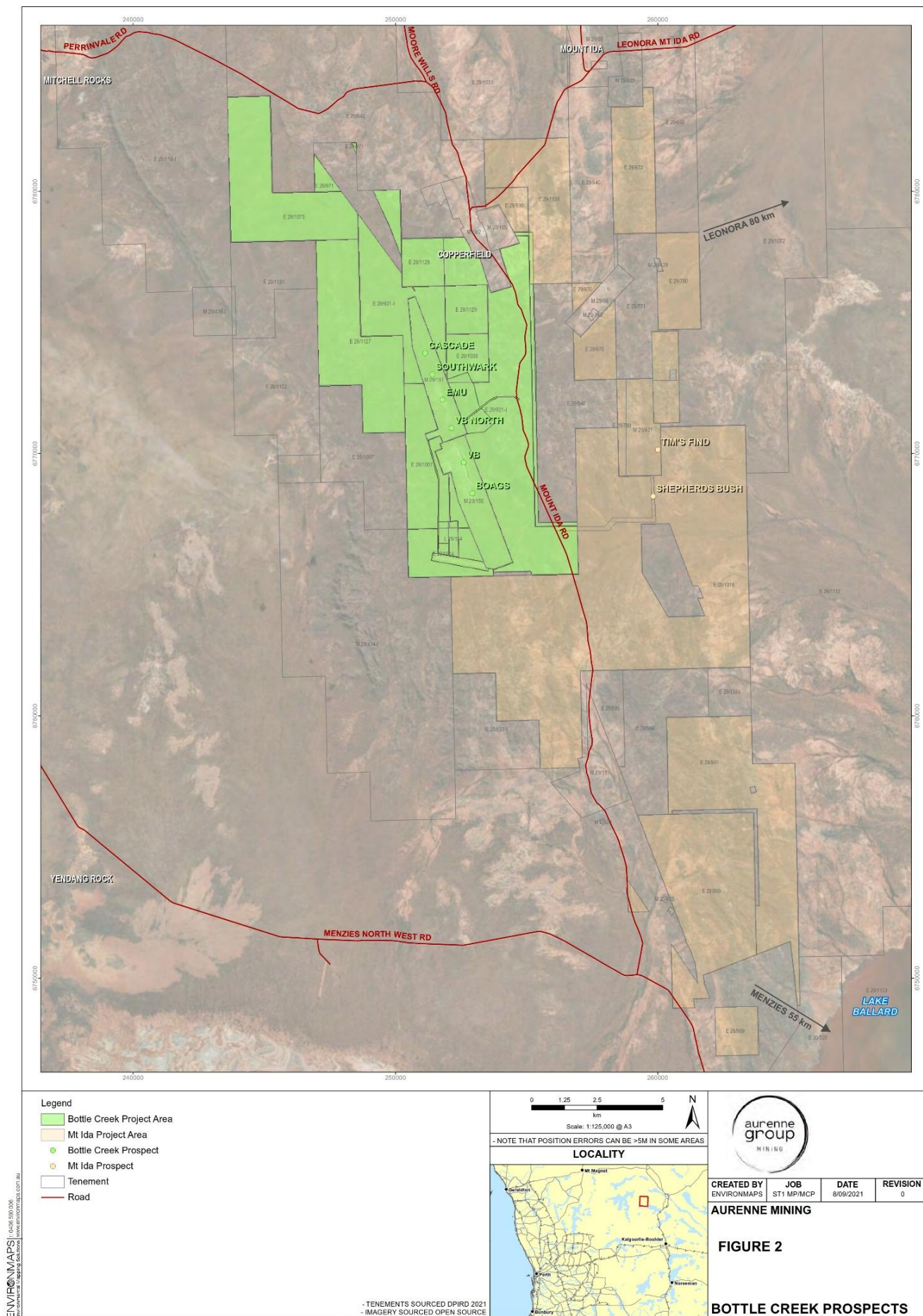


Figure 2: Bottle Creek Project Area and Prospects

4 PROPOSAL DESCRIPTION

Aurene Mining is developing the **Mt Ida Gold Project** (MIG) (the Project), planned to be a 1.2-1.4 Mtpa gold mining operation using conventional carbon-in-leach technology. The Project is planned to be approved and constructed in stages with an expected life-of-mine (LoM) of 7-10 years.

The Project is in the Eastern Goldfields, 80 km west of Menzies, and 230 km north-northwest of Kalgoorlie-Boulder. Access to the area is via sealed Kalgoorlie-Leonora Highway to Menzies, and then along the well-maintained, unsealed Menzies-Sandstone Road to 45 Mile Outcamp, and finally Mt Ida Road just north of the Copperfield mining centre (**Figure 2**).

The MIG Project holds consolidated tenements for mining, exploration, and prospecting around Bottle Creek, Mt Ida, and Quinns project areas with ongoing exploration. This Mining Proposal is for the **Bottle Creek** project area which consists of multiple prospects; Boags, Boags South, Cascade, Emu, Piantos Find, Single Fin, Southwark, VB, VB North, and Boags. Development of the Project is being planned in stages. An indicative timeline for project stages is provided in **Table 2**. This timeline is flexible and expected to adjust as further exploration and baseline studies inform planning.

Early Works and Stage 1 and 1b have been previously approved under existing Mining Proposals. This document has been revised to propose **Stage 2** activities and incorporates all previously approved activities.

There has been an amendment to the to the Project stage indicative timeframes. VB North

Table 2: Project Stages and Indicative Timeframes

Project Stage	Timeframe	Infrastructure/activity	Approval mechanism under Mining Act
Early Works	2019-2021	Exploration only fly camp	PoWs (under Alt Resources)
		Alt Resources is taken over by Aurene Group Mining	N/A
		Baseline surveys, exploration	PoW under MGK/Aurene Alt Resources
	2021	Temporary Camp (M29/150) for exploration & baseline survey contractors	Approved under PoW Reg ID 96890
		Upgrade of Temporary Camp to accommodate early construction workforce (M29/150)	Interim MP/MCP Reg ID 98744
	2021-2022	MIG Project Early Works Stage 1 maintenance clearing, bulk earthworks to runway, village (L 29/145), topsoil stockpile and Landfill (M 29/150).	NVCP CPS 9383 Earthworks under Interim MP/MCP Reg ID 98744
	2022	Fly camp decommissioning (M29/150)	PoW (rehabilitation report) (Reg ID 96890); nearing completion
		Decommissioning of Temp. Camp	PoW Reg ID 96890
Stage 1	2021-2022	Bottle Creek mine and processing infrastructure VB North	Stage 1 MP/MCP Reg ID 101557
Stage 1b	2023	Bottle Creek expansion Prospects: Emu, Southwark and supporting infrastructure	Stage 1b MP/MCP Reg ID 117952
Stage 2	2023	Bottle Creek expansion Prospect Cascade and supporting infrastructure	Stage 2 MP/MCP Reg ID 122042

Stage 1 (WRL closure)	2025	Bottle Creek Closure of Emu WRLS	MCP
Stage 3	2025	Bottle Creek expansion Prospects: VB, Boags, Single Fin, VB North	Stage 3 MP/MCP Reg ID 500063
Stage 4	2026	Mt Ida development Prospects: Tims Find, Shepherds Bush	Stage 3 MP/MCP
Stage 5	2027	Quinns development. Prospects: Forest Belle, Boudie Rat	Stage 4 MP/MCP
Closure	2027-2029	Preparation for mine closure	MCP
	2031	Anticipated mine closure	

4.1 Proposed Activities

Stage 3 incorporates the newly discovered Single Fin strike and cutbacks to the historic VB and Boags pits, last mined in 1989. During sterilisation of VB and Boags a parallel lode was discovered to the east of the pits running in a north south direction. The lode has a grade level which makes it economically viable. The discovery of the lode has resulted in additional waste rock dumps required to the east and west of the historical Boags and VB pits. Surface water diversion channels will be added to divert probable maximum flood levels (PMF) away from the pits and waste dumps.

The geology along the strike to Single Fin is an oxidised ore body and predominantly non-acid forming. Should potentially acid forming material (PAF) be encountered, cells for the encapsulation of PAF materials will be included in the design of the new waste rock dumps. Both waste rock landforms (WRL) will have a maximum height of 40m and an overall slope angle of 14 degrees. VB North which had a separate waste dump will be incorporated into the eastern WRL in Stage 3 of the Bottle Creek. VB North pit has expanded slightly due to the high gold prices.

The historic Norgold waste dumps and TSF will be redeveloped and incorporated into the new Western WRL due to the VB and Boags cutbacks to the existing pits.

Proposed activities are summarised in **Table 3**.

Table 3: Summary of Proposed Mine Activities (Stage 3)

Activity Type	Description
Key Mine Activities	
Mining voids	Development VB North , VB, Boags as a cut back and Single Fin
Waste Dump	Addition of two waste dumps to the east and west of the pits
Other Mine Activities	
Transport	A 30m wide haul road between the pit and waste dump and Extension of the water pipeline service corridor to the airstrip access road from Mt Ida Road
Diversion channels	Surface water management structures to protect the waste dumps and pits
Topsoil Stockpiles	Additional top-soil stockpiles for the expanded waste dump

4.2 Previously Approved Activities

Stage 2 Mining Proposal Red ID 122042

Stage 2 involves the expansion of Bottle Creek project mining area with a new open pit and waste dump design and extends the life of the project. A drilling campaign over the last six months has defined the strike north of Emu. This has led to the Cascade pit expanding considerably from the previous satellite pit described in the 2021 MP. The Cascade pit is geologically identical to Emu Pit and intersects with Southwark expansion to the south. The Cascade extension will eventually form a single pit with Emu around 3km long.

Emu waste dump footprint has been expanded to take the additional material from newly developed Cascade pit expansion. The waste dump footprint is at final slope angle of 14 degrees with a height of 40 meters. The previous Emu waste dump approved in MP 117952 was under tenure constraint and material from the Cascade expansion had not been included.

Stage 1b Mining Proposal (Reg ID 117952)

Stage 1b was approved on the 19 July 2023 allowing the expansion of Emu pit, Southwark pit extension, minor changes in design for the approved IWL TSF and additional supplementary non-processing linear infrastructure. The following activities were approved under Stage 1b Mining proposal.

- Expansion of existing Emu Open Pit.
- Development of Southwark Open pit adjoining Emu Open Pit.
- Changed IWL TSF Stage 1 embankment (and subsequent) design from RL506 to RL498 due to a survey error.
- Rock ring decant structure replaced with a segmented concrete decant tower with rock and geotextile filter.
- Decant causeway now from the east, not west.
- New alternative access road allowing co-lease holders to access Bottle Creek Aerodrome (ex-Perrinvale Airstrip) without going through active mining/construction areas.
- New access road from Mt Ida Rd to MIGP Bottle Creek Village / Aerodrome.
- New access road from Mt Ida Road to the west to access a planned future borefield.
- Telecommunication tower, infrastructure and connecting communication and underground power lines to Bottle Creek Village.
- Pipelines for macerated sewerage, potable water and RO brines between Village and Process Plant along service corridors.
- Pipelines from production bores to supply water to Process Plant.
- HV Powerline between Village and Process Plant.
- Powerline from Village to Aerodrome.
- Potable water pipeline from borefields to Bottle Creek Village.
- Amendment of TSF pipeline route to travel across newly granted tenement. This route is significantly shorter than previous and reduces required area to be cleared.

Stage 1 Mining Proposal (Reg ID 101557)

Stage 1 was approved on 21 April 2022 allowing the construction and commencement of mining, processing and associated infrastructure. Stage 1 involved construction of the

Processing Plant, ROM Pad, IWL / TSF, Village, Aerodrome and associated supporting infrastructure and commencement of mining of VB North & Emu open pits. Ore extracted from the pits will be hauled to the ROM pad for processing. The following activities were approved under Stage 1 Mining Proposal.

- New open pits (VB North, Emu)
- Run-of-mine pad (ROM)
- Waste rock landforms (WRLs)
- Processing Plant site (crushing, grinding & gold processing circuit)
- Integrated waste landform (IWL) incorporating tailings storage facility (TSF)
- Water services (raw, potable and process water storage)
- Site services (power station, workshops, laboratory & warehouse)
- Establishment of haul roads and internal access roads
- Establishment of infrastructure corridors for the co-location of services and vehicle access
- Dewatering of existing pit lakes (Boags, VB) for dust suppression & Processing Plant
- Associated miscellaneous disturbance/infrastructure (topsoil stockpiles, abandonment bunds, laydown yards, offices, laboratory, vehicle washdown, diversion bunds, channels and drains, roads and tracks, workshops, diesel power generation, fuel facility, pit lake dewatering pumps/standpipe)
- Upgrade of the existing Perinvale Airstrip to Aerodrome (CASA standard) including an Aerodrome terminal building and supporting infrastructure

Early Works Mining Proposal (Reg ID 98744)

Early works were approved on 9 November 2021 allowing development of the following activities:

- Accommodation Village with wastewater treatment plan (WWTP) / spray field
- Airstrip and north-south access track surface maintenance to runway (no clearing)
- Topsoil stockpile & putrescible waste facility

4.3 Historical Workings

Bottle Creek was discovered in 1983 and mined by Norgold Ltd between 1988 and 1989 but was prematurely shutdown due to a pit wall failure, mill issues, and a declining gold price in 1990. The Project produced 93,000 oz Au from two open pits (VB and Boags) in 18 months of operation. Remaining are two long narrow water filled pits and rehabilitated landforms. These workings were relinquished by Norgold/Rio Tinto in 2001. The following section provides more information on the relinquished activities.

Alt Resources consolidated the Bottle Creek, Mt Ida and Quinns tenements. In mid-2020 Aureenne acquired Alt Resources and has since consolidated tenements from Alt Resources, MGK Resources and other local tenements to develop a viable mining operation of mining and processing; Aureenne Mining's **Mt Ida Gold Project**.

4.3.1 Relinquished Activities

The following workings were relinquished by Norgold/Rio Tinto in 2001:

- Two mining voids with pit lakes (Boags 7.47 ha, VB 14.43 ha)
- Rehabilitated waste dumps (Boags 17.12 ha, VB 44.32 ha, Waste dump 5.77 ha)
- Rehabilitated TSF (30.86 ha)

- Perinvale airstrip (27.23 ha)
- Access roads and tracks (15.06 ha)
- Laydown area (1.71 ha)

Some relinquished areas have been redeveloped for the purpose of the Mt Ida Gold Project.

Perinvale airstrip – The total relinquished area of the Perinvale airstrip (27.23 ha) has been redeveloped for the Bottle Creek Aerodrome.

Access roads and tracks – The total relinquished area of access roads and tracks (15.06 ha) has been redeveloped.

Laydown area – The temporary construction camp has been decommissioned and this area has been repurposed for exploration purposes such as storing of equipment.

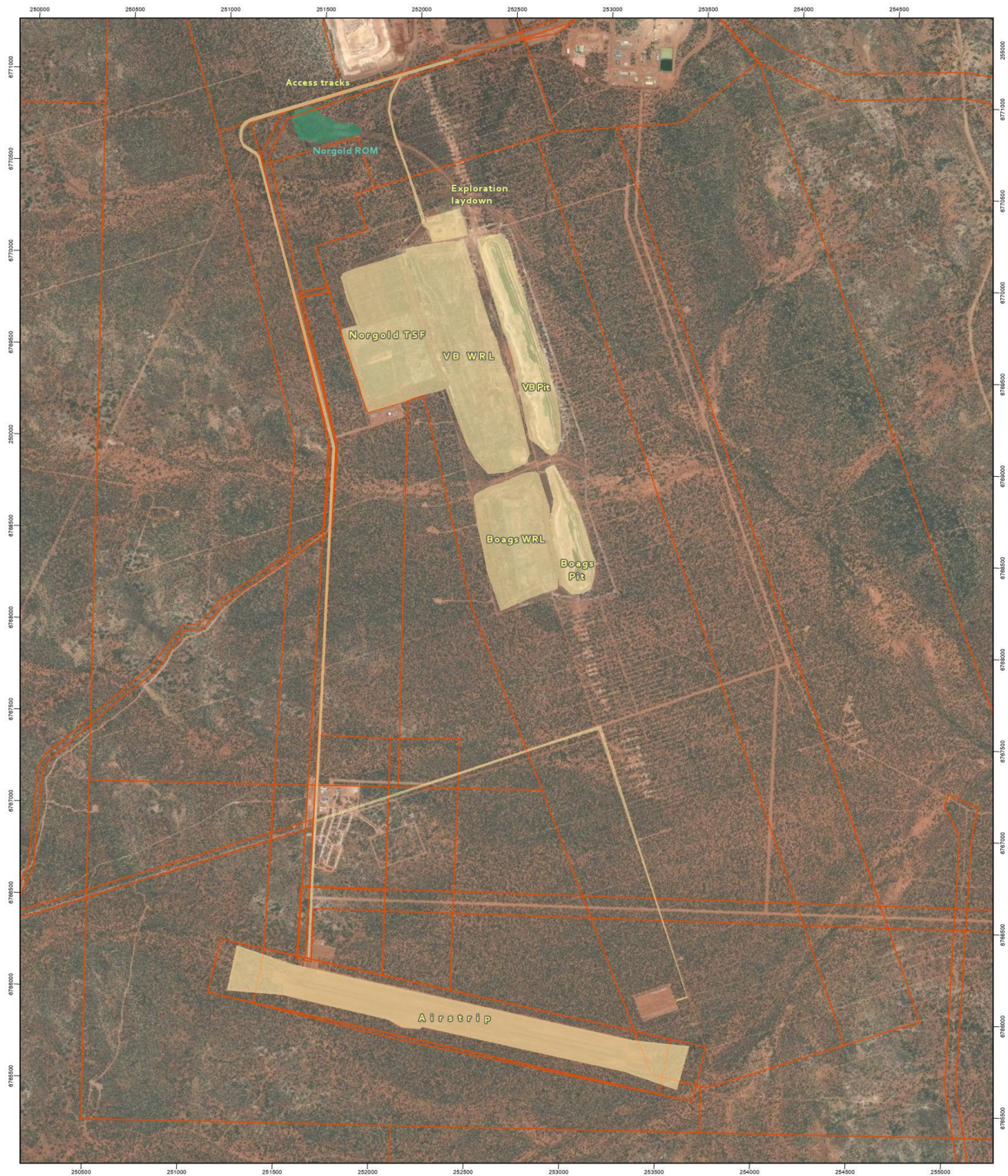
Mining voids and rehabilitated landforms – VB and Boags Open pits and the VB and Boags waste rock landforms will be redeveloped for Stage 3.

Table 4 details the disturbance areas for each activity to track the relinquished and redeveloped areas and a map is provided in **Figure 3**. Proposed and approved mine activities for the overall site are provided in **Section 5.1**.

Table 4: Relinquished Areas Tracking

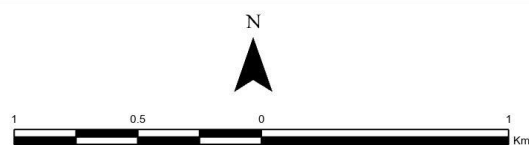
Activity Type	Mine Activity Reference	Tenement	Originally Relinquished (ha)	Area Redeveloped (ha)	Remaining Relinquished (ha)
Mining void	Boags open pit	M 29/150	7.47	7.47	0
	VB open pit	M 29/150	14.43	14.43	0
Waste dumps	Boags WRL (rehabilitated)	M 29/150	17.12	17.12	0
	VB WRL (rehabilitated)	M 29/150	44.32	44.32	0
ROM Pad	Norgold ROM Pad (Rehabilitation)	M29/151	5.10	0	5.10
Tailings storage facility	Norgold TSF (rehabilitated)	M 29/150	30.86	30.86	0
Airstrip	Perinvale Airstrip (now Bottle Creek Aerodrome)	L 29/137	27.23	27.23	0
Transport corridors	Access roads & tracks	L 29/137	15.06	15.06	0
Laydown	Laydown area	M 29/151	1.71	1.71	0
TOTAL			163.97	158.2	5.10

*Total relinquished area in use



Bottle Creek Historical Disturbances
Mt Ida Gold Project Proposal Stage 3

Imagery : Maxar , Aurenne Group Mining
Location : Mt Ida Road, Ullaring , Shire of Menzies
Projection : GDA2020 MGA Zone 51
Scale : A2 1:20,000 , Date 10 December 2024. Drawn by C.Sinclair



Legend

- AGM Tenements
- Historic Cleared Land
- Redeveloped landforms



Figure 3: Historic and Relinquished Disturbance

4.4 Identified Key Issues to be Managed

Following environmental baseline survey/assessments by specialist consultants including biological, hydrological, hydrogeological, materials characterisation, geotechnical, metallurgical testing, and mine planning, the following potential issues relevant to the Project include:

- **Fauna** – Vegetated areas are foraging habitat for the Threatened Malleefowl, and Priority fauna may also utilise the habitats of the Project area. Although no active nor recently active Malleefowl mounds have been located during surveys, a Malleefowl Management Plan is in place along with strict procedures for clearing and mound survey prior to ground disturbance. In addition, the Project clearing permit (**CPS 9383/3**) has fauna management conditions relating to Malleefowl.
- **Flora** – *Jacksonia lanicarpa*, a Priority 1 flora is found within the Project area and a Priority 3 flora (*Calotis* sp. *Perrinvale*) has been found on adjacent tenements. Clearing for the Project will be regulated under a EP Act Part V clearing permit **CPS 9383/3** with strict procedures for clearing and survey prior to ground disturbance in place. Further targeted flora survey is ongoing as part of mine planning and environmental management.
- **Surface Water** – The Project is within a broad surface water catchment, although there no defined riparian zones or groundwater dependent ecosystems (GDE) present. Surface water drainage will be managed during significant rainfall events to minimise erosion and disruption to site activities. During closure planning, further work to manage the reinstatement of natural surface flows will be undertaken.
- **Waste Characterisation** – Waste characterisation studies determined that fresh materials classify predominantly as potentially acid forming (PAF), albeit some fresh materials have large acid neutralisation capacities (ANC) classifying as non-acid forming (NAF). Ongoing assessment during grade control drilling will include the collection, characterisation, assessment and management of actual waste rock to confirm the expected geochemical properties of these materials. This may employ a sampling approach starting from set Total Sulphur and pH triggers and extending through to laboratory testing as required.
 - Emu – No fresh materials will be mined from the Emu and VB North Open Pits therefore the risk of acid forming material from these pits is considered low.
 - Southwark – Fresh material (PAF) makes up an estimated 2.5% of all waste material excavated from Southwark Open Pit. An encapsulation cell will be included as part of the Emu Waste Dump to manage this material.
 - Cascade – No fresh materials will be mined from the Cascade extension therefore the risk of acid forming material from these pits is considered low. The geology is identical to Emu and the materials characterisation is not expected to vary from the rest of the orebody.
 - VB North – Some PAF material could potentially be mined from the pit. Encapsulation cells will be included as part of the waste rock landforms to manage this material
 - VB and Boags cutbacks – Some PAF material could potentially be mined from the pit. Encapsulation cells will be included as part of the waste rock landforms to manage this material
 - Single Fin – Some PAF material could potentially be mined from the pit. Encapsulation cells will be included as part of the waste rock landforms to manage this material.

- **Tailings Characterisation** – Tailings characteristics were assessed and classified as NAF, reflective of a negligible content of sulphides and were devoid of carbonate minerals (except Boags existing open pit, which is not part of this Mining Proposal). The tailings streams to be discharged to the IWL should be NAF and saline with enriched-elements (e.g. As, Sb) in geochemically stable forms reflective of ores containing 'negligible-sulphides'. However, given this is a new Project, it was recommended that during the LOM for the Project, tailings should be re-visited, and confirmed (or refined if required) following the collection and testing of an actual 'mill-generated' slurries of tailings. Such work would add to the information base assessed during the annual auditing of the tailings-storage.
- Aureenne Mining is required to undertake testing of mill generated slurries as a requirement of the EP Act 1986 Part V Works Approval during time limited operations. The MCP will be updated in 2025 to include the results of the testing.
- **Sodicity** – Soils and waste rock are generally sodic and placement will be managed to ensure stable, non-eroding landforms.
- **Zone of Instability** – All constructed landforms (WRL and IWL) are located outside the potential zone of instability (PZOI) for each of the pits.
- **Pit Walls** - Pit wall design parameters have been professionally recommended in a study due to previous pit wall slips during NorGold operations. Ongoing operational assessments to refine and optimise pit walls have been recommended for future mining stages
- **Emergency Services** – Operations are remote and new communications and emergency services accessibility is critical; discussions with DFES have been initiated.

5 ACTIVITY DETAILS

5.1 Disturbance Tables

The following tables summarise the disturbance areas for all mine activities for each tenement. within each of the tenements that comprise the Stage 3 Project (

Table 5 to Table 19).

An additional 591 ha is proposed to be disturbed with a total area of 1405 ha in the development envelope on Tenements M29/150 , M29/151 , G2930 and G2931.

Table 4: M 29/150 Disturbance Table

M 29/150				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Mining void (depth greater than 5m – below groundwater)	VB Open Pit	87.6965	0	87.6965
	Boags Open Pit	38.6619	0	38.6619
	Single Fin Open Pit	54.4758	0	54.4758
Waste dump or overburden stockpile (class 1)	VB North WRL *	-4.43	4.43	0.0000
	Bottlecreek East WRL	89.3017	0	89.3017
	Bottlecreek West WRL	121.078	0	121.0780
Total Key Mining Activity Area		386.7839	4.4300	391.2139
Other Mine Activity Area				
Building (Other Than Workshop) Or Campsite	Construction camp (temporary)			
	Magazine (explosives storage)			
Borefield	Monitoring bores			
Core yard	Core yard			
Diversion channel or drain	Diversion channel or drain			
Landfill site	Waste Disposal for Accommodation Camp			
Land that is cleared of vegetation (other cleared land)	Other cleared land			
	Laydown			
	Pump dewatering VB & Boags pits			
Laydown or hardstand area	Standpipe and Pump (with Genset and fuel tank)			
	Topsoil stockpile			
	Topsoil stockpile			
Transport or service infrastructure corridor	Access roads			
	Mine haul road			
	HV powerlines			
	Pipelines			
Workshop	Workshop			
Total Other Mine Activity Area		39.1232	153.68	192.8032
Total Tenement Activity Area		425.9071	158.11	584.0171
Total Mine Activity Area		591.7968	797.35	1389.1468

* VB North WRL disturbance has been incorporated in Bottlecreek East WRL

Table 5: M 29/151 Disturbance Table

M 29/151				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Mining void (depth greater than 5m – below groundwater)	Emu Open Pit	0	35.190	35.1900
	Southwark Open Pit	0	11.500	11.5000
	Cascade	0	33.290	33.2900
	VB Open Pit	3.057	0.000	3.0568
	VB North Open Pit	14.8320	0.000	14.8320
Waste dump or overburden stockpile (class 1)	Bottle Creek East	2.0986	0.000	2.0986
	VB North WRL*	-12.0000	12.000	0.0000
	Emu WRL	0	81.860	81.8600
Total Key Mining Activity Area		7.9874	173.840	181.8274
Other Mine Activity Area				
Borefield	Monitoring bores			
Diversion channel or drain	Diversion channel or drain			
Laydown or hardstand area	Pit laydown			
Topsoil stockpile	Topsoil stockpile			
Transport or service infrastructure corridor	Access roads			
	Mine haul road			
	Tailings pipeline and access track			
	Decant pipeline			
	Water pipeline			
Total Other Mine Activity Area		17.2552	135.1	152.3552
Total Tenement Activity Area		25.2426	308.940	334.1826
Total Mine Activity Area		591.7968	797.35	1389.1468

* VB North WRL will be incorporated into Bottle Creek East WRL

Table 6: G 29/29 Disturbance Table

G 29/29				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Tailings or residue storage facility (class 1)	IWL & TSF	0	49	49
Total Key Mining Activity Area		0	49	49
Other Mine Activity Area				
Borefield	Monitoring bores			
Diversion channel or drain	Diversion channel or drain			
Topsoil stockpile	Topsoil stockpile			
Transport or service infrastructure corridor	Access roads			
	Mine haul road			
	Tailings pipeline and access track			
	Decant pipeline			
	Water Pipeline			
Total Other Mine Activity Area		0	22.4	22.4
Total Tenement Activity Area		0	71.4	71.4
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 7: G 29/30 Disturbance Table

G 29/30				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Dam – saline or process liquor	Raw water pond	0	0.5	0.5
	Process water pond	0	0.5	0.5
	Oily water pond	0	0.1	0.1
Plant site	Process plant	0	10.8	10.8
Run-of-mine pad	ROM pad	0	9.1	9.1
Waste dump or overburden stockpile (class 1)	Bottlecreek East	0.2035	0	0.2035
Total Key Mining Activity Area		0.2035	21	21.2035
Other Mine Activity Area				
Borefield	Monitoring bores			
Core yard	Core yard			
Diversion channel or drain	Diversion channel or drain			
Fuel Storage Facility	Fuel storage facility			
Laydown or hardstand area	Laydown			
Topsoil stockpile	Topsoil stockpiles			
Transport or service infrastructure corridor	Access roads			
	Mine haul road			
	Decant pipeline			
	Water Pipeline			
Workshop	HV workshop			
Total Other Mine Activity Area		7.7599	21.95	29.7099
Total Tenement Activity Area		7.9634	42.95	50.9134
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 8: G 29/31 Disturbance Table

G 29/31				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Waste dump or overburden stockpile (class 1)	Bottle Creek East	117.0880	0	117.0880
Total Key Mining Activity Area		117.0880	0	117.0880
Other Mine Activity Area				
Topsoil stockpile	Topsoil stockpiles			
Transport or service infrastructure corridor	Access road and HV powerline			
	HV powerline			
	Potable water pipeline			
Total Other Mine Activity Area		15.5957	17.59	33.1856
Total Tenement Activity Area		132.684	17.59	150.274
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 9: G 29/32 Disturbance Table

G 29/32				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Waste rock landform	Emu WRL	0	90.07	90.07
Total Key Mining Activity Area		0	90.07	90.07
Other Mine Activity Area				
Topsoil stockpile	Topsoil stockpile			
Diversion drain	Diversion drain			
Total Other Mine Activity Area		0	16.30	16.30
Total Tenement Activity Area		0	106.37	106.37
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 10: L 29/137 Disturbance Table

L 29/137				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activity Area				
Transport or service infrastructure corridor	Access roads			
Total Other Mine Activity Area		0	110.05	110.05
Total Tenement Activity Area		0	110.05	110.05
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 11: L 29/139 Disturbance Table

L 29/139				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activity Area				
Transport or service infrastructure corridor	Access road			
Total Other Mine Activity Area		0	8.45	8.45
Total Tenement Activity Area		0	8.45	8.45
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 12: L 29/145 Disturbance Table

L 29/145				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activity Area				
Building (other than workshop) or campsite	Accommodation camp			
Sewage pond	Wastewater treatment			
Topsoil stockpile	Topsoil stockpiles			
Transport or service infrastructure corridor	Access roads			
Total Other Mine Activity Area		0	36.37	36.37
Total Tenement Activity Area		0	36.37	36.37
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 13: L 29/153 Disturbance Table

L 29/153				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activity Area				
Building (other than workshop) or campsite	Terminal and apron for airstrip			
Transport or service infrastructure corridor	Access roads			
Total Other Mine Activity Area		0	5.84	5.84
Total Tenement Activity Area		0	5.84	5.84
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 14: L 29/154 Disturbance Table

L 29/154				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activity Area				
Sewage pond	Wastewater treatment irrigation sprayfield			
Topsoil stockpile	Topsoil stockpiles			
Transport or service infrastructure corridor	Access roads			
Total Other Mine Activity Area		0	11.81	11.81
Total Tenement Activity Area		0	11.81	11.81
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 15: L 29/157 Disturbance Table

L 29/157				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activity Area				
Borefield	Production bores			
Topsoil stockpile	Topsoil stockpiles			
Transport or service infrastructure corridor	Access roads			
	HV powerline			
	Potable water pipeline			
Workshop	Explosives magazine			
Total Other Mine Activity Area		0	4.15	4.15
Total Tenement Activity Area		0	4.15	4.15
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 16: L 29/159 Disturbance Table

L 29/159				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activity Area				
Transport or service infrastructure corridor	Access road			
	Telecommunications tower			
Total Other Mine Activity Area		0	0.9	0.9
Total Tenement Activity Area		0	0.9	0.9
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 17: L 29/161 Disturbance Table

L 29/161				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activities				
Topsoil stockpile	Topsoil stockpiles			
Transport or service infrastructure corridor	Access road and pipeline			
Total Other Mine Activity Area		0	21.51	21.51
Total Tenement Activity Area		0	21.51	21.51
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 18: L 29/168 Disturbance Table

L 29/168				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activities				
Transport or service infrastructure corridor	Access road, powerline and pipeline			
	Tailings pipeline			
Total Other Mine Activity Area		0	3.25	3.25
Total Tenement Activity Area		0	3.25	3.25
Total Mine Activity Area		591.7968	797.35	1389.1468

Table 19: L 29/169 Disturbance Table

L 29/169				
Activity category	Mine activity reference	Proposed area (ha)	Current area (ha)	Total area (ha) (proposed & current)
Key Mine Activities				
Nil		0	0	0
Total Key Mining Activity Area		0	0	0
Other Mine Activities				
Borefields	Production bores			
Topsoil stockpile	Topsoil stockpiles			
Transport or service infrastructure corridor	Access roads, pipelines and powerlines			
Total Other Mine Activity Area		0	1.41	1.41
Total Tenement Activity Area		0	1.41	1.41
Total Mine Activity Area		591.7968	797.35	1389.1468

5.2 Key Mine Activities

5.2.1 Proposed Key Mine Activities

Open pits:

- VB North Open Pit
- VB Open Pit
- Boags Open Pit
- Single Fin Open Pit

Waste Rock Landforms

- Bottlecreek East Waste Rock Landform
- Bottlecreek West Waste Rock Landform

The proposed expansions are shown in Figure 4, with the current approved disturbance in white. VB North has changed in depth and width since the last mining proposal due to additional drilling and will be updated in this section.

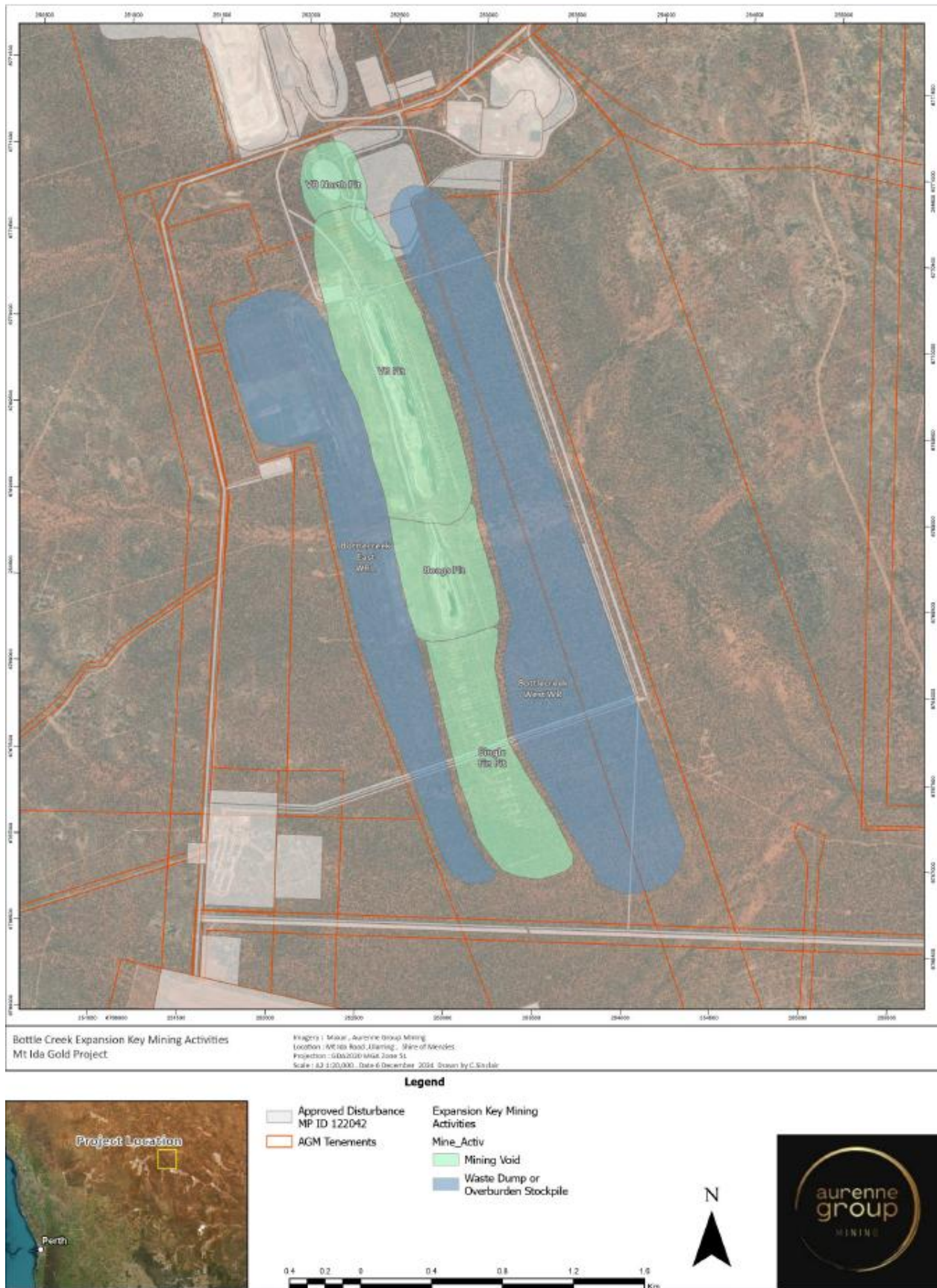


Figure 4 Bottle Creek Stage 3 Expansion Key Mining Activities

5.2.1.1 Mining Voids

5.2.1.1.1 VB North Open Pit

Activity type	Mining Void (depth greater than 5m - below groundwater)	
Mine activity ref	VB Open Pit	
Area (ha)	14.8320 ha	
Area per tenement (ha)	M 29/151 – 14.8320	
Design description	VB North Open Pit • Length – 415 • Width – 210m • Maximum depth – 75m • Batter angles – 50° to 70° • Face height – 5m to 10m • Berm widths – 5m to 6m	
Zone of Instability (Zoi)	Zoi was established from the base of the pit design using the guideline for pit abandonment published by the Department of Industry and Resources (DoIR) (1997). All final abandonment bunds and WRLs will be placed outside this position in accordance with guidelines. P O'Bryan & Assoc (2024; Appendix B7) made recommendations for pit wall design parameters that were incorporated into design. Planned / future WRs on the east and west of the possible ultimate open pits generally lie well outside the generically defined very long term Zoi – Examples from VB and Single Fin show typical standoffs (P O Brian and Ass 2024) (Figure 5)	
Abandonment Bund	Abandonment bunds have been designed as per the DoIR guidelines (1997). Placement of the abandonment bund is outside Zoi as shown in Figure 7.	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	Yes. Waste rock in the deeper ore zone is classified as Uncertain PAF and PAF. NAG pH varies between 1.7 and 10.8 averaging 6.1 with the transitional and fresh materials below 90m having pH's below the 4.5 threshold potentially classifying as PAF
	Dispersive and/or erosive material capable of compromising structure & stability	Yes minor – Sodic and potentially dispersive but unlikely
Backfill	No	

5.2.1.1.2 VB Open Pit

VB was last mined by Norgold between 1988 and 1989. Sterilization drilling undertaken by Aurene has discovered a parallel lode close to the current pit with economically viable grade. A cutback is necessary for safe mining of the lode and to access the remaining ore at bottom of the pit.

Table 20: Mining Void Boags

Activity type	Mining Void (depth greater than 5m - below groundwater)
Mine activity ref	VB Open Pit
Area (ha)	90.7533 ha
Area per tenement (ha)	M 29/150 – 87.6965 ha M 29/151 – 3.0568 ha

Design description	VB Open Pit will potentially intersect with Boags. Design details: - Length – 1,770m - Width – 470m - Maximum depth – 137m - Batter angles – 50° to 70° - Face height – 5m to 10m - Berm widths – 5m to 6m	
Zone of Instability (Zoi)	The Zoi was established from the base of the pit design using the guideline for pit abandonment published by the Department of Industry and Resources (DoIR) (1997). All final abandonment bunds and WRLs will be placed outside this position in accordance with guidelines. P O'Bryan & Assoc (2024; Appendix B7) made recommendations for pit wall design parameters that were incorporated into design. Planned / future WRs on the east and west of the possible ultimate open pits generally lie well outside the generically defined very long term Zoi – Examples from VB and Single Fin show typical standoffs (P O Brian and Ass 2024) (Figure 5)	
Abandonment Bund	Abandonment bunds have been designed as per the DoIR guidelines (1997). Placement of the abandonment bund is outside Zoi as shown in Figure 8.	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	Yes. Waste rock in the deeper ore zone is classified as Uncertain PAF and PAF. NAG pH varies between 1.7 and 10.8 averaging 6.1 with the transitional and fresh materials below 90m having pH's below the 4.5 threshold potentially classifying as PAF.
	Dispersive and/or erosive material capable of compromising structure & stability	Yes – Sodic and potentially dispersive but unlikely.
Backfill	No	

5.2.1.1.3 Boags Open Pit

Like VB, Boags was last mined by Norgold between 1988 and 1989. Sterilization drilling undertaken by Aurenne has discovered a parallel lode close to the current pit with economically viable grade. A cutback is necessary for safe mining of the lode and to access the remaining ore at bottom of the pit.

Table 21: Mining Void Boags

Activity type	Mining Void (depth greater than 5m - below groundwater)
Mine activity ref	Boags Open Pit
Area (ha)	38.6619 ha
Area per tenement (ha)	M 29/150 - 38.66 ha
Design description	Boags Open Pit will potentially intersect with VB and Single Fin. Design details: - Length – 760m - Width – 453m - Maximum depth – 130 m - Batter angles – 50° to 70° - Face height – 5m to 10m - Berm widths – 5m to 6m

Zone of Instability (Zol)	The Zol was established from the base of the pit design using the guideline for pit abandonment published by the Department of Industry and Resources (DoIR) (1997). All final abandonment bunds and WRLs will be placed outside this position in accordance with guidelines. P O'Bryan & Assoc (2024; Appendix B7) made recommendations for pit wall design parameters that were incorporated into design. Planned / future WRs on the east and west of the possible ultimate open pits generally lie well outside the generically defined very long term Zol – Examples from VB and Single Fin show typical standoffs (P O Brian and Ass 2024 Appendix B7) (Figure 5)	
Abandonment Bund	Abandonment bunds have been designed as per the DoIR guidelines (1997). The placement of the abandonment bund is outside the Zol as shown in Figure 8.	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	Yes. Waste rock in the deeper ore zone is classified as Uncertain PAF and PAF. NAG pH varies between 1.7 and 10.8 averaging 6.1 with the transitional and fresh materials below 90m having pH's below the 4.5 threshold potentially classifying as PAF.
	Dispersive and/or erosive material capable of compromising structure & stability	Yes – Sodic and potentially dispersive but unlikely.
Backfill	No	

5.2.1.1.4 Single Fin Open Pit

Single Fin is a new discovery and exists on the same geological strike as the previous pits. Geology is homogeneous and largely identical, consisting of a benign oxidized ore body which transitions to fresh at maximum depth.

Table 22: Mining Void Single Fin

Activity type	Mining Void (depth greater than 5m - below groundwater)
Mine activity ref	Single Fin Open Pit
Area (ha)	54.4758 ha
Area per tenement (ha)	M 29/150 –54.4758 ha
Design description	Single Fin Open Pit will potentially intersect with Boags. Design details: • Length – 760m • Width – 2 • Maximum depth – 130 m • Batter angles – 50° to 70° • Face height – 10m, 20 and 25m • Berm widths – 3m, 5m and 7m
Zone of Instability (Zol)	The Zol was established from the base of the pit design using the guideline for pit abandonment published by the Department of Industry and Resources (DoIR) (1997). All final abandonment bunds and WRLs will be placed outside this position in accordance with guidelines. P O'Bryan & Assoc (2024, Appendix B7) made recommendations for pit wall design parameters that were incorporated into design. Planned / future WRs on the east and west of the possible ultimate open pits generally lie well outside the generically defined very long term Zol – Examples from VB and Single Fin show typical standoffs (P O Brian and Ass 2024 Appendix B7) (Figure 5)

Abandonment Bund	Abandonment bunds have been designed as per the DoIR guidelines (1997). The placement of the abandonment bund is outside the ZOI as shown in Figure 9	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	Yes. Waste rock in the deeper ore zone is classified as Uncertain PAF and PAF. NAG pH varies between 1.7 and 10.8 averaging 6.1 with the transitional and fresh materials below 90m having pH's below the 4.5 threshold potentially classifying as PAF.
	Dispersive and/or erosive material capable of compromising structure & stability	Yes – Sodic and potentially dispersive but unlikely.
Backfill	No	

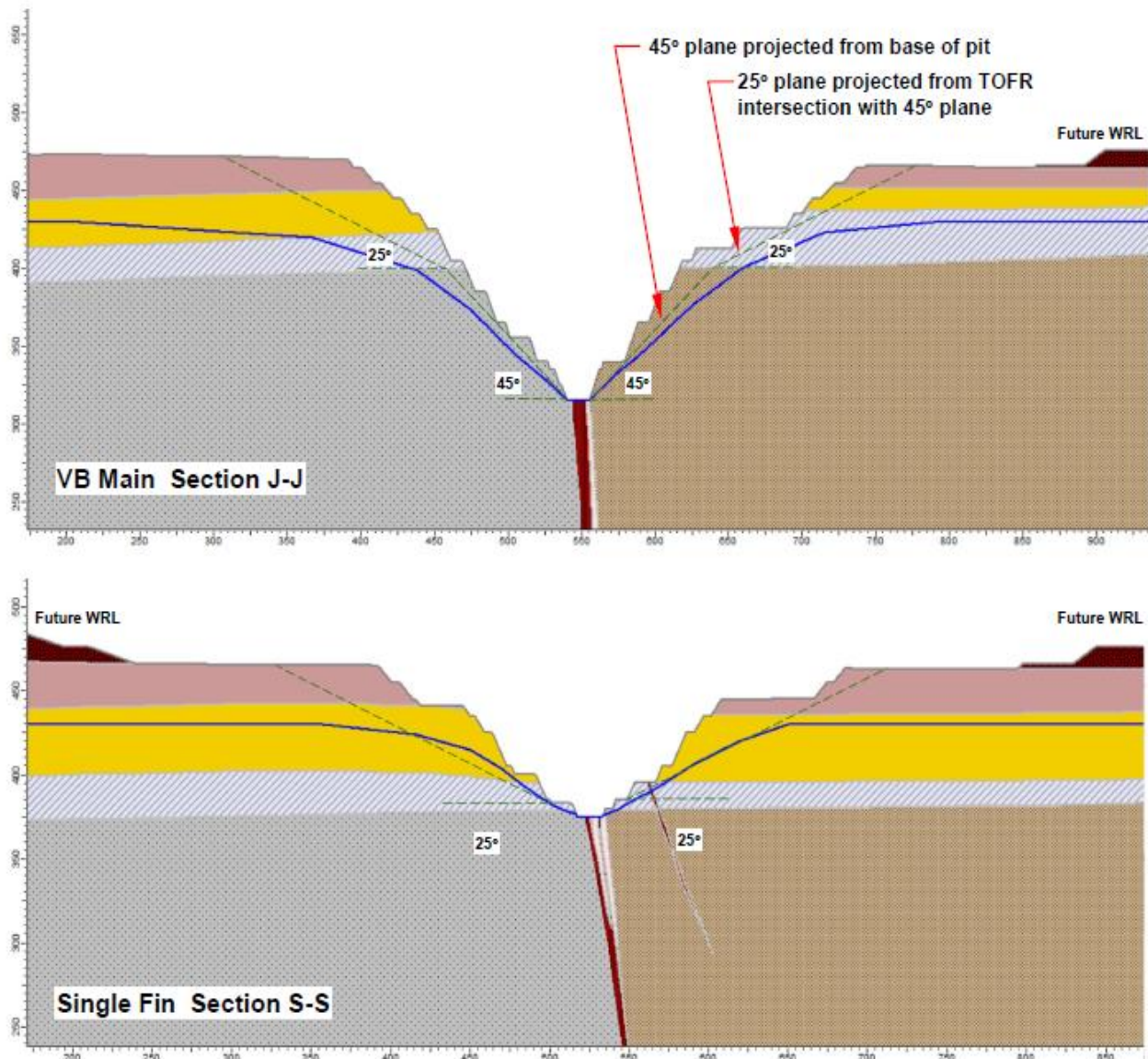


Figure 5 Geotechnical Cross sections examples for Zol - Single Fin and VB (P O Brian and Associates 2024).

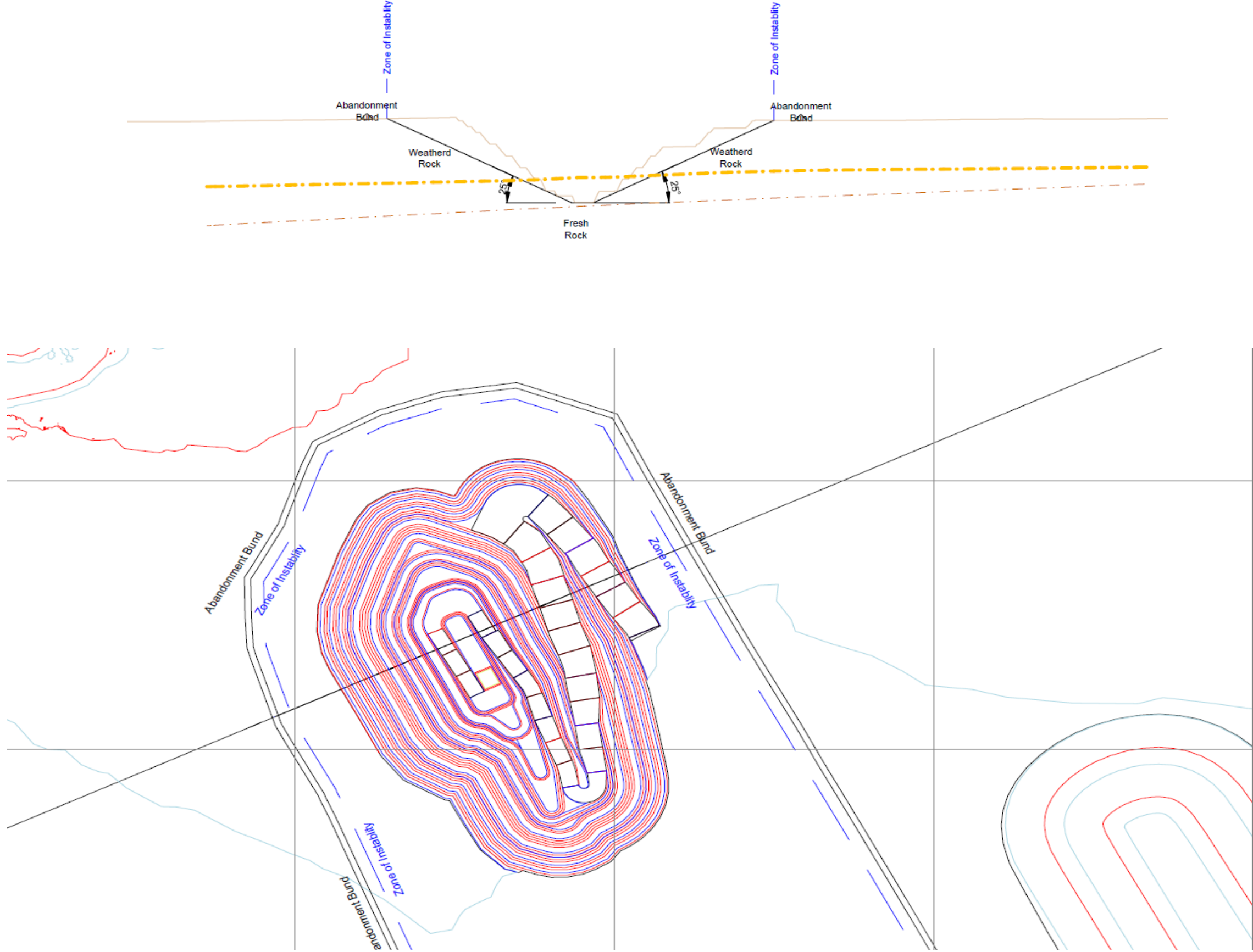
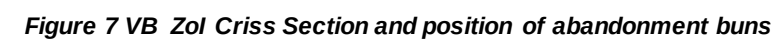


Figure 6 VB North Zol Criss Section and position of abandonment buns



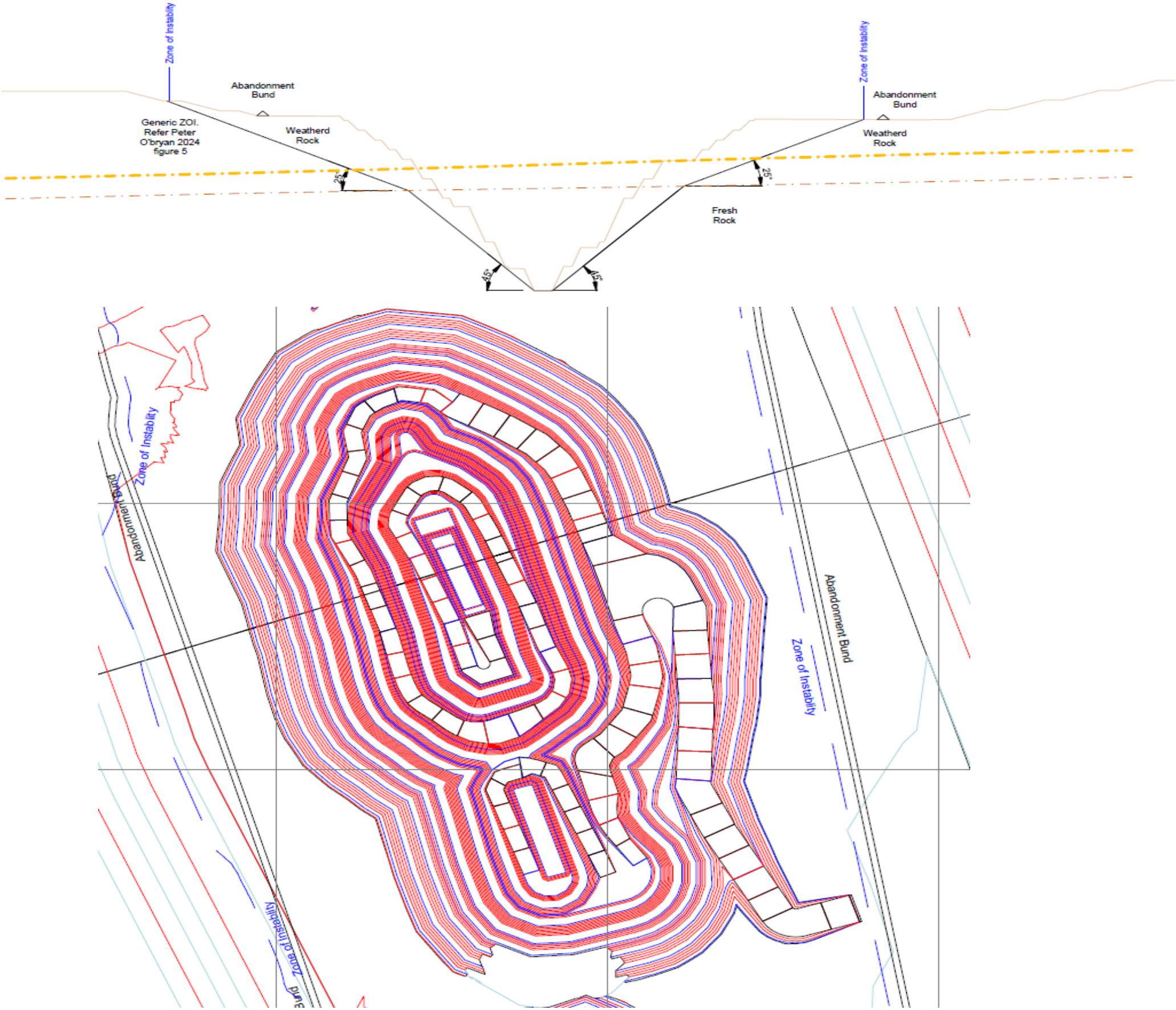


Figure 8 Boags ZOI Criss Section and position of abandonment buns

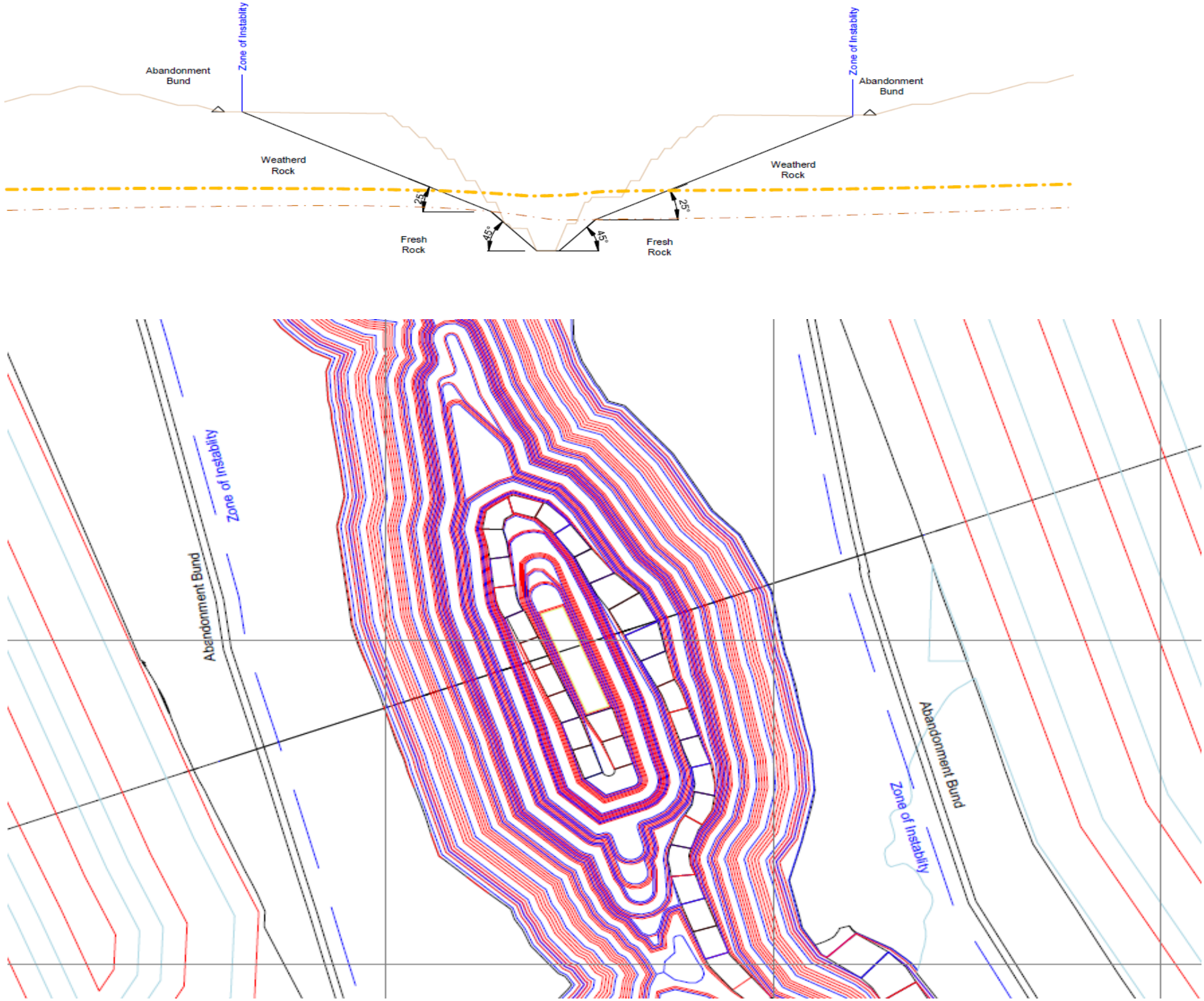


Figure 9 Single Fin Zol Criss Section and position of abandonment bund

5.2.1.2 Waste Rock Landforms

Waste rock landform (WRL) design is based on generally accepted design criteria and recent published guidelines (DMIRS 2021) to create a stable non-eroding structure.

5.2.1.2.1 Bottlecreek East Waste Rock Landform

The Bottlecreek East Waste Rock Landform (WRL) replaces and incorporates waste rock from the previously approved VB North WRL. The design for VB North WRL is described in 5.2.2.2 but will be superseded.

Table 23: Waste Dump Bottle Creek East WRL

Activity type	Waste Dump or overburden stockpile (Class 1)	
Mine activity ref	Bottlecreek East Waste Rock Landform	
Area (ha)	208 ha	
Area per tenement (ha)	• M 29/150 = 89.3017 ha • G 29/31 = 117.0880 ha • M 29/151 = 2.0986 ha • G 29/30 = 0.20 ha	
Design description	Design parameters: • Max height – 50 m • Batters – 18 degrees • Batter Height – Max 10 m • Berms – 15 m Wide • Lift height – 10 m • Berm width prior to reshaping – 31.5 m • Surface water controls – toe drains/sediment traps • Estimated volume – 41,304,258.4 BCM	
	Closure design: • Final overall slope angle – 14 degrees max • Max. reprofile lift height – 10 m • Min. back sloping berm width – 15 m • Berm windrow height – 1 m • Berm windrow base width – 7 m • Berm backslope angle – 5 degrees; berm crest to 1m to retain water & potentially dispersive materials • Capping – 1m NAF rock armor on low stability waste types on both batters and flat surfaces	
	WRL top design: Concave shape (5° backslope for 20 m from crest) with 1 m crest bund Cell bunds of 0.75m height to create 1-2 ha cells on top surface. An updated geotechnical assessment is attached (Peter O Brian 2024 Appendix B7).	
Rock Mass Rating	The average of the median RMR values for the oxide material at Mt Ida – Bottlecreek is ~ 19, indicating very poor-quality rock, excluding borehole SWKGT001, which is improved by a thicker interval of lower saprolite than the other boreholes in the deposit area.	
	Transitional material (weathered rock) ranges from 26 to 65, with an average median value of ~ 50, or fair quality rock. Fresh rock has a similar average median value of ~ 57 (fair quality rock), but with a more restricted range of values, and higher maxima. (Peter O Brian 2024).	
Material characteristics	Fibrous materials	No

	Radioactive material	No	
	Materials capable of generating acid and/or metalliferous drainage	Yes. Waste rock in the deeper ore zone is classified as Uncertain PAF and PAF. NAG pH varies between 1.7 and 10.8 averaging 6.1 with the transitional and fresh materials below 90m having pH's below the 4.5 threshold potentially classifying as PAF.	
	Dispersive and/or erosive material capable of compromising structure & stability	Yes - Sodic and potentially dispersive but unlikely. Sufficient competent material present.	
Materials Management	Ongoing assessment during grade control drilling will include the collection, characterisation, assessment, and management of actual waste rock to confirm expected geochemical properties of these materials. This may employ a sampling approach starting from set Total Sulphur and pH triggers and extending through to laboratory testing as required. Internal PAF Cells (Figure 10) will be constructed in the central core of the WRL. These cells will be sized between 600 m and 800 m long and 50 to 300 wide and up to 10 m deep and shall have a base, sides and a cover of compacted NAF materials of a nominal 2.5 m thickness for the base and cover and a nominal 4 m thickness for the sides. Their total capacity shall be a nominal 3 to 4 Mm³ and based on a conceptual design by Pendragon (2024) It is planned to have only one PAF cell open at any one time, with the area of any open cell minimised during cyclone/wet season. Sufficient volume of competent NAF material (oxide and transitional) is present to construct a stable WRL and have sufficient material for rehabilitation capping of final landforms. Due cognisance must be taken of the long-term behaviour of existing WRLs and TSF; they remain stable and there are no indications of acid and/or metalliferous drainage		
	It is planned to have only one PAF cell open at any one time, with the area of any open cell minimised during cyclone/wet season.		
	Sufficient volume of competent NAF material (oxide and transitional) is present to construct a stable WRL and have sufficient material for rehabilitation capping of final landforms.		
	Due cognisance must be taken of the long-term behaviour of existing WRLs and TSF; they remain stable and there are no indications of acid and/or metalliferous drainage		

5.2.1.2.2 Bottle Creek West Waste Rock Landform

Bottle Creek West WRL will incorporate waste from the existing historic Norgold waste dump. Up to 1.7 million BCM will be removed to maintain a final long-term position of >60m minimum separation ZOI from the pit crest to the WRL toe (**Figure 6**). The remaining waste dump will be rehabilitated to 14 degree overall slope as described in the data sheet below.

Table 24: Waste Dump Bottle Creek West WRL

Activity type	Waste Dump or overburden stockpile (Class 1)
Mine activity ref	Bottle Creek West Waste Rock Landform
Area (ha)	121.078 ha
Area per tenement (ha)	M 29/150 - 121.078 ha
Design description	• Design parameters: • Max height – 50 m • Batters – 18 degrees • Batter Height – Max 10 m • Berms – 15 m Wide • Lift height – 10 m • Berm width prior to reshaping – 31.5 m • Surface water controls – toe drains/sediment traps • Estimated volume – 11,595,870.5 BCM
	Closure design: • Final overall slope angle – 14 degrees max • Max. reprofile lift height – 10 m • Min. back sloping berm width – 15 m • Berm windrow height – 1 m • Berm windrow base width – 7 m • Berm backslope angle – 5 degrees; berm crest to 1m to retain water & potentially dispersive materials • Capping – 1m NAF rock armour on low stability waste types on both batters and flat surfaces
	WRL top design: Concave shape (5m backslope for 20 m from crest) with 1 m crest bund Cell bunds of 0.75m height to create 1-2 ha cells on top surface. An updated geotechnical assessment is attached (Peter O Brian 2024 Appendix B7). Accordingly, to avoid ZOI encroachment on the future constructed landforms, the existing historic WRL be cut back ≥ 60m (behind the proposed final western crest of the pit). For simplicity, this stand-off should be applied along the entire north – south span of the western WRL. (Peter O Brian 2024). Approximately 2.2 million BCM will be removed and incorporated into the new western WRL.
Rock Mass Rating	The average of the median RMR values for the oxide material at Mt Ida – Bottle Creek is ~ 19, indicating very poor-quality rock, excluding borehole SWKGT001, which is improved by a thicker interval of lower saprolite than the other boreholes in the deposit area. Transitional material (weathered rock) ranges from 26 to 65, with an average median value of ~ 50, or fair quality rock. Fresh rock has a similar average median value of ~ 57 (fair quality rock), but with a more restricted range of values, and higher maxima. (Peter O Brian 2024).

Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	Yes. Waste rock in the deeper ore zone is classified as Uncertain PAF and PAF. NAG pH varies between 1.7 and 10.8 averaging 6.1 with the transitional and fresh materials below 90m having pH's below the 4.5 threshold potentially classifying as PAF.
	Dispersive and/or erosive material capable of compromising structure & stability	Yes - Sodic and potentially dispersive but unlikely. Sufficient competent material present.
Materials Management	Ongoing assessment during grade control drilling will include the collection, characterisation, assessment, and management of actual waste rock to confirm expected geochemical properties of these materials. This may employ a sampling approach starting from set Total Sulphur and pH triggers and extending through to laboratory testing as required. Internal PAF Cells (Figure 10) will be constructed in the central core of the WRL. These cells will be sized between 600 m and 800 m long and 50 to 300 wide and up to 10 m deep and shall have a base, sides and a cover of compacted NAF materials of a nominal 2.5 m thickness for the base and cover and a nominal 4 m thickness for the sides. Their total capacity shall be a nominal 3 to 4 Mm³ and based on a conceptual design by Pendragon (2024) It is planned to have only one PAF cell open at any one time, with the area of any open cell minimised during cyclone/wet season. Sufficient volume of competent NAF material (oxide and transitional) is present to construct a stable WRL and have sufficient material for rehabilitation capping of final landforms. Due cognisance must be taken of the long-term behaviour of existing WRLs and TSF; they remain stable and there are no indications of acid and/or metalliferous drainage It is planned to have only one PAF cell open at any one time, with the area of any open cell minimised during cyclone/wet season. Sufficient volume of competent NAF material (oxide and transitional) is present to construct a stable WRL and have sufficient material for rehabilitation capping of final landforms. Due cognisance must be taken of the long-term behaviour of existing WRLs and TSF; they remain stable and there are no indications of acid and/or metalliferous drainage	

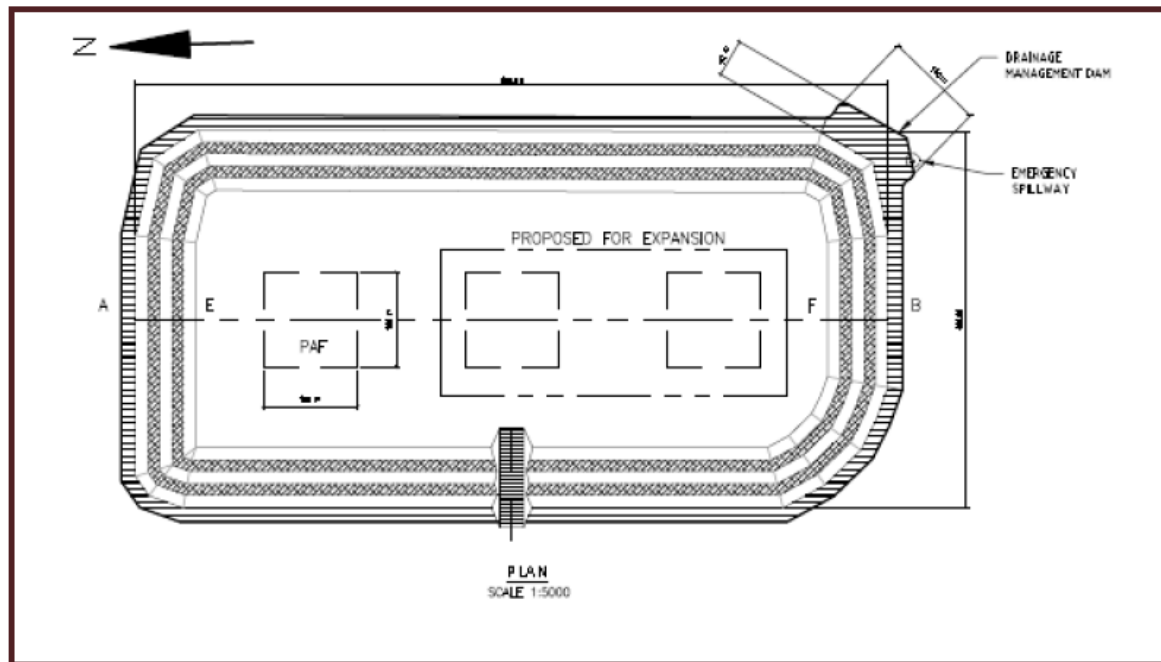


Figure 10: Conceptual design of a PAF encapsulation cel

5.2.2 Previously Approved Key Mining Activities

5.2.2.1 Mining Voids

5.2.2.1.1 Cascade Open Pit

Emu Expansion - Cascade Open Pit is a new proposed Mining Void as part of this Mining Proposal, see details in **Table 27** below. Cascade is geologically identical to the current Emu pit and can be described as an extension of the current strike. Cascade open pit will eventually intersect with Emu and become a single void with the same characteristics.

Table 25: Mining void – Cascade Expansion

Activity type	1. Mining Void (depth greater than 5m - below groundwater)	
Mine activity ref	2. Cascade Open Pit	
Area (ha)	3. 33.29 ha	
Area per tenement (ha)	4. M 29/151 – 33.29	
Design description	5. Cascade Open Pit will join to the southern end of Southwark Open Pit. 6. Design details: • Length – 550 m • Width – 270 m • Maximum depth – 123 m • Batter angles – 50° to 70° • Face height – 10 to 20 m • Berm widths – 3 to 7 m	
Zone of Instability (Zoi)	7. The Zoi (Figure 6) was established from base of pit design using guideline for pit abandonment published by the Department of Industry and Resources (DoIR) (1997). All final abandonment bunds and WRLs will be placed outside this position in accordance with guidelines. P O'Bryan & Assoc (2023; Appendix B6) updated their 2022 report and made recommendations for pit wall design parameters to be incorporated into Cascade. The WRL will remain outside the ZOI. (Figure 6) 8.	
Abandonment Bund	9. Abandonment bunds have been designed as per DoIR guidelines (1997). Placement of abandonment bund is outside Zoi. (Figure 8)	
Material characteristics	10. Fibrous materials	11. No
	12. Radioactive material	13. No
	14. Materials capable of generating acid and/or metalliferous drainage	15. No
	16. Dispersive and/or erosive material capable of compromising structure & stability	17. Yes – Sodic and potentially dispersive but unlikely.
Backfill	18. No	

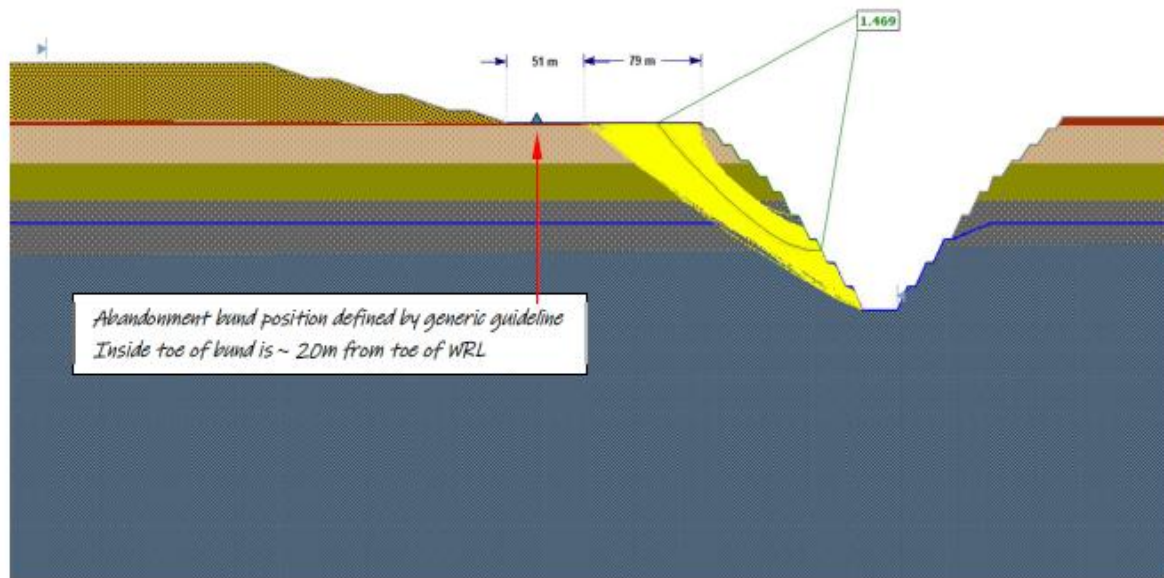


Figure 11: Cascade Extension. Position of Abandonment Bund Beyond Zone of Instability

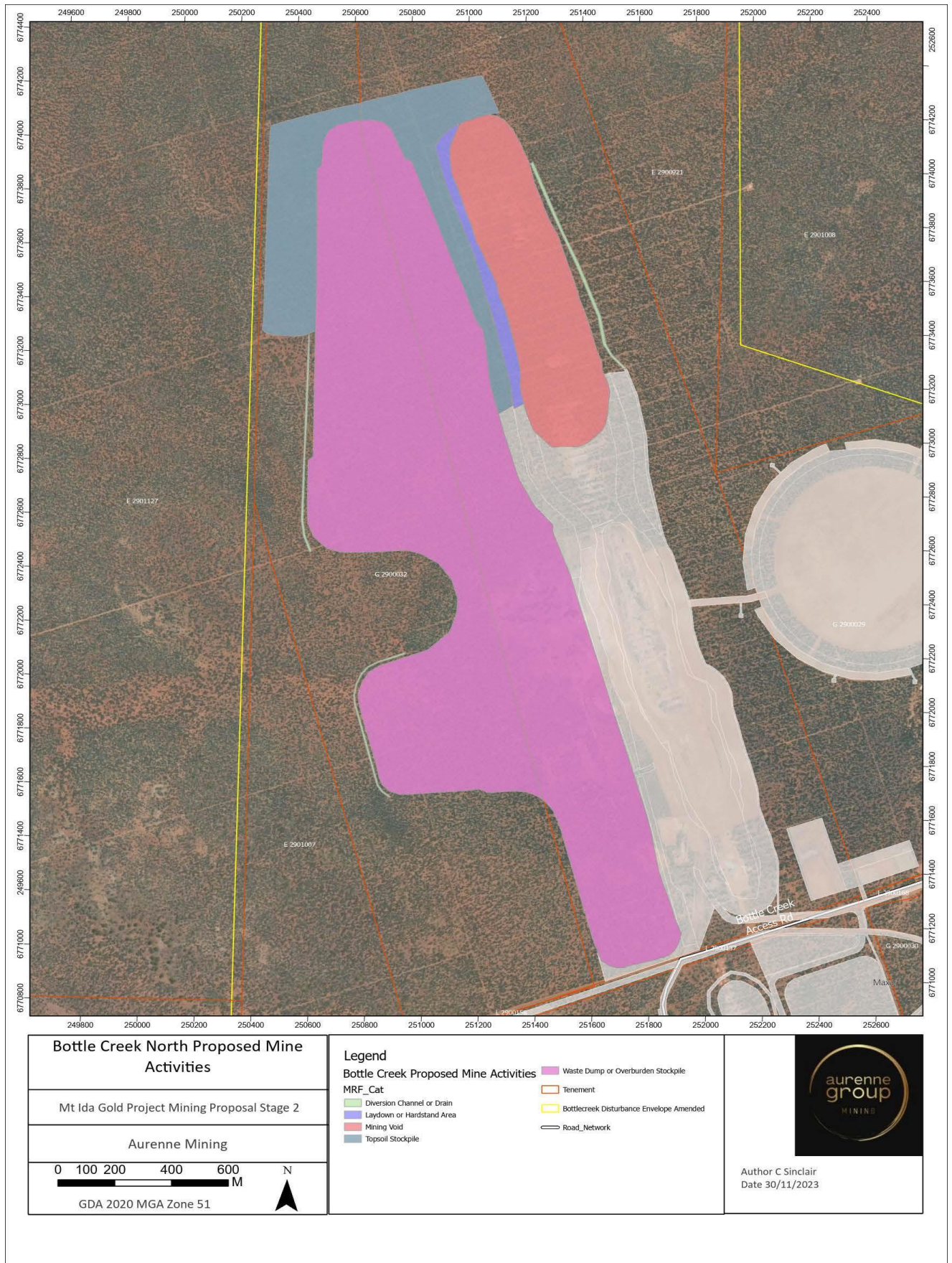


Figure 12: Cascade Pit with expanded Emu WRL footprint

5.2.2.1.2 Emu Open Pit

Emu Open Pit was approved under an existing Mining Proposal (Reg ID 101557). An expansion to the Emu open pit is proposed in this Mining Proposal, see details in **Table 26**.

Table 26: Mining Void – Emu

Activity type	Mining Void (depth greater than 5m - below groundwater)	
Mine activity ref	Emu Open Pit	
Area (ha)	30.97 ha	
Area per tenement (ha)	M 29/151 – 30.97 ha	
Design description	An expansion is proposed for the perimeter of the Emu open pit as shown in Figure 11. The updated design details are as follows: • Length – 1500 m • Width – 270 m • Maximum depth – 86 m • Batter angles – 50° to 70° • Bench height – 5 m • Berm widths – 5 to 6 m	
Zone of Instability (Zoi)	The Zoi was established from the base of the pit design using the guideline for pit abandonment published by the Department of Industry and Resources (DoIR) (1997). All final abandonment bunds and WRLs will be placed outside this position in accordance with guidelines. P O'Bryan & Assoc (2021; Appendix B1) made recommendations for pit wall design parameters that were incorporated into design. The resulting pit cross-sections are shown in Figure 12 with ZOI and abandonment bund. The expansion of Emu Open Pit is minor and will have minimal impact on the ZOI. The WRL will remain outside the ZOI.	
Abandonment Bund	Abandonment bunds have been designed as per the DoIR guidelines (1997). Placement of the abandonment bund is outside Zoi as shown in	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	No
	Dispersive and/or erosive material capable of compromising structure & stability	Yes – Sodic and potentially dispersive but unlikely.
Backfill	No	

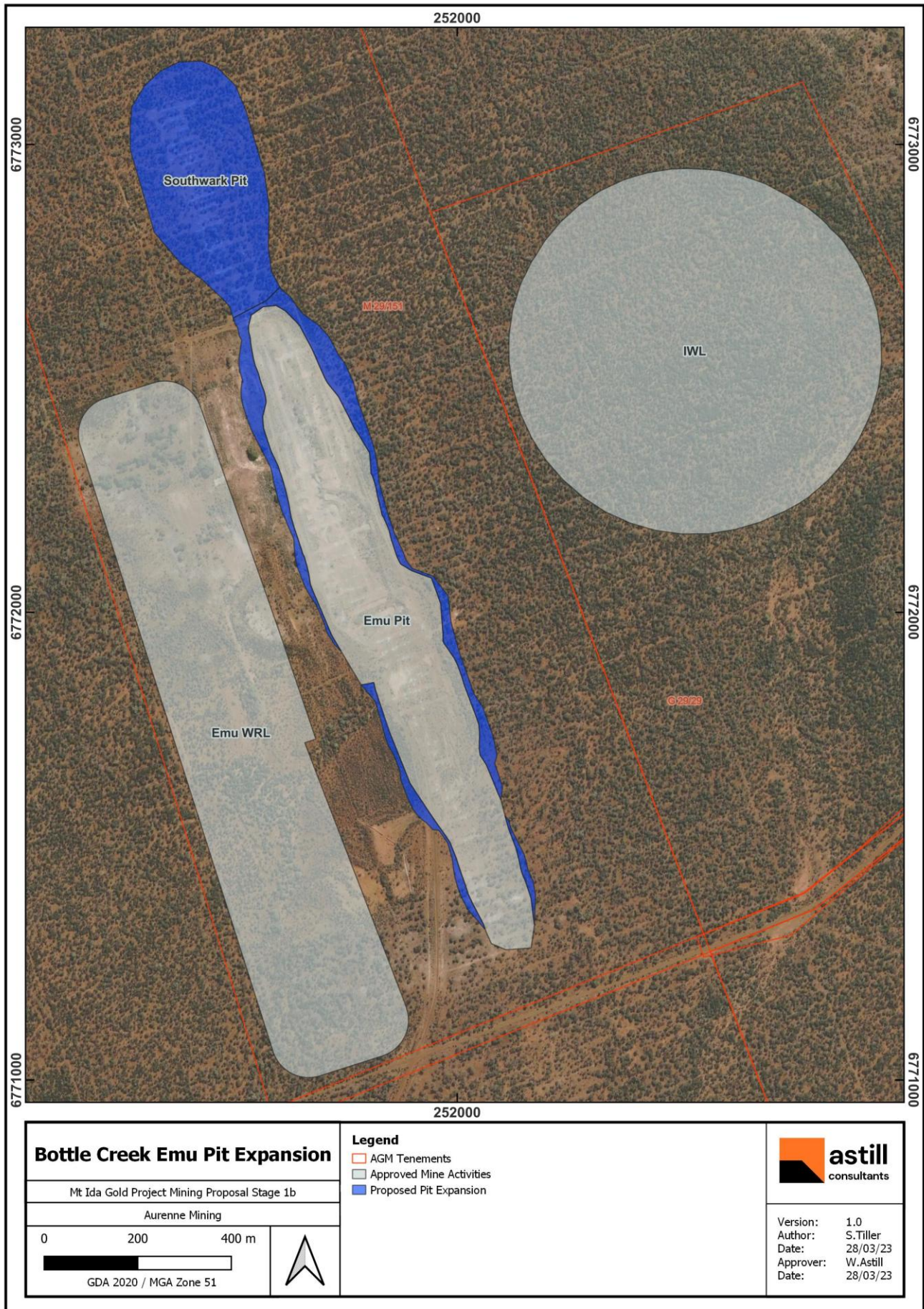


Figure 13: Emu Pit Expansion (next to old WRL footprint)

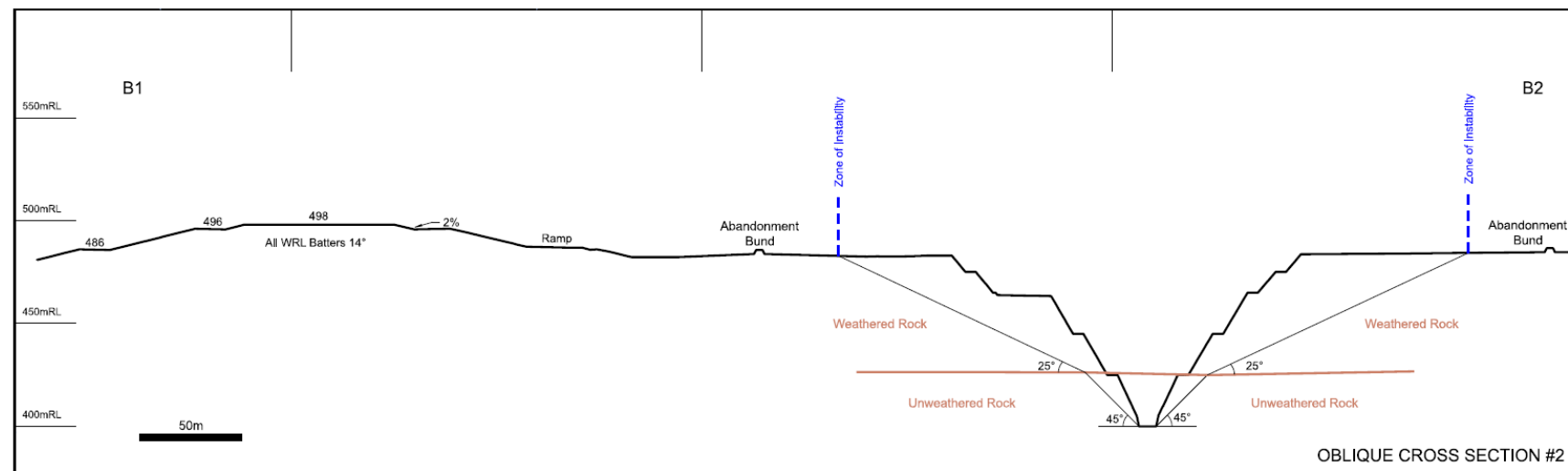
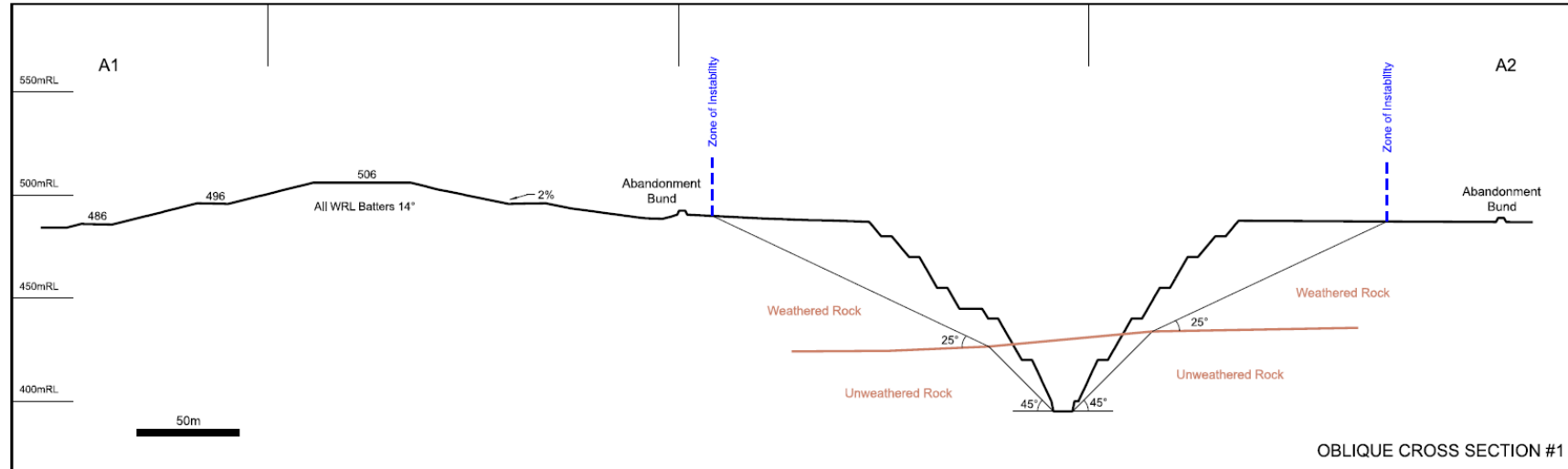


Figure 14: Cross-sections of Emu Open Pit

5.2.2.1.3 Southwark Open Pit

Southwark Open Pit is a new proposed Mining Void as part of this Mining Proposal, see details in **Table 27** below.

Table 27: Mining void – Southwark

Activity type	Mining Void (depth greater than 5m - below groundwater)	
Mine activity ref	Southwark Open Pit	
Area (ha)	11.50 ha	
Area per tenement (ha)	M 29/151 – 11.50 ha	
Design description	Southwark Open Pit will join to the northern end of Emu Open Pit. Design details: • Length – 550 m • Width – 270 m • Maximum depth – 100 m • Batter angles – 50° to 70° • Face height – 10 to 20 m • Berm widths – 3 to 7 m	
Zone of Instability (Zol)	The Zol was established from base of pit design using guideline for pit abandonment published by the Department of Industry and Resources (DoIR) (1997). All final abandonment bunds and WRLs will be placed outside this position in accordance with guidelines. P O'Bryan & Assoc (2021; Appendix B1) made recommendations for pit wall design parameters that were incorporated into design.	
Abandonment Bund	Abandonment bunds have been designed as per DoIR guidelines (1997). Placement of abandonment bund is outside Zol.	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	Yes – Fresh rock was identified as PAF and makes up ~2.5% of waste material mined from Southwark. Some materials also contain ANC values and subsequently classified NAF.
	Dispersive and/or erosive material capable of compromising structure & stability	Yes – Sodic and potentially dispersive but unlikely.
Backfill	No	

5.2.2.1.4 VB North Open Pit

VB North Open Pit was approved under an existing Mining Proposal (Reg ID 101557). Details are provided in **Table 28** below.

Table 28: Mining Void – VB North

Activity type	Mining Void (below groundwater table)	
Mine activity reference	VB North Open Pit	
Area (ha)	3.5 ha	
Area per tenement (ha)	M 29/151 – 3.5 ha	
Design description	Pit design consisting of a single access ramp to the following parameters. • Length – 270 m • Width – 170 m • Depth – 61 m • Batter angles - 50° to 70° • Bench height – 5 m • Berm widths – 5 m	
Zone of Instability (Zoi)	The Zoi was established from the base of the pit design using the guideline for pit abandonment published by the Department of Industry and Resources (DoIR) (1997). All final abandonment bunds and WRLs will be placed outside this position in accordance with guidelines. P O'Bryan & Assoc (2021; Appendix B1) made recommendations for pit wall design parameters that were incorporated into design. The resulting pit cross-sections are shown in Figure 15 with the ZOI and abandonment bund.	
Abandonment Bund	Abandonment bunds have been designed as per the DoIR guidelines (1997). The placement of the abandonment bund is outside the Zoi as shown in Figure 15	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	No
	Dispersive and/or erosive material capable of compromising structure & stability	Yes – Sodic and potentially dispersive but unlikely.
Backfill	No	

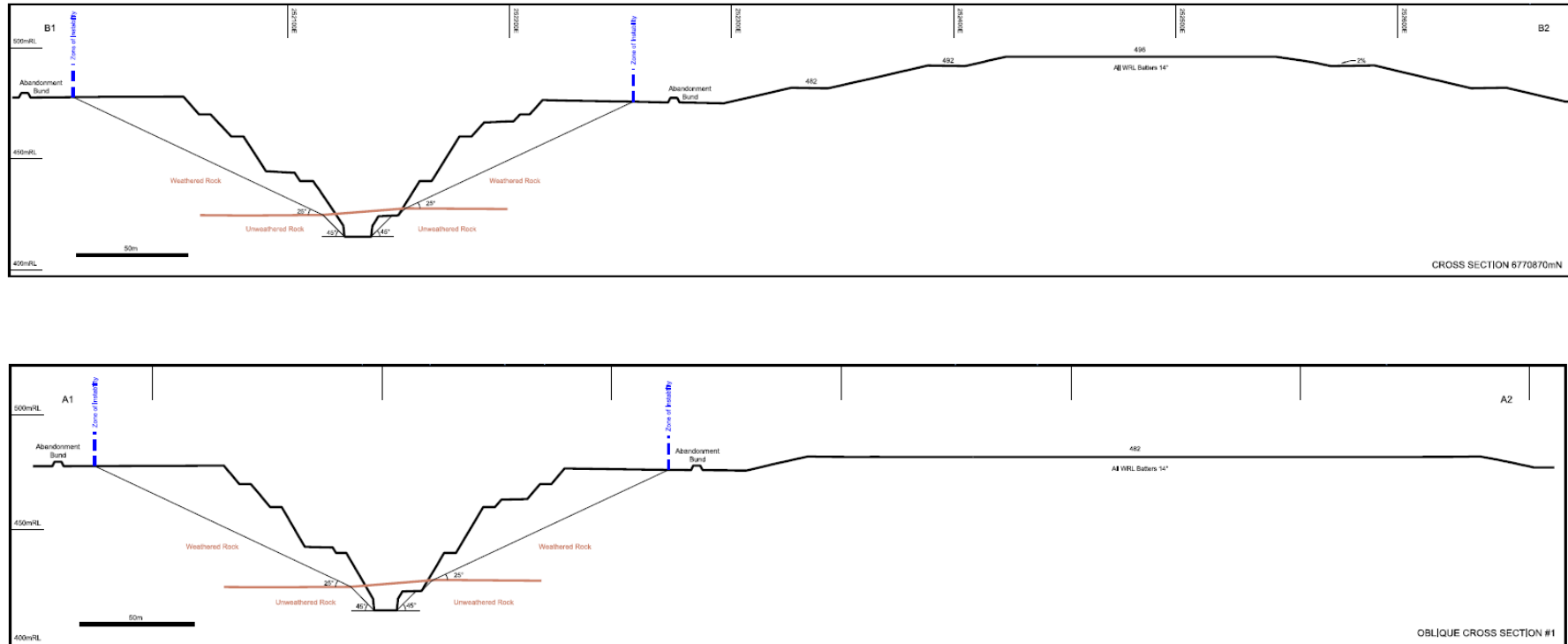


Figure 15: Cross-sections of VB North Open Pit Showing Zol and Abandonment Bund

5.2.2.2 Waste Dumps

5.2.2.2.1 Emu waste dump

Emu Waste Dump was approved under an existing Mining Proposal (Reg ID 101557). This Proposal seeks to amend the waste dump footprint to include additional waste rock from Cascade expansion and incorporating the final rehabbed slope angle of 14 degrees.

Following an assessment by Peter O'Brian and Associates (2023) the waste dump height was lifted to 40m. Safety factors remain unchanged at FOS 1.00. Details in **Table 21** below.

Table 21: Waste Dump – Emu

Activity type	Waste Dump or overburden stockpile (Class 1)
Mine activity ref	Emu Waste Dump
Area (ha)	167.85
Area per tenement (ha)	• M 29/151 - 81.86 • G29/32 – 90.07
Design description	Design parameters: • Max height – 40 m • Batters – 18 degrees • Batter Height – Max 10 m • Berms – 15 m Wide with -2% gradient • Ramp 1 in 10-25 m Wide • Lift height – 10 m • Berm width prior to reshaping – 45 m • Surface water controls – toe drains/sediment traps Estimated volume – 29,066,943 BCM Closure design: • Final overall slope angle – 14 degrees max • Max. reprofile lift height – 10 m • Min. back sloping berm width – 15 m • Berm windrow height – 1 m • Berm windrow base width – 7 m • Berm backslope angle – 5 degrees; berm crest to 1m to retain water & potentially dispersive materials • Capping – 1m NAF rock armor on low stability waste types on both batters and flat surfaces WRL top design: Concave shape (5° backslope for 20 m from crest) with 1 m crest bund Cell bunds of 0.75m height to create 1-2 ha cells on top surface. An updated waste rock landform stability assessment is attached as Appendix B6.
Rock Mass Rating	An assessment of rock mass quality of VB North and Emu proposed pits (and therefore the associated waste materials for WRL construction). Rock mass qualities were assessed from geotechnically logged boreholes and given a Rock Mass Rating (RMR) based on rock strength, quality, defect spacing, defect conditions and weathering grade. Assessed RMR values indicated that oxide material (~19) is very low-quality rock and transitional material (26-65) is of fair quality (P O'Bryan & Associates, 2022). In the

	updated report (P O'Bryan & Associates, 2023) for Cascade the geology and is identical and the RMR values remain the same.	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	Yes – Fresh rock was identified as PAF and makes up ~2.5% of waste material mined from Southwark. Some materials also contain ANC values and subsequently classify as NAF.
	Dispersive and/or erosive material capable of compromising structure & stability	Yes - Sodic and potentially dispersive but unlikely. Sufficient competent material present.
Material Management	Waste material from Emu, Southwark and Cascade Open Pits will be used to construct the Emu Waste Dump. Waste characterisation studies determined that fresh materials classify predominantly as potentially acid forming (PAF), albeit some fresh materials have large acid neutralisation capacities (ANC) classifying as non-acid forming (NAF). • Emu Open Pit – No PAF material is anticipated from the Emu Open Pit • Southwark Open Pit – An estimated 73,800 BCM of fresh waste material is anticipated from Southwark Open Pit. This makes up ~2.5% of total waste material from Southwark Open Pit. • Cascade Open Pit – No PAF material is anticipated from the Cascade Open Pit. Ongoing assessment during grade control drilling will include the collection, characterisation, assessment, and management of actual waste rock to confirm expected geochemical properties of these materials. This may employ a sampling approach starting from set Total Sulphur and pH triggers and extending through to laboratory testing as required. Internal PAF Cells will be constructed in the central core of the WRL. These cells will be sized between 50 m and 100 m long and wide and up to 10 m thick and shall have a base, sides and a cover of compacted NAF materials of a nominal 2.5 m thickness for the base and cover and a nominal 4 m thickness for the sides. Their total capacity shall be a nominal 4 Mm³ (Pendragon, 2021). It is planned to have only one PAF cell open at any one time, with the area of any open cell minimised during cyclone/wet season. Sufficient volume of competent NAF material (oxide and transitional) is present to construct a stable WRL and have sufficient material for rehabilitation capping of final landforms. Due cognisance must be taken of the long-term behavior of existing WRLs and TSF; they remain stable and there are no indications of acid and/or metalliferous drainage.	

Stability	A waste rock landform stability assessment was carried out by P O'Bryan & Associates (2022), attached as Appendix B2. The technical advice states that WRL slope stability analyses confirm stability of slopes formed in weathered Bottle Creek materials at the final profile proposed with appropriate FOS and a rating as highly stable. A waste rock landform stability assessment was carried out by P O'Bryan and Associates (2023) on the expanded Emu waste landform (B6), At a height of 40m the FOS was rated as 1.00 and stable.
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5.2.2.2.2 VB North Waste Dump

Table 29: Waste Dump – VB North

Activity type	Waste Dump or overburden stockpile (Class 1)
Mine activity reference	VB North Waste Dump
Area (ha)	16.43 ha
Area per tenement (ha)	M 29/150 – 4.43 ha M 29/151 – 12.00 ha
Design description	Design parameters: • Max height – 33 m • Batters – 14 degrees • Batter Height – Max 10 m • Berms – 15 m Wide with -2% gradient • Ramp 1 in 10-25 m Wide • Lift height – 10 m • Berm width prior to reshaping – 45 m • Surface water controls – toe drains/sediment traps Estimated volume – 1,800,000 m³ Closure design: • Final overall slope angle – 14 degrees max • Max. reprofile lift height – 10 m • Min. back sloping berm width – 15 m • Berm windrow height – 1 m • Berm windrow base width – 7 m • Berm backslope angle – 5 degrees; berm crest to 1m to retain water & potentially dispersive materials • Capping – 1m NAF rock armor on low stability waste types on both batters and flat surfaces WRL top design: Concave shape (5° backslope for 20 m from crest) with 1 m crest bund Cell bunds of 0.75m height to create 1-2 ha cells on top surface. A waste rock landform stability assessment is attached as Appendix B2.
Rock Mass Rating	An assessment of rock mass quality of VB North and Emu proposed pits (and therefore the associated waste materials for WRL construction). Rock mass qualities were assessed from geotechnically logged boreholes and given a Rock Mass Rating (RMR) based on rock strength, quality, defect spacing, defect conditions and weathering grade. Assessed RMR values indicated that the oxide material (~19) is very low-quality rock and the transitional material (26-65) is of fair quality (P O'Bryan & Associates, 2022; Appendix R).

Stability	Further independent technical review of the proposed WRLs was provided by P O'Bryan & Associated (2022) The technical advice states that WRL slope stability analyses confirm the stability of slopes formed in weathered Bottle Creek materials at the final profile proposed with appropriate FOS and a rating as highly stable. Erosion protection will be provided by a diversion channel (Hydrologia 2021). Diversion surface water management structures have been placed and designed to minimise erosion around structures and the WRLs will be capped with competent materials available as the open pits deepen.	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	No
	Dispersive and/or erosive material capable of compromising structure & stability	Yes – Sodic and potentially dispersive but unlikely. Sufficient competent material present.

5.2.2.3 Integrated Waste Landform & Tailings Storage Facility

Minor changes were approved to the tailings storage facility (TSF) under MP Red ID **117952** as detailed below:

- Changed Stage 1 embankment (and subsequent) design from RL506 to RL498 due to a survey error.
- Rock ring decant structure replaced with a segmented concrete decant tower with rock and geotextile filter.
- Decant causeway now from the east, not the west.

The following information is previously approved under an existing Mining Proposal (Reg ID 101557). An addendum to the geotechnical design report is attached as **Appendix B4**.

The Project will construct and develop an integrated waste landform (IWL) that will encompass the tailings storage facility (TSF) with waste rock as summarised in **Table 30** and shown in **Figure 16**.

Table 30: Tailings Storage Facility – IWL

Activity type	Tailings or residue storage facility (class 1)
Mine activity reference	Integrated Waste Landform (IWL); Encompassing TSF & waste rock
Area (ha)	48.9113
Area per tenement (ha)	G 29/29 - 48.9113 ha
Design description	A single cell, circular facility, constructed within a waste dump being designed to store tailings. Designed storage volume 4 Mm ³ . Storage capacity 6 Mt of tailings over a 6-year life assuming an ore processing rate of 1.2 Mtpa, minimum tailings in-situ density of 1.5 t/m ³ (dry) and a beach slope of 1% Maximum embankment height will be 22 m; typical cross-section
Type of TSF	Paddock; (ring-dyke), cross-valley, side-hill, in-pit, depression, waste fill, central thickened discharge, stacked tailings
No. of Cells	1 (operated using the same decant arrangement)
Hazard Rating	High (=1; Hazard rating system in the Code of practice)

TSF Category	1 (Matrix of hazard ratings in the Code of practice)
Catchment Area	48.9113 (Internal for paddock (ring-dyke) type, internal plus external catchment for other facilities)
Tailings Discharge Method	Multi-point spigot (End of pipe, (fixed), end of pipe (movable), single spigot, multi-spigots, cyclone, central thickened discharge (CTD))

Water Recovery Method	Segmented concrete decant tower
Lined	Yes Type of seal or liner: 8 Compacted low permeable materials; clay
Freeboard	Minimum required total freeboard of 700 mm Allowance for the temporary storage of 1% average exceedance probability (1% AEP; previously the 1 in 100 year average recurrence interval) 72 hour duration storm event
Design Capacity	Factors considered in IWL design: Annual tailings production of 1.0-1.2 Mtpa Tailings deposited at 42% solids Total tailings production of approximately 6 Mt for a minimum storage life of 6 years Total tailings capacity of 1.68 Mt in the starter embankment for a minimum life of storage of 1 year and 5 months
Material characteristics	Fibrous materials – No Radioactive materials – No Materials capable of generating acid and/or metalliferous drainage, including neutral drainage and saline drainage – No Dispersive and/or erosive material that is capable of compromising the structure and stability of the activity – No

The CMW design report is provided as **Appendix B3** and includes an Operations Manual to ensure appropriate competency, inspections and monitoring is undertaken of the IWL. An addendum to the geotechnical design report is attached as **Appendix B4**.

The IWL design is based on the Australian National Committee on Large Dams Incorporated (ANCOLD) Guidelines (2019) *Guidelines on Tailings Dams –Planning, Design, Construction, Operation and Closure* and consistent with TSF Code of Practice Department of Mines and Petroleum (DMP) (2013) and is based on 6-year life based on an ore processing rate of 1.2 Mtpa.

The proposed IWL will require a Works Approval and licensing as a prescribed activity under Part V of the EP Act; Schedule 1, Category 5, viz:

Processing or beneficiation of metallic or non-metallic ore: premises on which:

- metallic or non-metallic ore is crushed, ground, milled or otherwise processed.
- tailings from metallic or non-metallic ore are reprocessed; or
- tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam.

DWER will regulate the construction, time limited operation (for commissioning) and ultimately the operating of the IWL. This will include staged and operating conditions to ensure no negative impact to the environment.

The embankment of the IWL will be a zoned embankment and raised in stages. The facility will be constructed in multiple stages, with Stage 1 being constructed before Plant commissioning. Construction of embankment to the design RL will involve:

- Waste dump construction to the design RL by the mining operation.
- Raising construction of the upstream embankment zone to the design RL, likely by a civil contractor.
- Raising of the decant accessway and segmented concrete decant tower to the design RL either by the mining operation or a civil contractor.

As part of preparation works, the footprint of the facility will be cleared of vegetation. The topsoil from the footprint will be stripped and stockpiled for use in rehabilitation. The vegetation and topsoil will be stockpiled separately. In order to reduce seepage particularly at start-up, the subgrade of the IWL basin will be tyned, moisture conditioned, and roller compacted to provide a 'low' permeability layer at the base of the IWL.

The IWL will capture rainfall which will contribute to the water being recycled back to the processing circuit. Rainfall on the IWL perimeter will be collected in the base toe-drain and eventually recharge to ground. Perimeter surface water will be diverted around the IWL to minimise potential erosion to the structure. The embankments have been designed with a downstream slope of approximately 18° or 1:3 (v:h). The downstream slopes constructed at this angle with such material should be resistant to erosion (CMW 2021).

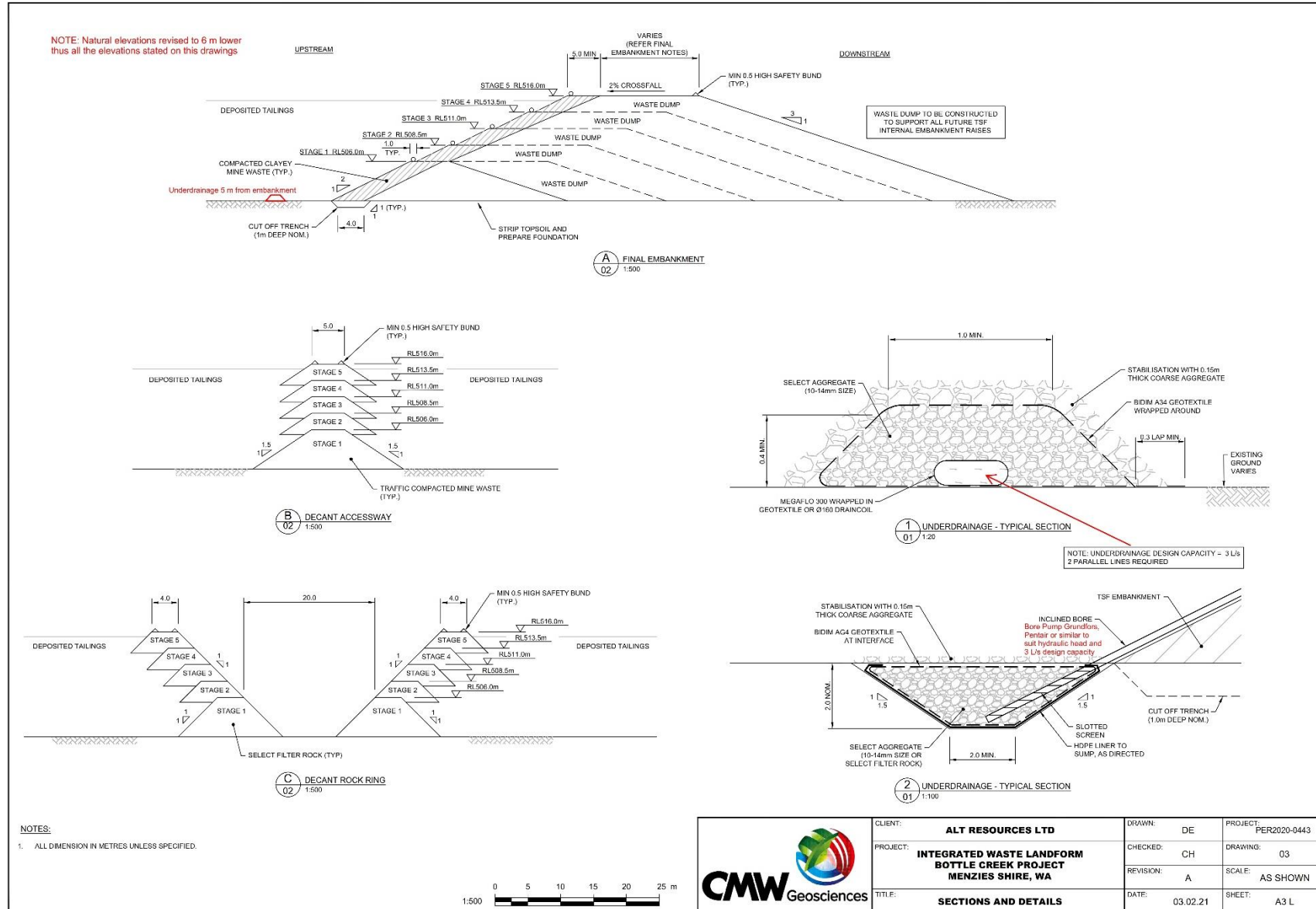


Figure 16: IWL Design Cross-Section

IWL Water Recovery System

Surface water will be removed from the IWL by a segmented concrete decant tower with rock and geotextile filter. Return water will be pumped directly to the process plant for re-use. In terms of TSF-decant-water quality, CN_{Wad} concentrations should be below the accepted industry guideline value of 50 mg/L for protection of fauna (e.g. birds) (Graeme Campbell & Associates 2021) and the hyper-salinity of the IWL decant water should also reduce attraction to wildlife. Daily inspections of the IWL will include recording any fauna entrapment, injuries or death and reported to environment Department that will retain data and review for adaptive management purposes should bird attraction and deaths be at an elevated level (compared to other IWL/TSFs in the region).

Return water pH will be 8.7-9.2 with cyanide and copper noted as potential contaminants (CMW GeoSciences 2021). The decant water is a closed system and will be returned to the Processing Plant only and not be released elsewhere into the environment.

Drainage Diversion

A surface water assessment was carried out by Hydrologia in 2024, attached as **Appendix H**. The IWL has been located such that no major diversion is required, based on the site hydrological assessment. The IWL is located to the northwest of a creek line that flows from the north/northeast, bypassing the IWL to the west of the plant site.

A small catchment extends to the northeast of the IWL, and most flow from the catchment is concentrated in a flow path that passes to the south of the IWL. Hydrologia (2024) indicates that for a 1% AEP rainfall event, the maximum flow depth will be 0.35 m with a velocity of 0.75 m/s. There should be no requirement for erosion protection at the toe of the IWL during operations, as the flow path is outside of the IWL footprint.

For the 1% event, predicted flows at the IWL embankment near the diversion drain reach about 0.2 m deep and 0.5 m/s velocity. Shallow overland flow also intercepts the remainder of the IWL perimeter and the adjacent topsoil stockpiles. These flows are shallow (< 0.1 m) and low velocity (<0.3 m/s), but deeper ponding and areas with localised high velocity may be possible.

Predicted flood modelling depth around the IWL is shown in **Figure 17** with the velocity shown in **Figure 18**. The IWL design report noted that There should be no requirement for erosion protection at the toe of the IWL during operations, as the flow path is outside of the IWL footprint.

Stability

The IWL is a robust structure and the factors of safety indicate adequate factors of safety for the drained, undrained and pseudo-static conditions when compared with the recommended minimum factors of safety in ANCOLD (2019) are above the required minimum for this structure type (CMW 2021). Stability is significantly influenced by the position of the phreatic surface within the deposited tailings and confining embankment.

The IWL has been designed to provide temporary water storage following extreme storm events. If water does extend to the embankment, which is considered very unlikely, it is anticipated this will be a temporary occurrence given continuous water removal from the IWL. The tailings storage will be operated in such a manner as to ensure that the 'normal' supernatant pond is kept well away from the embankment at all times.

A preliminary assessment of embankment deformation due to earthquake was estimated using the Swaisgood (2003) method (CMW 2021). From the analysis, it is concluded that for the highest embankment section, the deformation due to an MDE event is likely to be in the order of 10 mm. Such deformation is insignificant when compared with the minimum required total freeboard of 700 mm (1% AEP, 72 hr event), which must not come closer than 250 m to the embankment, and the proposed 1% beach slope.

Design Acceptance Criteria

Classification of the IWL, at its ultimate height, in accordance with Tables 1 and 2 of DMP (2013) code results in a hazard rating of Medium Category 1 (Section 3.1). The ANCOLD (2019) consequence rating is High C (refer Tables 1 and 2 of ANCOLD (2019)).

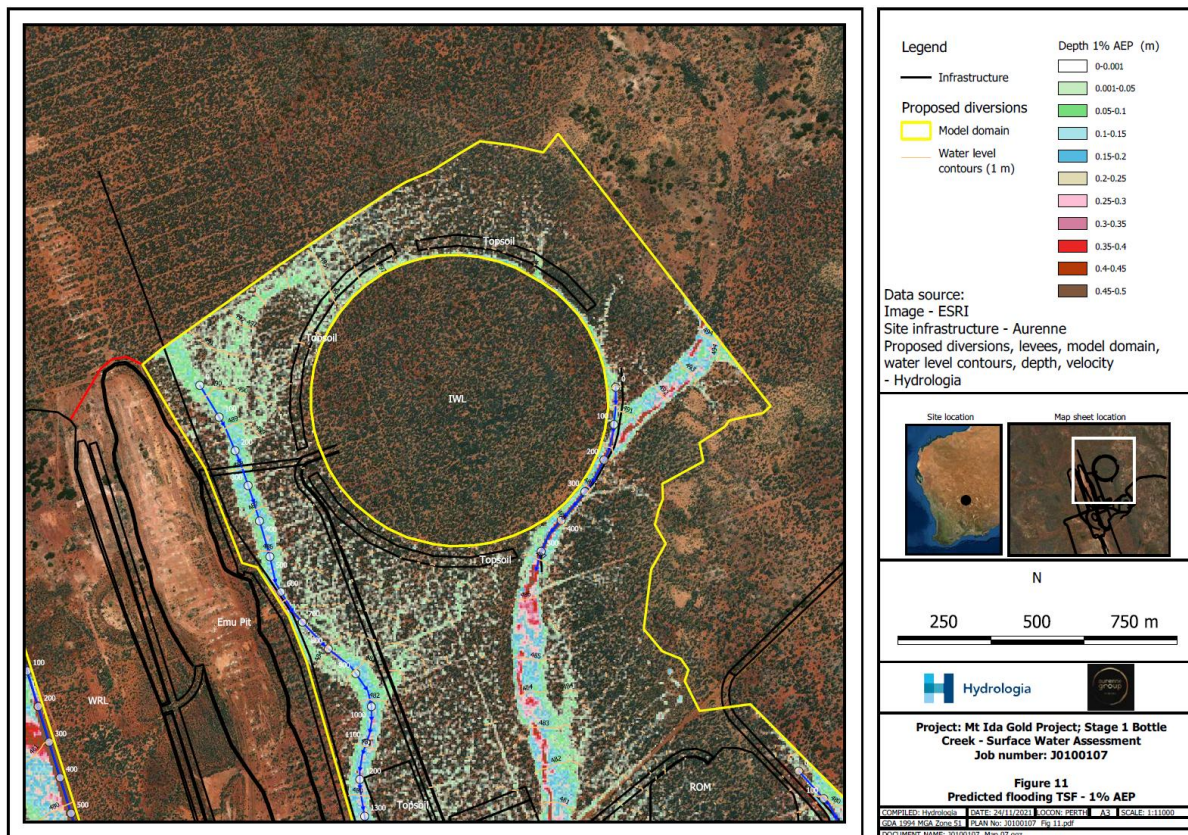


Figure 17: Predicted flood modelling depth at 1% AEP around the IWL (Hydrologia 2022)

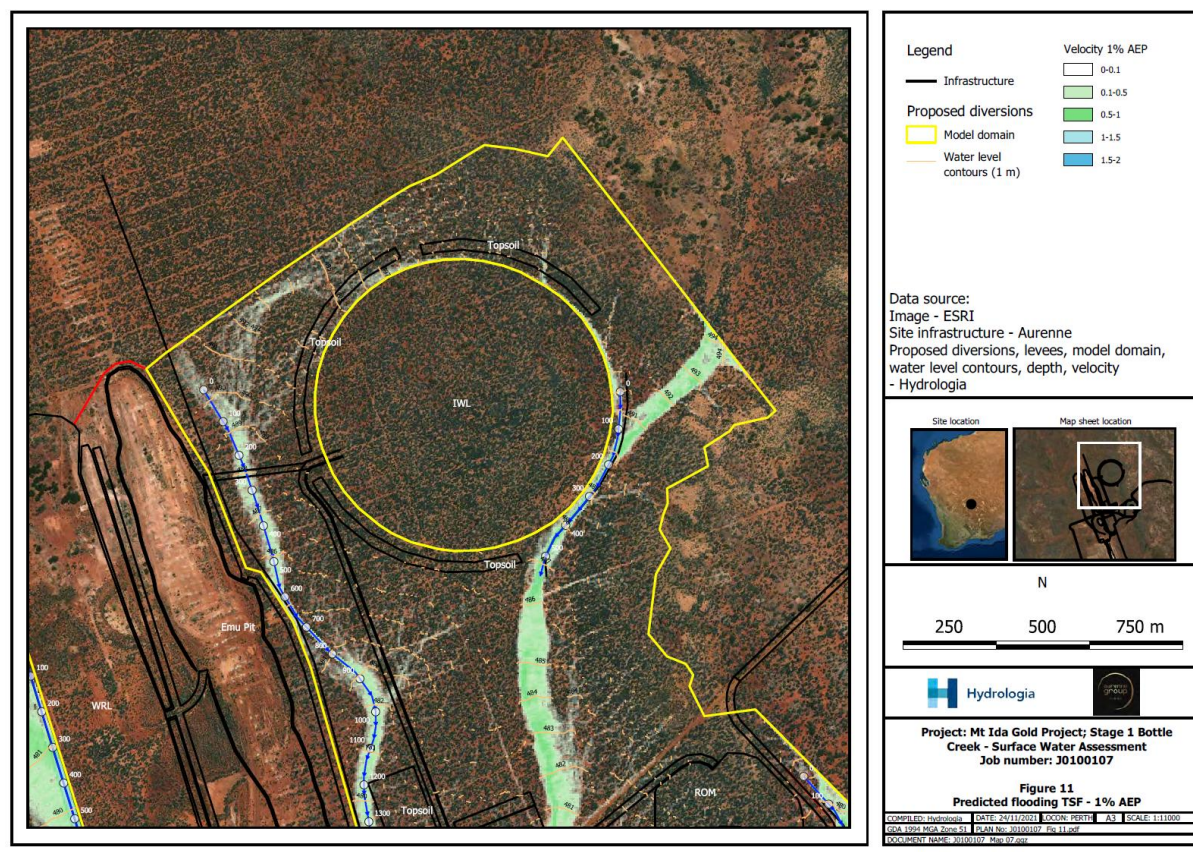


Figure 18: Predicted flood modelling velocity at 1% AEP around the IWL (Hydrologia 2022)

Tailings Characteristics

Tailings characteristics were tested on slurried samples and geochemical assay by Graeme Campbell & Associates Pty Ltd (2021; **Appendix E**), with implications for tailings management provided and incorporated into IWL design and management; the resultant analyses show the material to be non-acid forming (NAF) with a pH range of 7.9-8.2 (G Campbell & Assoc, 2021). In addition, the cyanide Carbon-In-Leach (CIL) circuit will involve addition of liming agent to keep the pH high to prevent production of HS gas, which will buffer the tailings material to maintain relatively low acid producing potential during operations.

The tailings streams to be discharged to the IWL should be NAF and saline with enriched-elements (e.g. As, Sb, etc.) in geochemically-stable forms reflective of ores containing 'negligible-sulphides'. Further, the 'tailings-types' were found to pose no environmental demands for TSF design, operation, and decommissioning / rehabilitation. The resulting 'filled-TSF' will comprise saline-NAF-tailings as commonly produced at gold mines throughout the WA Goldfields (G Campbell & Assoc, 2021).

Dam Break Assessment

CMW included a Dam Break Assessment as part of the study and design brief for the IWL (**Appendix B3**). From the report; the breach characteristics include the loss of containment of slurry and therefore not free-flowing as water. Under worst case probable maximum precipitation (PMP) rainy day failure conditions:

- the storage capacity of IWL is estimated at 3,600,000 m³

- PMP storm volume is estimated at nominal 169,000 m³. This was based on a 4.5 hr probable maximum precipitation event (PMP) rainfall depth of 640 mm over the IWL catchment of 26.3 ha
- The tailings failure volume likely to be released from the IWL at the final height of nominally 28 m, in the event of an embankment failure under PMP rainy day conditions, would be of the order 1.5 Mm³ i.e. approximately 40% of the impounded storage capacity plus the PMP storm volume
- Based on T MacDonald and J Langridge-Monopolis (1984), embankment breaches typically occur relatively quickly (typically 0.5 an hour to 4 hours). Based on this methodology, it is estimated that the breach will occur over approximately 4 hours.

In addition, The Rourke and Luppnow Method (ref: H Rourke, D Luppnow, 2015) for estimating volume released from the IWL was also utilised to assess potential stored volume release. This method is based on a relation between the potential volume released from an IWL and the size of the decant pond. The greater the ratio of the pond area to the total area, the greater the ratio of release volume to stored volume. It was noted from Rourke and Luppnow analysis of past tailings storage facility (TSF) failures, that the release volume varies between 9% and 67% of stored volume. The 40% of IWL volume plus a PMP event, or approximately 1.5 Mm³ scenario represents a likely maximum release from a relatively low embankment height, IWL in a semi-arid region such as the Goldfields region of WA (i.e. the water pond should not be this large as the water balance is negative and water should not accumulate on the facility). The Rourke and Luppnow Method demonstrates that in order to mitigate the consequence of a dam-break, the pond volume and area should be minimised by the adoption of good operating practices (CMW 2021).

The sunny day case was examined by assessing a dam break using energy methods as referenced in K D Sneddon (2010) and estimate tailings run-out distance. The method presented in the paper assumes the tailings and the embankment are assumed to liquefy and move as a block downstream (CMW 2021).

The height of the block was assumed to be 28 m and the run-out distance a function of the residual shear strength and material density. For residual shear strengths of 4 kPa and 7 kPa the run-out distances were estimated to be 1,273 m and 932 m, respectively (CMW 2021).

Based on the analyses performed, the tailings from a sunny day dam break are expected to go to the south of the IWL and towards the mill area as shown in **Figure 19**. **Figure 20** provides cross section of the IWL, pits, PZOI and bunds (CMW 2021).

Hydraulic modelling indicates that the maximum (peak) run-out flow from a 'dam break' under 'worst case' (PMP) rainy day conditions will be approximately 400 to 1,900 m³/s over 4 hours. The flow will generally be along the drainage lines to the east-southeast of the project area. The waste dumps to the east of the VB and Boags pits should divert a dam break flood further south. The flow is estimated to be between 100 to 160 m wide, with a flow depth of up to 3.0 m. In a worst-case scenario, tailings and water run-out could inundate a large part of the Process Plant area (CMW 2021).

The following consequences of a dam break are considered most likely:

- Loss of human life; personnel at the mill should be able to be evacuated as soon as any breach from the IWL will occur over time and should be discovered by IWL operations personnel, during daily monitoring. There is also a potential for loss of life

of mining personnel visiting the IWL. The PAR has been conservatively estimated to be between ≥ 10 to < 100 (noting the PAR are mine personnel).

- Economic loss; due to mill shutdown and production loss, repairs of damaged sections of IWL and local access roads.
- Environmental impact; there will be potential for contamination of soils and surface water requiring environmental 'clean-up'.

The conditions for IWL embankment failure to occur would be driven largely by the significant embankment mass and crest width adopted, the size and extent of the decant pond on the facility, and the magnitude of a trigger seismic event, embankment deformation, the grading of the tailings and saturation of the tailings adjacent to the embankment. Effective management of the decant pond to ensure excess water is continually removed and that the location of the pond is maintained within the segmented concrete decant tower will minimise the risk of a perimeter embankment breach and release of saturated tailings (CMW 2021).

IWL embankment failure is not expected provided the facility is operated in accordance with the requirements set out in the IWL Operations Manual. The water recovery system, pumps and piping will be designed for a minimum recovery of not less than 185 t/hour (CMW 2021).

In the event that the IWL is in imminent danger of failure and breach, an Emergency Action Plan would need to be enacted.

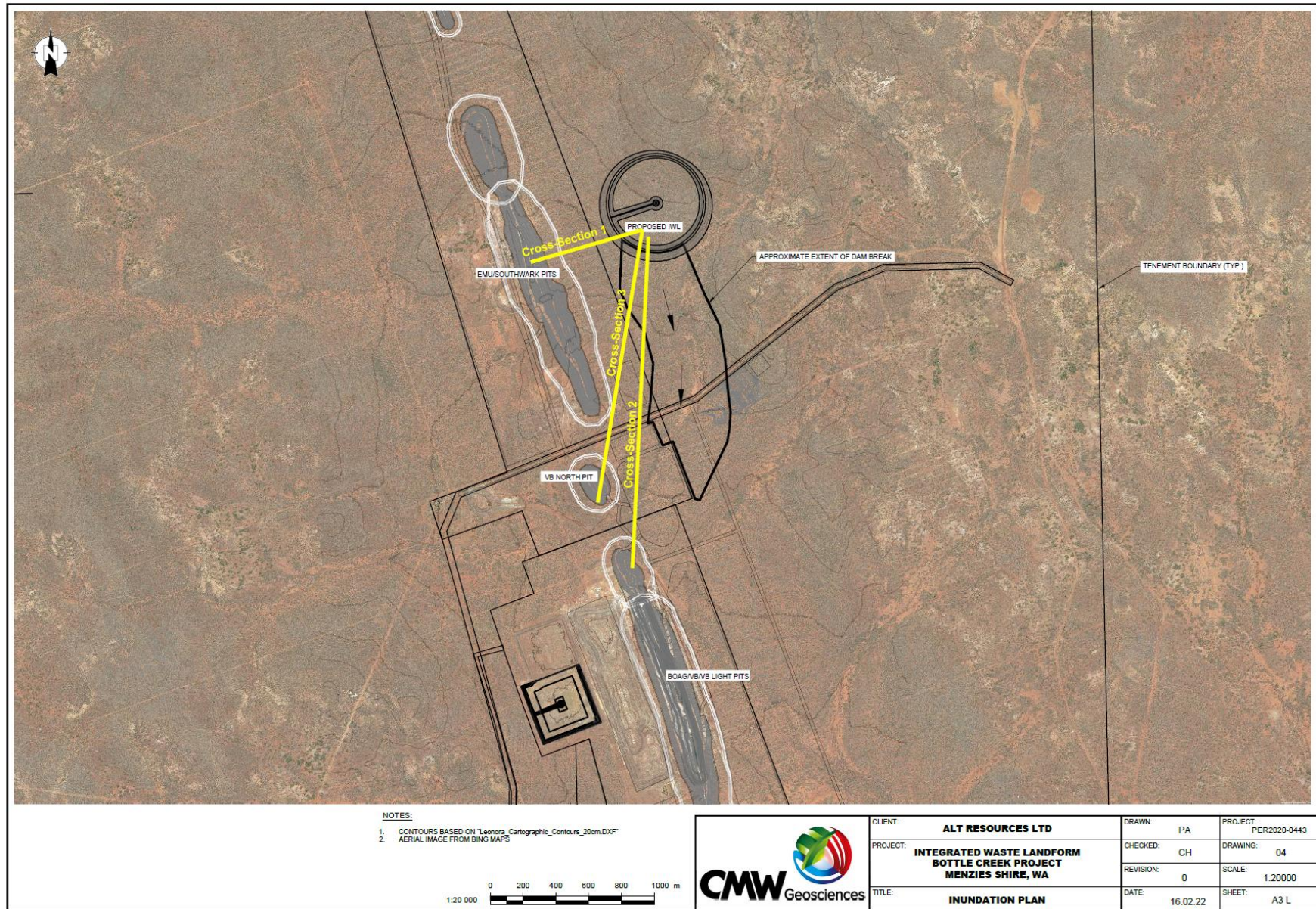


Figure 19: IWL Cross-Section Plan to Mining Voids

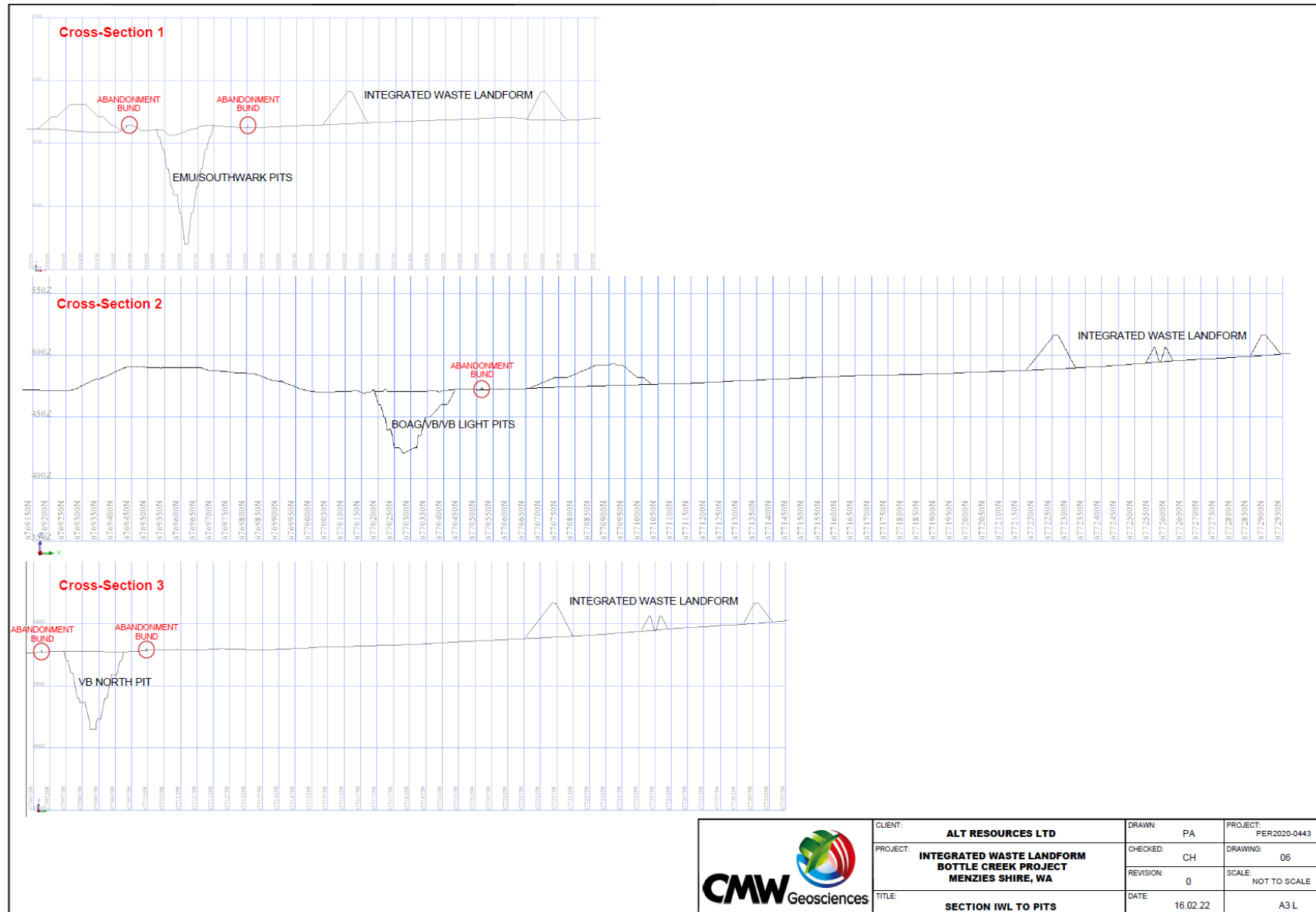


Figure 20: Cross-Sections to Mining Voids

Erosion Control

The embankments have been designed with a downstream slope of approximately 18° or 1:3 (v:h). The downstream slopes constructed at this angle with such material should be resistant to erosion. Further assessments will be required during mining on the erodibility of the materials to be included in the outer mine waste dump and downstream batters of the IWL.

Dust Control

Provision for the IWL construction works will include a water cart on location to provide dust suppression as required. This control measure will prevent dust from becoming airborne and subsequently being mobilised into the surrounding environment, from becoming a visibility issue, or from becoming a respiratory hazard for construction personnel. Dust generation from the tailings beaches is not expected as the tailings are saline and a crust is likely to form on the beaches, binding the tailings surface and reducing the potential for dusting. If dust generation becomes an issue (i.e. in periods the IWL may be inactive), the tailings beaches could be irrigated (i.e. with sprinklers or similar) or tailings deposition managed such that beach areas do not dry back to such that dust generation occurs. The IWL Operations Manual is included as part of the TSF Design Report provided as **Appendix B3**.

Tailings beaches will be irrigated (i.e. with sprinklers or similar) or tailings deposition managed such that beach areas do not dry back to such that dust generation occurs.

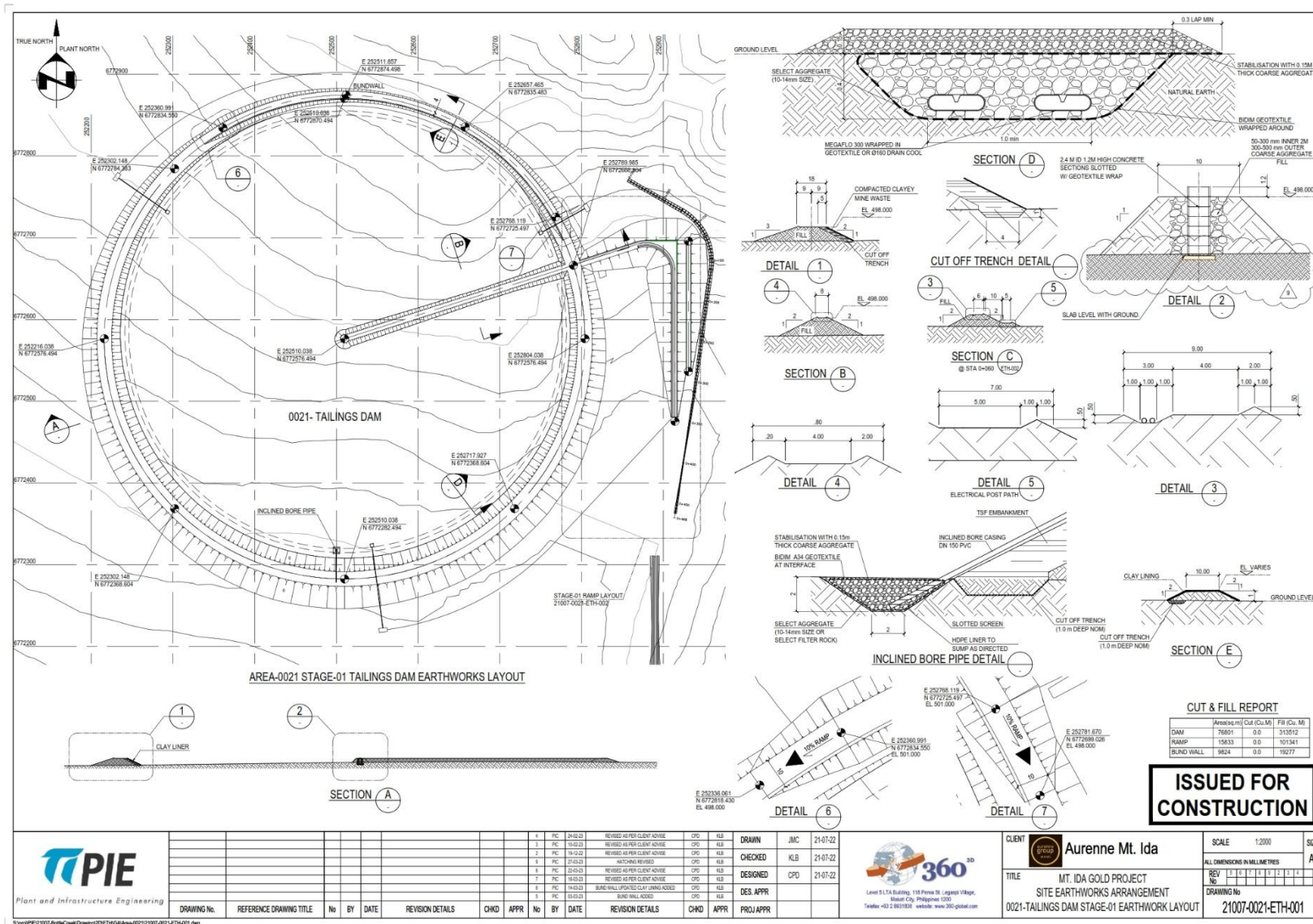
IWL Monitoring

The IWL embankments have relatively high factors of safety; are of limited height; and upstream raising is not contemplated (CMW 2021; **Appendix B3**). Monitoring of the IWL will be undertaken through the installation of three sets of pairs of heavy-duty vibrating wire piezometers (VWP) to 3.5 BAR (50 PSI) in the foundation of the IWL. This will:

- give an early warning of seepage
- provide for assessment of stability if extension and raising of the facility is contemplated in the future
- allow thorough assessment of embankment stability for auditing purposes.

The planned VWP monitoring locations (CMW 2022) are shown in **Figure 21**.

Aurenne will develop an IWL Monitoring Procedure as part of its EMS. CMW 2021 (**Appendix B3**) contains an Operations Manual that will be utilised until **E-PRO-017 is developed**.



IWL Groundwater Monitoring

A suite of groundwater monitoring bores will be installed to capture baseline and comparative operational groundwater levels and quality data. Deep aquifer down gradient bores (2); two upgradient; and one bore adjacent to decant pipelines will be developed according to the Groundwater Monitoring Plan (Pendragon 2022; **Appendix G2**). This will be a requirement of the operating licence, as required under a Prescribed Premises activity in the DWER Works Approval/licence for the IWL. The bores will inform if the IWL is contributing to mounding, seepage, or significant changes to groundwater quality.

The bores will be sampled according to the Works Approval / licence conditions. The monitoring data will be reported to DWER as per WA/Licensing conditions.

The groundwater bore monitoring suite is shown in **Figure 22** and will be installed prior to development of infrastructure proposed in this MP and in accordance with DWER Works Approval W6640/2022/1. Regular monitoring will occur as per the plan with results submitted to DWER as part of both Works Approval and DWER licencing conditions.

Decommissioning & Rehabilitation

The closure objectives for the IWL are to leave the facility in a safe, stable, erosion resistant and non-polluting state. The downstream tailings slopes of the IWL perimeter embankments will be rehabilitated as part of the waste dump rehabilitation. The maximum slope angle will be 18°, with no intermediate benches. Once tailings deposition has been completed within the IWL and the top surface of the tailings has gained adequate bearing capacity, it will be capped with a layer of mine waste (0.5 m nominal thickness) to minimise dust generation from dried tailings and provide support for topsoil / growth medium for revegetation.

The IWL concept requires the integration of the planning, construction, and closure of the IWL with waste dump construction. The IWL concept provides an optimum solution to rehabilitation of an IWL by encompassing the IWL within a waste dump. Mine waste for rehabilitation of the top-surface will be sourced from nearby waste dumps.

Upon completion of tailings placement within the facility, the surface will undergo a rehabilitation program. The rehabilitation program will include the identification of appropriate capping material and local flora species to revegetate the surface of the facility.

At final closure, the decant structure will be decommissioned and the decant area sealed'. This will involve:

- Removing excess filter rock in the segmented concrete decant tower to the surrounding tailings level
- Covering the rock layer surrounding the decant structure with geofabric to prevent movement of fine material through rock voids
- Backfilling the annulus of the segmented concrete decant tower with tailings to the adjacent tailings level
- Capping the IWL decant areas with nominal 0.5 m thick clayey mine waste (to be validated with field trials or otherwise).

Upon decommissioning of the facility, the rehabilitated surface will follow the grade of the finished tailings surface and therefore have the capacity to store a considerable volume of stormwater. Internal bunding may be constructed to distribute stored rainfall and maximise at-source infiltration.

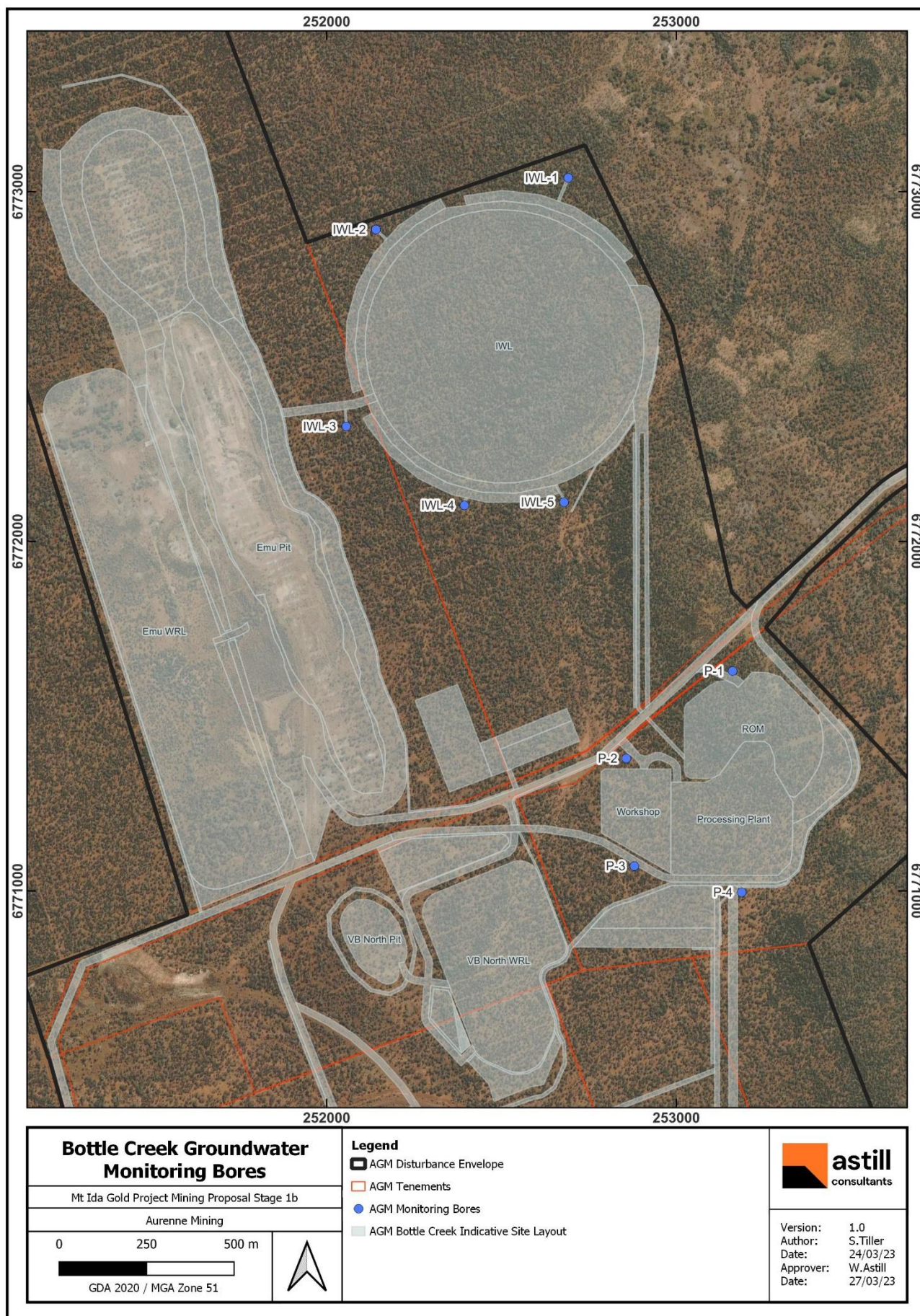


Figure 22: Proposed Groundwater Monitoring Bores

5.2.2.3.1 Existing Pit Lakes

The mining haul roads, access tracks and potentially other cleared areas will require water for dust suppression. The Plant and processing will additionally require approximately 180 m³/hr for processing (1.2 million kL/a).

Two existing open pits (VB & Boags) have water up to 427 m RL (approximately as determined from survey pickup of the pits). The volumes stored and the remaining capacity for the pits are provided in **Table 31**. The Processing Plant requirements, coupled with regional evaporation rates and expected to exhaust the pit lakes in 6-9 months.

The Project has a license to take water under Section 5C of the RIWI Act; GWL204119(1) provides an annual water entitlement of 250,000 kL and authorises the taking of water at several locations for dewatering for mining and dust suppression and mining camp purposes. Additionally, CAW 26D license 204120(1) to develop multiple additional bores will be used to source potable water (**Appendix C5**).

Works Approval for Stage 1 mining and processing (W6640/2022/1) is received from DWER (**Appendix C2**). As the discharge to environment (through dust suppression) does not trigger EP Act Schedule 1 thresholds, dewatering is not included but will be reviewed over LoM with the potential for future Works Approval amendments as the Project develops and expands.

Table 31: Estimated Existing Pit Lake Water Volumes

Pit	Stored Volume (m ³)	Remaining capacity (m ³)
VB	390,000	3,500,000
Boags	70,000	1,600,000
Total	460,000	5,100,000

5.2.2.4 Integrated Waste Landform & Tailings Storage Facility

The IWL and TSF are previously approved under an existing Mining Proposal (Reg ID 101557). This MPMCP proposes some minor changes to the TSF. See **Section** Error! Reference source not found. for updated design details.

5.2.2.5 Run of Mine Pad (ROM)

The primary ROM pad for the processing plant will be located adjacent to the Processing Plant.

The base of the pad will be cleared and grubbed, and any topsoil removed. The ROM pad will be formed initially from Low Grade Ore Material by building a ramp up to the crusher feed bin tipping level. Low Grade Ore Material will then be dumped out at the natural angle of repose from the ore bin tipping level. High Grade Ore Material will then be dumped in finger stockpiles adjacent to the ore bin on this level at the natural angle of repose using a ramp to access a skyway. Storm water runoff from the ROM pad will be directed into the process plant drainage system. Dust generated from traffic and dumping of ore into the crusher feed hopper will be suppressed using water sprayed onto all trafficable parts of the ROM pad and into the crusher feed hopper.

Table 32 summarises the Key Mine Activity data for the ROM pad; **Figure 23** shows the ROM design plan view.

Table 32: ROM Pad

Activity type	Run-of-mine pad	
Mine activity ref	ROM pad	
Area (ha)	9.10	
Area per tenement	G 29/ 30 – 9.10	
Design description	Ore will be loaded into the crushing circuit via an elevated ROM pad, the ROM pad will be 27 m in height and cover an area of 9 ha, the elevated ROM will be rehabilitated as for WRLs	
Material characteristics	Fibrous materials	No
	Radioactive material	No
	Materials capable of generating acid and/or metalliferous drainage	No
	Dispersive and/or erosive material capable of compromising structure & stability	Yes

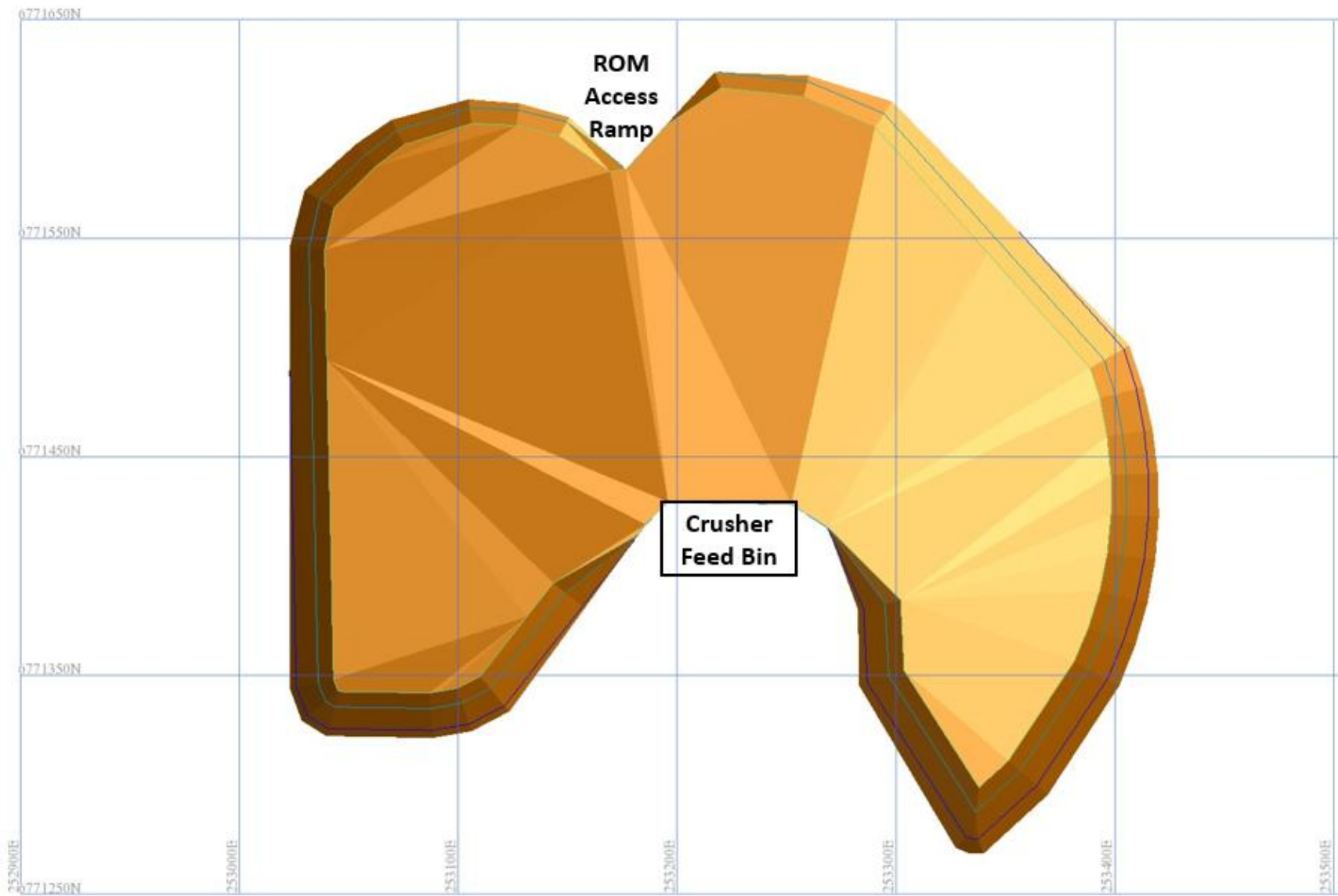


Figure 23: ROM pad – plan view

5.2.2.6 Processing Plant

The Bottle Creek Processing Plant has been designed based on a throughput of 1.2 million tonnes per annum. The operation is planned to run for 8,000 operating hrs per annum at a process milling rate of 180 tph. The Processing Plant general arrangement is provided in **Figure 24**; **Figure 25** is the process flow diagram (PFD) and includes the following major equipment areas:

- Primary Jaw Crusher
- Crushed Ore Stockpile
- Semi-autonomous grinding (SAG) Mill
- Cyclone Classification
- Leach and Adsorption Circuit Totalling 26 hours
- 6.0 tonne Zadra Elution Circuit and 6 tonne per day Carbon Regeneration
- Services and Reagents.

The ore has variable competency and expected to possess clay-like properties from a materials handling perspective. **Table 33** presents the area specific description for the plant site. The Processing Plant meets Works Approval/licencing Prescribed Premises requirements and will regulated under Prescribed Premises categories for processing and as such, will be regulated by DWER.

Due to the storage and use of chemicals in the Processing Plant, the Works Approval is also submitted with a Groundwater Monitoring Plan (**Appendix G2**) to ensure groundwater is monitored from baseline, through operations and closure to regularly record groundwater quantity and quality to ensure no negative trends are detected, or if so, adaptive management can be implemented. Groundwater monitoring bores are located up and down gradient (adjacent) to the Plant.

Table 33: Processing Plant

Activity type	Processing Plant
Mine activity	Processing Plant
Area (ha)	10.60
Area per tenement	G 29/ 30 – 10.60
Design description	Crushing & Reclaim The crushing plant has been selected based on 24 hr operation at an availability of 80% and will be capable of operating at a nominal rate of 180 t/h. Water sprays on the transfer points and on the head of the conveyors will be used to minimise the generation of dust throughout the crushing circuit. Grinding & Dewatering The crushed ore is withdrawn from the bottom of the coarse ore surge bin via apron feeder to the grinding circuit. A 100t lime silo is included to supply quicklime the mill feed belt to maintain a steady pH of 9.5-10. Grinding takes place in a 5.2m diameter SAG Mill and 5.2m Ball Mill, selected to achieve a grind target of 45 micron. Dewatering of classified ground product will take place in a 16m diameter thickener where flocculant is added to accelerate the settling process. Water is recycled back to the process water dam for re-use in the processing facility. Thickened slurry is pumped to the CIL circuit for gold dissolution and recovery. Leaching, Adsorption and Disposal

	The leach circuit is based on a standard hybrid carbon in leach (CIL) circuit with one leach tanks (980m³) and six (980m³) adsorption tanks. Cyanide is added to the leach front end to essentially dissolve gold into a aurocyanide complex over the course of the seven tank leach cycle. Carbon will be added to the 6 adsorption tanks to collect the gold from solution and will be pumped counter current to the direction of slurry flow. The loaded carbon is withdrawn from the first adsorption tank to be fed to the elution circuit. Slurry from the last CIL tank will be transferred via tailings pumps to the tailings storage facility at approximately 43% solids. The tailings will be pumped through a polyethylene pipeline to the IWL/TSF. Pressure in the line will be monitored on the control system to detect high pressures that result from line obstructions or sanding, and low pressure resulting from possible pipe failures. Elution & Recovery The elution circuit is a 6 tonne pressure Zadra circuit comprising separate acid and elution columns, electrowinning cells, thermal heater and a carbon regeneration kiln. A mixture of raw water and hydrochloric acid (to a concentration of 3% HCl) is pumped up through the column containing loaded carbon before discharging to the tailings hopper to remove inorganic foulants from the carbon. The elution column is pressurized and placed in a closed loop with an eluate tank, heater, heat exchanger and electrowinning cells. A caustic/cyanide solution is pumped from the eluate tank and heated up to 90oC by a heat exchanger. The solution is then heated to 140oC in the direct fired LNG heater. The hot caustic eluate causes the gold and silver to release from the carbon back into solution as a cyanide complex. The solution then exits the column into the electrowinning cells where the precious metals are plated onto the cathodes. The cathodes loaded with gold are periodically removed from the electrowinning cells and gold sludge washed, dried and mixed with fluxes and smelted in a LNG fired tilting furnace at ~1100°C. The molten contents are then poured into moulds, the heavier metal remaining in the base of these moulds and the slag flowing over the top
Process chemicals	Quicklime is to be delivered to site in a tanker and pneumatically transferred into a 100 t silo (approximately 5 days capacity) located adjacent to the mill feed conveyor. The quicklime silo has a filter on top (baghouse) to relieve air introduced into the silo during filling Cyanide will be delivered in liquid form by 16 m³ isotainer and transferred to a 140 m³ holding tank. Cyanide solution is pumped to the leach circuit using a variable speed pump Caustic to be stored in a 30 m³ tank dual walled tank and bund and delivered by 16 m³ isotainer Hydrochloric acid to be stored in a 30 m³ tank dual walled tank and bund and delivered by 16 m³ isotainer A dry powder 25 kg per bag, flocculant mixing system will prepare flocculant solution for use in the Pre-Leach Thickener
Material characteristics	Fibrous materials – N Radioactive materials – N <i>Materials capable of generating acid and/or metalliferous drainage, including neutral drainage and saline drainage – N.</i> All tailings-solids samples classify as Non-Acid Forming (NAF), reflective of a negligible content of sulphides.





5.2.2.7 Dams – Saline or Process Liquor

The Processing Plant and HV Workshop contains three ponds, these being the (Processing Plant) Raw Water Pond, Process Water Pond; and HV Workshop Oily Water Pond.

The Processing Plant water services between the ponds and the IWL decant is a closed system that relies on the continuous recycling of water. To initiate processing of ore, water will be extracted from the NorGold pit voids (VB & Boags) and this water will be pumped from a standpipe to water trucks and used to fill the Process Water Ponds. Once the bore field is developed (future MPMCP) additional water will come from the borefield. The objective is to recycle as much water as possible to minimise take from the environment. No discharge of Process Water to the environment is planned.

Table 34: Dam – Saline or Process Liquor

Activity type	Dam – Saline or Process Liquor
Mine activity	Process Water Ponds/Dams
Area (ha)	1.10 ha
Area per tenement	G 29/30 – 1.10 ha
Design description	Dams will be designed as shown in Figure 26 including: • Lined with an impervious membrane • Equipped with a lifesaving buoyancy device • Provided with egress • Fenced off from access by livestock and wildlife. The raw water within the Raw Water Pond will spill via spillway to the Process Water Pond and raw water spills to plant site vee drains. Both the Raw and Process Water Ponds have a base inside dimension of 50 x 50 m and 3 m liquid level, giving a total capacity of 7500 m³. Without decant return water, the raw water demand is 175 tonnes per hour, so the Raw Water Pond provides 42 hours capacity to top up the process water pond if the bores are out of service for any reason. The Oily Water Dam has a base inside dimension of 14 x 14 m and up to 1 m liquid level, giving a total capacity of 225 cubic metres with 0.5 m freeboard. The largest influent is from the truck wash bay at 9 cubic metres per hour when water is not being recycled. This dam has a capacity of 25 hours in this case. In practice, this bleed stream will be intermittent allowing evaporation. The Processing Plant and the ponds are included in DWER Works Approval W6640/2022/1.
Material characteristics	Fibrous materials – N Radioactive materials – N Materials capable of generating acid and/or metalliferous drainage, including neutral drainage and saline drainage – N

The groundwater monitoring bore suite to be installed around the Plant to monitor potential changes in groundwater quantity and quality are shown in **Figure 26**. The Groundwater Monitoring Plan (Pendragon 2022) is provided in **Appendix G2**.



5.3 Other Mine Activities

This section provides a summary of supporting infrastructure for the Bottle Creek mine establishment.

5.3.1 Proposed Other Mine Activities

5.3.1.1 Transport or Service Infrastructure Corridors

- Extending the borefield service infrastructure corridor to the air airport access road
- Haul road from the Stage 3 expansion to the ROM pod

5.3.1.2 Topsoil Stockpile

- Additional topsoil storage locations added for Stage 3 expansion

5.3.2 Previously Approved Other Mine Activities Mining Proposal Reg 122042

5.3.2.1 Transport or Service Infrastructure Corridors

- Haul road to Cascade Mine pit for HV access

5.3.2.2 Topsoil Stockpile

- Additional topsoil storage locations added for Cascade and Emu WRL expansions

5.3.3 Previously Approved Other Mine Activities Mining Proposal Reg 117952

5.3.3.1 Transport or Service Infrastructure Corridors

- **Alternative access road** – allowing co-lease holders to access Bottle Creek Aerodrome (ex-Perrinvale Airstrip) without going through active mining/construction areas.
- **New access road** – from Mt Ida Rd to MIGP Bottle Creek Village / Aerodrome.
- **New access road** – from Mt Ida Rd to the west to access a future borefield.
- **Telecommunication tower** – infrastructure and connecting underground power and communication lines to Bottle Creek Village.
- **Pipelines** – for macerated sewerage, potable water and RO brines between Village and Plant along.
- **Pipelines** – from production bores to supply water to the Plant
- HV Powerline between Village and Plant.
- **Powerline** – from Village to Aerodrome.
- **Potable water pipeline** – from Borefield to Bottle Creek Village.
- **Amendment of TSF pipeline route** – across newly granted tenement. This route is significantly shorter than previous and reduces required area to be cleared.

5.3.3.2 Borefields

Multiple bores will be installed across site to monitor groundwater and supply water to Processing Plant and Bottle Creek Village. These include five monitoring bores around the IWL, four around the Plant and six production bores located south of the Plant.

All bores will be installed in accordance with DWER Guidelines.

5.3.3.3 Laydown

A laydown area has been proposed surrounding the Emu Open Pit. This area is significantly disturbed from historical mining activities.

5.3.3.4 Topsoil Stockpile

Additional topsoil stockpiles are proposed. Topsoil will be stored as per current approvals detailed in **Section 5.4.1.5** below.

5.3.3.5 Core Yard

A core yard for logging and storing core samples from across the Project.

5.3.3.6 Magazine

A magazine was approved under existing Mining Proposal 101557. The magazine will be relocated to an adjacent tenement for ease of operations. The magazine will be constructed as per current approvals detailed in **Section 5.3.4.4** below.

5.3.4 Previously Approved Other Mine Activities Mining Proposal Reg ID 101557

5.3.4.1 Aerodrome

The Perinvale Airstrip is on L 29/137 and remains in reasonable condition but requires upgrades to pavement width and length to bring it up to contemporary standards. In accordance with the Civil Aviation Safety Authority (CASA) requirements, the airstrip will be fenced to prevent inadvertent access by humans and animals. An apron extension (width and length) will also be required to meet CASA requirements so that the airstrip can be used for mobilising the operational workforce. **Figure 27** shows the general arrangement of the aerodrome. Infrastructure upgrades include:

- Upgrade to runway length and width on L 29/137
- Apron on L 29/153
- Fencing to exclude stock (perimeter of L 29/137)
- Car Park on L 29/153
- Aviation gas (AVGas) stored for potential re-fuelling on L 29/153
- Aerodrome Terminal Building on L 29/153.

Access consent from the pastoralist (Zenith Australia Group) and Red Dirt Minerals (formerly Ora Bana/Mt Ida Gold Pty Ltd) to upgrade to Aerodrome has been received. The Shire, pastoralist and co-lease owners (Red Dirt Metals) have agreed to Aurenne's proposal to bring the airstrip up to contemporary standards. Written notification to Civil Aviation Safety Authority, Airservices Australia and the Local Government Authority have been issued.

The operation of the Aerodrome will be under contract to a suitable service provider, who has not yet been appointed by Aurenne. Under the Part 135 Legislation, it is left to Aircraft Operator Company, the Pilot in Command of the aircraft, and indirectly their insurers to decide where they can and cannot regularly operate based on pre-identification of hazards and treatment of risks. The Aircraft Operator Company requires technical inspection survey data and details of the facility before commencement of operations. Aurenne has received preliminary advice on the requirements to achieve CASA certification and will be working towards developing this infrastructure once the MPMCP is approved. The Aerodrome will not be operational until it meets the requirements of the Aircraft Operator Company and the Pilot in Command. The Aerodrome management (Aurenne & future service provider) will not be offering any

commercial flights and therefore will not be in competition with any regional commercial flight service provider.

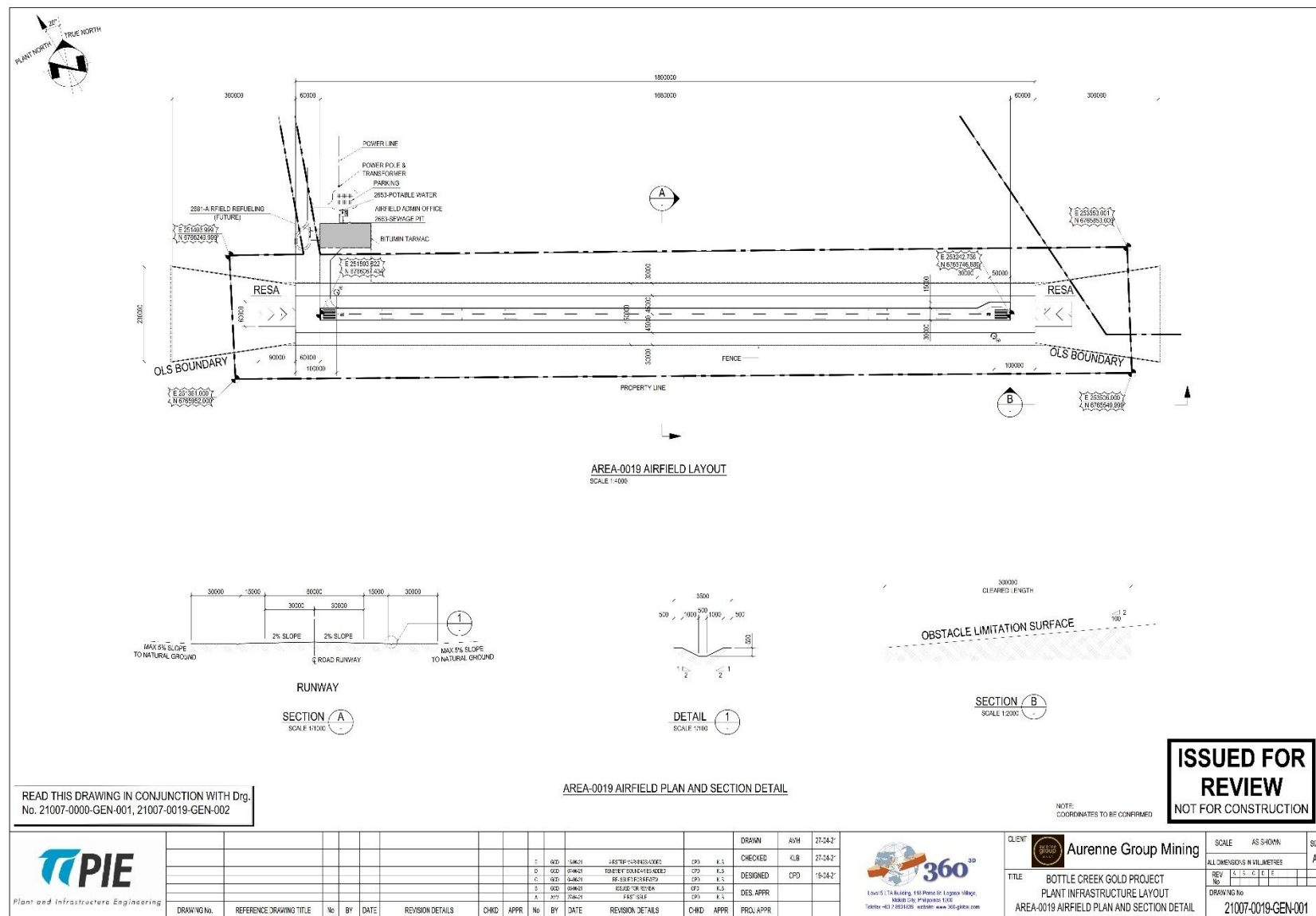


Figure 27: Aerodrome General Arrangement

5.3.4.2 Transport or Service Infrastructure Corridors

The Project is accessed from the Mt Ida Road onto an existing all weather access track established by NorGold in the late 1980s. Tenement L 29/137 contains the main site access from Mt Ida Road through the mine, and down the N-S access track to the Accommodation Village and proposed Aerodrome (existing Perinvale airstrip).

Additional haul roads around the two pits (M 29/151) and access roads to the IWL (G 29/29) and processing plant (G 29/30) will be established.

Haul roads will be created according to separate HV haulage from LV site access. Dust suppression via spray from water carts will utilise water from existing pit lakes (Boags & VB).

5.3.4.3 Fuel Storage Facility

A self-bunded tank with a safe fill will be installed on G 29/30 for vehicle refuelling within the HV Workshop Area. This equipment comes with an overfill alarm, mechanical overfill protection and automatic shutoff nozzle (LV) and dry-break nozzle (HV).

Other smaller fuel storage will be required at the Accommodation Village on L 29/145 primarily for the diesel generators; and AVGas fuel tanks on L 29/153 to supporting the proposed Aerodrome.

All fuel storage will be contained in double walled (self-bunded) storage tanks as per industry standard. Each facility will have spill kits in place and will be routinely inspected to ensure they are to standard. Backup generators will support any outage or servicing of the main power supply.

5.3.4.4 Magazine

A storage magazine for bulk and packaged explosives as well as detonators and explosive accessories will be established. The area will be constructed in compliance with *Dangerous Goods Act and Goods Safety Regulations 2007*. Dangerous goods (DG) that will be transported to, stored and handled onsite in quantities that potentially pose a risk to human health and the environment if transported, stored or handled incorrectly include:

- Bulk diesel
- Sodium cyanide
- Sodium hydroxide
- Hydrochloric acid.

To minimise risk associated with these dangerous goods/chemicals, transportation and handling will be undertaken by licenced carriers and suppliers that are accredited to transport such materials in accordance with the requirements of the Australian Dangerous Goods Code.

Storage and handling onsite of dangerous goods and hazardous materials (including explosives) will be in accordance with the requirements of the relevant legislation including the DG Act and associated regulations and relevant Australian Standards such as AS1940-2017. Transport, storage and handling of dangerous goods and hazardous materials onsite will be carried out in accordance with the requirements of the relevant sections of the *Mines Safety and Inspection Act 1994* and associated Regulations.

Cyanide transport, storage and handling onsite will be conducted in a manner that is consistent with the requirements of the International Cyanide Management Code (International Cyanide Management Institute 2018).

Aurenne has engaged an independent DG consultant to develop and apply for the required DG permits for the Project.

5.4 Surface Water Management

A surface water assessment was carried out by Hydrologia in 2024 to update the model with the Stage 3 Expansion (Appendix H) and informed the placement of surface water management structures to ensure surface water flows during average and peak events do not erode constructed landforms nor enter pits. The structures allow surface water movement to be directed and contained such that no erosive action of constructed landform or pits results, and sediments are captured and retained in situ so they don't flow into the local natural catchment.

All Surface Water Management Structures will be constructed to ultimate (PMF) design from Construction Phase according to Hydrologia Water Management Strategy for Operational phase (2024).

5.4.1 Diversion Infrastructure

The surface water diversions drains are summarised in **Table 14** and their placements are shown in Error! Reference source not found.. For detailed information on the diversion channels and levees please refer to the report in **Appendix H**.

Table 35: Surface Water Diversion Details

Structure	Description	Length (m)	Size	Timing
Diversion 1	Diversion around TSF.	566	Up to 10 m wide drain cut up to 1.1 m deep.	Construct prior to building the TSF. Permanent.
Diversion 2	Natural flow pathway and cut drains around eastern side of Emu/Southwark/Cascade Pits.	3,021	Up to 20 m wide drain, up to 1.1 m deep.	Construct prior to the Pit. Permanent
Diversion 3	Cut-off drain above access road. Connects to Diversion 2.	322	5 m wide cut channel, up to 2.3 m deep.	Construct prior to the roads in the area. Temporary. Remove on project closure and reinstate pre-development drainage line.
Diversion 4	Diversion around mill area.	828	Up to 11 m wide cut channel, up to 1.3 m deep.	Construct prior to the mill. Temporary.
Diversion 5a	Drain to protect the western WRL for the Emu\Southwark\ Emu Pits.	1,360	Up to 20 m wide cut channel, up to 0.6 m deep.	Construct prior to infrastructure in the area. Permanent.
Diversion 5b	Drain to protect the western WRL for the Emu\Southwark\ Emu Pits.	663	Up to 10 m wide cut channel, up to 2.1 m deep.	Construct prior to infrastructure in the area. Permanent.

Structure	Description	Length (m)	Size	Timing
Diversion 5c	Drain to protect the western WRL for the Emu\Southwark\ Emu Pits.	807	Up to 10 m wide cut channel, up to 1.4 m deep.	Construct prior to infrastructure in the area. Permanent.
Diversion 6	Cut-off drain to prevent ingress of stormwater into the construction camp area.	303	5 m wide cut channel, up to 1.3 m deep.	Construct prior to infrastructure in the area. Temporary.
Diversion 7	Drain along the eastern side of the services corridor.	1,335	20 m wide cut channel, up to 1.4 m deep	Construct prior to infrastructure in the area. Permanent
Diversion 8	Southern diversion drain.	4,079	Up to 30 m wide cut channel, up to 1.8 m deep.	Construct prior to infrastructure in the area. Permanent.

Proposed levees and predicted water level profiles against the levees are mapped in Error! Reference source not found. and detailed in **Table 36**. Typical sections across the diversions and levees, showing predicted water levels, are given in Error! Reference source not found. and Error! Reference source not found.. Sections are plotted from left to right looking downstream.

Table 36: Surface Water Levee Details

Structure*	Description	Length (m)	Size	Timing
Levee 1	Effective levee formed by the edge of the TSF. Associated with Diversion 1.	501	TSF structure. Design level up to 1.8 m deep.	Constructed as part of the TSF. Permanent.
Levee 2	Effective levee formed by the bund on the edges of Emu/Southwark/Cascade Pits, roadside berms, topsoil stockpiles and WRL. Associated with Diversion 2.	4,162	Other structures. Design level up to 2.3 m deep.	Constructed as part of the mine infrastructure. Permanent.
Levee 3	Effective levee formed by roadside berms. Associated with Diversion 3.	306	Other structures. Design level up to 2.0 m deep.	Constructed as part of the road. Temporary. Remove on project closure.
Levee 4	Effective levee formed by roadside berms. Associated with Diversion 4, around mill area.	710	Other structures. Design level up to 1.7 m deep.	Construct prior to the mill as part of road infrastructure. Temporary.
Levee 5	Levee in the lower section of Diversion 5a to protect the road. Formed by road earthworks.	420	Other structures. Design level up to 2.0 m deep.	Construct as part of the road. Temporary. Remove on project closure.
Levee 6	Effective levee formed by roadside berms. Associated with Diversion 6.	269	Other structures. Design level up to 2.2 m deep.	Constructed as part of the road. Temporary. Remove on project closure.
Levee 7	Levee protecting the VB North pit.	760	Constructed levee. Design level up to 3.6 m deep.	Construct prior to operations downstream of the levee or on closure. Permanent

Crossings

Locations were identified where existing streamlines or proposed diversion drains crossroads with locations of crossings shown in Error! Reference source not found.. Floodway's are used by preference, as these are cheaper than culverts, readily constructed and maintained and result in less flow concentration and downstream scour. However, maintenance may be required after storm events and traffic interruption may occur due to flow over the roadway or until damage is repaired. Maintenance of Surface Water Management Structures will be identified during Environmental Audits (**E-PRO-016 Environmental Audit Procedure**) and maintenance according to **E-PRO-008 Surface Water Management Procedure**.

Culverts are used at locations 4, 5 and 6 to maintain adequate road level to provide flood protection.

A summary of proposed road crossing structures across the mine site is given in **Table 37**. Some additional crossings have been added for the new proposed roads based on surface water drainage lines.

Table 37: Surface Water Crossing Details

Crossing	Location	Design flow 10% AEP (m ³ /s)	Structure	Comment
1	Site access to Mt Ida road	1.0	Floodway	
2	Site access to Mt Ida road	2.2	Floodway	
3	Site access to Mt Ida road	0.9	Floodway	
4	Haul road	4.8	34 * 0.5 m dia. CSP Culverts	Culverts are required to maintain road level for flood protection.
5	Mill-airport/camp road	4.8	34 * 0.5 m dia. CSP Culverts	Culverts are required to maintain road level for flood protection.
6	Water pipeline access	4.9	Floodway	
7	Haul road	1.1	8 * 0.5 m dia. CSP Culverts	Culverts are required to maintain road level for flood protection.
8	Haul road	0.8	Floodway	
9	Mill-airport/camp road	12.4	Floodway	
10	Construction camp road	19.5	Floodway	
11	Mill-airport/camp road	8.7	Floodway	
12	Mill-airport/camp road	8.1	Floodway	Bottle creek in upper reaches.
13	Haul road	28.6	Floodway	Bottle creek at existing diversion.
14	Mill-airport/camp road	-	Floodway	
15	Mill-airport/camp road	-	Floodway	
16	Waste disposal facility road	-	Floodway	
17	Services corridor	-	Floodway	
18	Services corridor	-	Floodway	
19	Services corridor	-	Floodway	
20	Services corridor	-	Floodway	

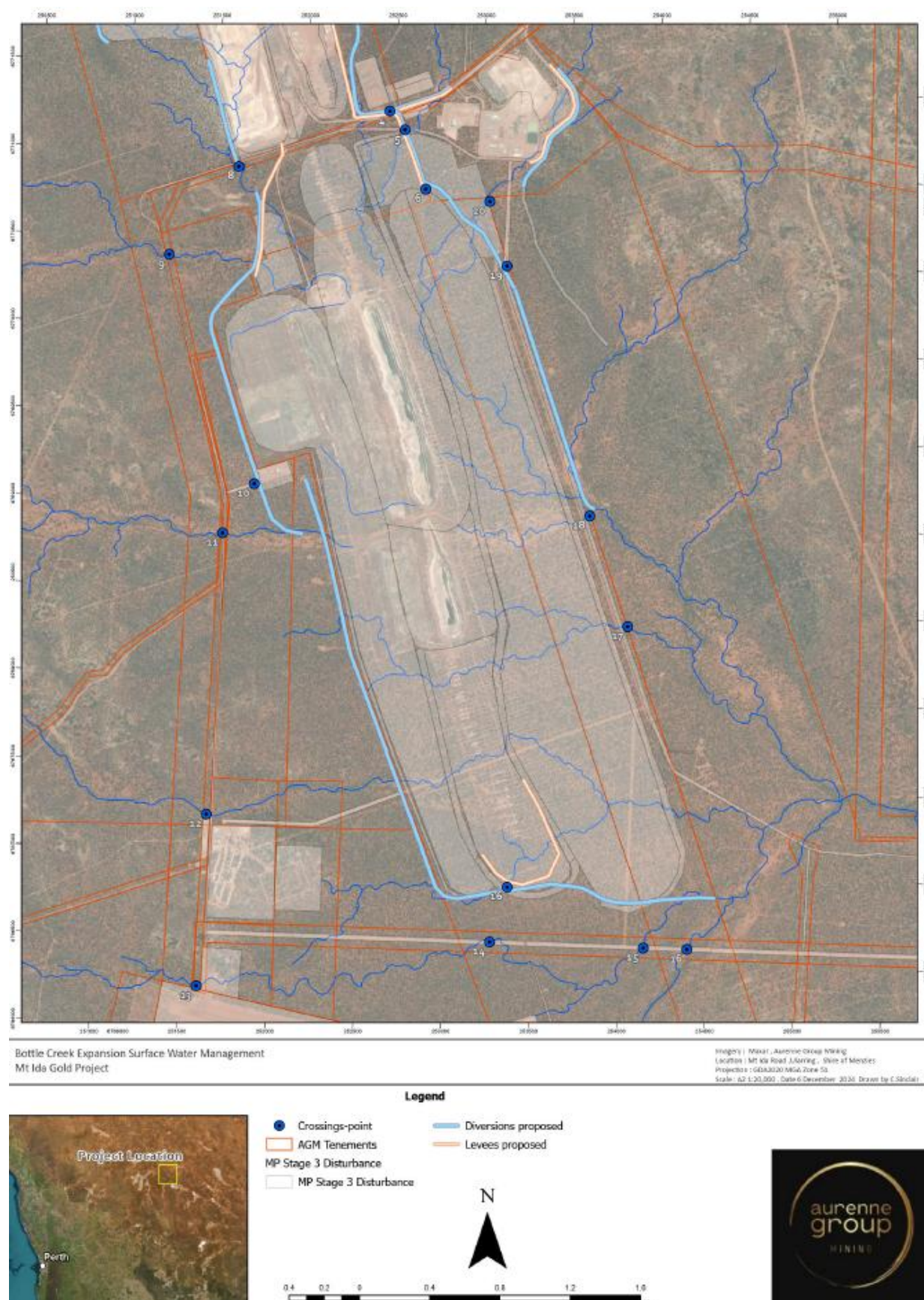


Figure 28: Proposed surface water management structures (based on Hydrologia 2024)

Drain Construction

A capping layer of coarse, angular gravels and cobbles may be beneficial along the excavated banks where loose materials are encountered. The capping layer would resist localised rilling and gully from direct rainfall as well as erosion related to possible floodwaters that enter the channel from the overbanks. Vegetation and cohesion will increase the allowable threshold over time following initial construction. Ongoing monitoring and maintenance according to **E-PRO-008 Surface Water Management Procedure**, of the drains and bunds will be undertaken before each wet season and after any flood event to check for any localised scour, deposition, bank migration or vertical head cuts. Some adjustment of the bed material in the receiving channel would be expected over time as the channel reacts to the change of inflow location. Some sediment that is mobilised, particularly the smaller fractions, would be deposited in lower energy areas downstream.

A preliminary monitoring period (**E-PRO-008 Surface Water Management Procedure**) will be undertaken to identify any sedimentation issues or along with proposed mitigation measures. The diversion channels have a very mild longitudinal slope. Sediment may deposit in lower flow events, to be conveyed to the downstream basin in larger events. Periodic maintenance will be required on site to remove sediment build-up and prevent drain overtopping over time. Surface water management structures will be inspected and maintained according to **E-PRO-008 Surface Water Management Procedure** that includes monitoring to check for localised scour, deposition, bank migration or vertical head cuts migrating along the diversion drain and at culvert inlets and outlets and reporting actions for maintenance.

As the Project develops, and at planning for closure, a Project review of surface water management structures will be undertaken to ensure that local catchment flows can be reinstated to result in no net impact to environmental water requirements. The review will include the pit and abandonment bunds retention which may be disruptive to natural surface water catchment flows.

5.4.1.1 Laydown & Hardstand Areas

There will be several hardstand areas constructed by clearing and sheeting the area with suitable material and compaction. These areas will be suitably fenced to restrict access from unauthorised personnel, livestock and wildlife.

5.4.1.2 Electrical Power Generation

Diesel powered generators (up to 250 kVA) will be located on:

- M 29/150 to power the Core yard, Standpipe pump and dewatering pumps in the existing pit lakes in the VB and Boags open pits
- L 29/145 to power the Accommodation Village and supporting infrastructure
- G 29/30 to power the offices, workshop, Plant and processing infrastructure and IWL decant pump.

5.4.1.3 Workshop

A Heavy Vehicle Workshop will be constructed adjacent to the Processing Plant. It will consist of 4 bays open on one side. The facility will consist of a concrete floor and a steel framework with metal sheet cladding.

Adjacent to the workshop will be HV and LV wash bays and associated drainage controls and oily water separator system.

5.4.1.4 Buildings

Buildings are to be constructed on site in a variety of sizes and configurations and include:

- Main administration office building located
- Plant office building located
- OHS and ERT building located
- Laboratory and Sample Preparation shed located
- Warehouse and office located
- Lube Storage located
- Heavy Vehicle maintenance office located
- Communications room located
- Ablutions buildings located.

An Aerodrome Terminal Building will be constructed on L 29/153.

The Bottle Creek Accommodation Village was approved under Interim MPMCP Reg ID 98744 and was limited to a 10 ha area. The revised Village GA is shown in **Figure 29** and has expanded to include an additional RO Plant and an improved layout to retain more of the existing vegetation and elevation to improve site amenity.

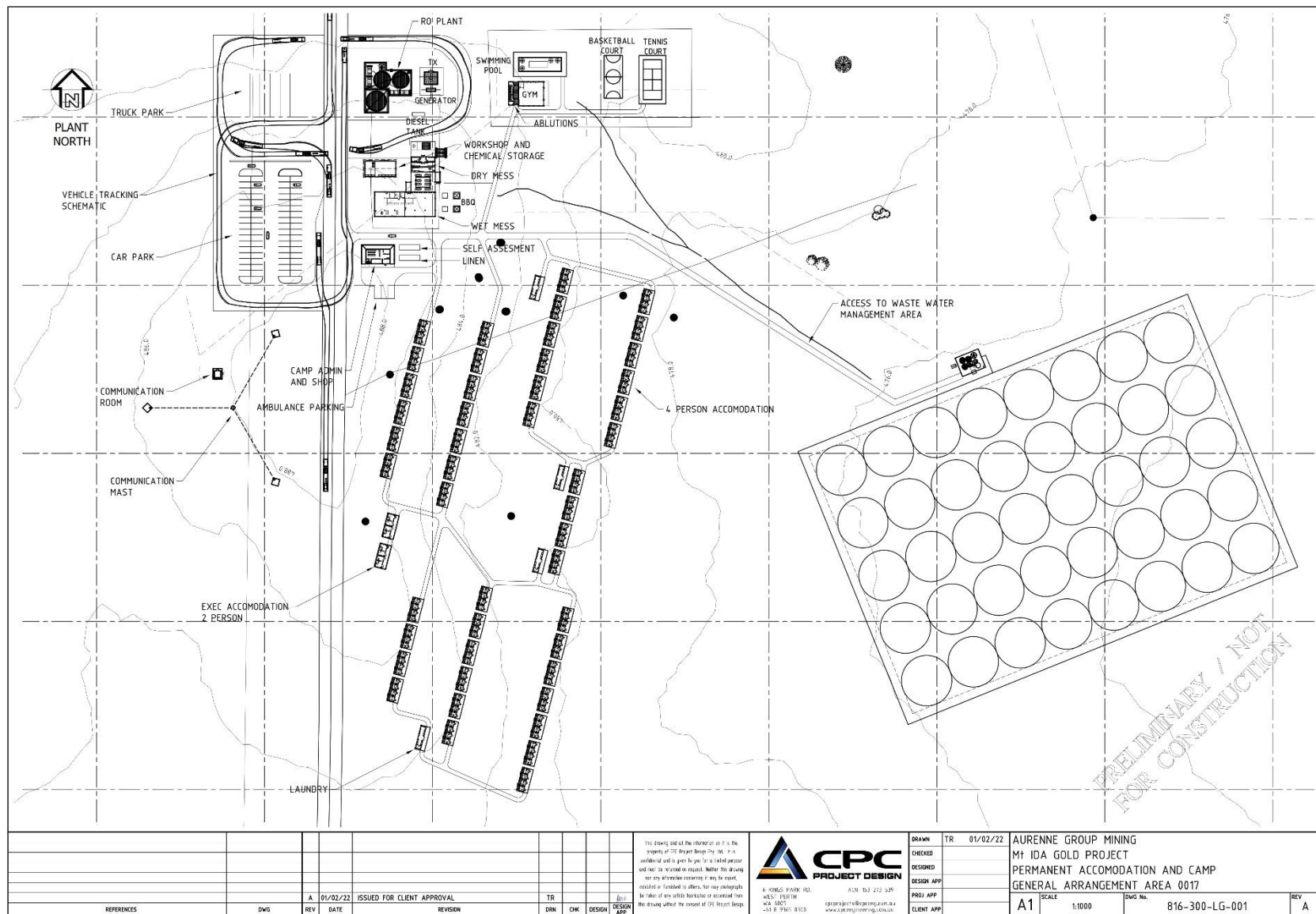


Figure 29: Village General Arrangement

5.4.1.5 Topsoil stockpiles

Soil characterisation over the Project area was undertaken (Landloch 2021; **Appendix F**) to assess the potential of the topsoil as a future rehabilitation resource. Topsoil Stockpile areas have been defined according to the Soil Mapping Units defined by Landloch (2021) and the respective properties of the soils and their future use. Topsoil stockpiles will be no more than 2 m in height and will retain material recovered from all disturbance areas according to the recovery profiles indicated in Landloch (2021). Due to the differing SMUs, topsoils will be handled and stored separately.

Topsoil Stockpile Facilities will have restricted access and be sign-posted to ensure long term protection of the resource; where topsoil is windrowed adjacent to a cleared area it will be managed according to Aurenne's **E-PRO-009 Topsoil Management Procedure** to ensure long term viability and protection of resource.

5.4.1.6 Landfill

The proposed Class II landfill site will be constructed and operated according to the *Environmental Protection (Rural Landfill) Regulations 2002*. Domestic (putrescible and non-putrescible), waste produced at the Accommodation Village during the construction and operations will be disposed of into this landfill facility. The landfill design is a moving trench which incorporates a maximum open excavation of ~130 m long by 4 m wide and up to 2 m deep (**Figure 30**).

Prior to excavation works, topsoil will be removed and stockpiled. Excavated overburden material will be placed around the edge of the landfill to create a safety bund half the height of the largest wheel for the vehicles using this facility. Excavated material will also be used to cover waste on a weekly basis. The excavated overburden stored alongside the long edges of the excavation will also prevent any surface water inflow during significant rainfall events. The empty trench will be filled with waste by tipping from above, utilising the active long edge. Once filled, a new trench is dug in front of the first trench and the resultant overburden is used to compact and backfill the previous trench. When the completed trenches backfilled surface has settled (normally post wet season) topsoil is placed over the backfilled overburden to begin rehabilitation. An egress ramp will be constructed at each end of the trench for both humans and fauna to enter and exit the excavation safely. Throughput of the landfill facility is estimated to be 440 m³ per year based on a calculation of 2 m³ of waste produced by each individual accommodated (maximum 220 persons) at the Accommodation Village in a year.

An appropriately sized fence will be erected around the boundary of the landfill facility to ensure an effective barrier is in place to prevent fauna (in particular feral animals) from accessing waste material. An entrance/exit gate will be incorporated into the fence; however, the gates will be kept closed at all times (other than when waste is being deposited). The boundary fence will also create a wind barrier for any waste material that may be blown out of the perimeter, thereby minimising the potential for littering of the surrounding environment. Any waste that is blown outside of the landfill will be returned to the tipping area at least once every month in accordance with Regulation 8 of the *Environmental Protection (Rural Landfill) Regulations 2002*.

The waste facility will be regulated by DWER under Works Approval/licensing (under assessment; W6640/2022/1). In addition it will be operated according to **E-PRO-005 Waste & Landfill Management Procedure**.

The landfill facility will be constructed and managed in accordance with DWER Works Approval (under assessment; W6640/2022/1) and future Environmental Licence conditions and as such, is assessed and regulated by DWER.

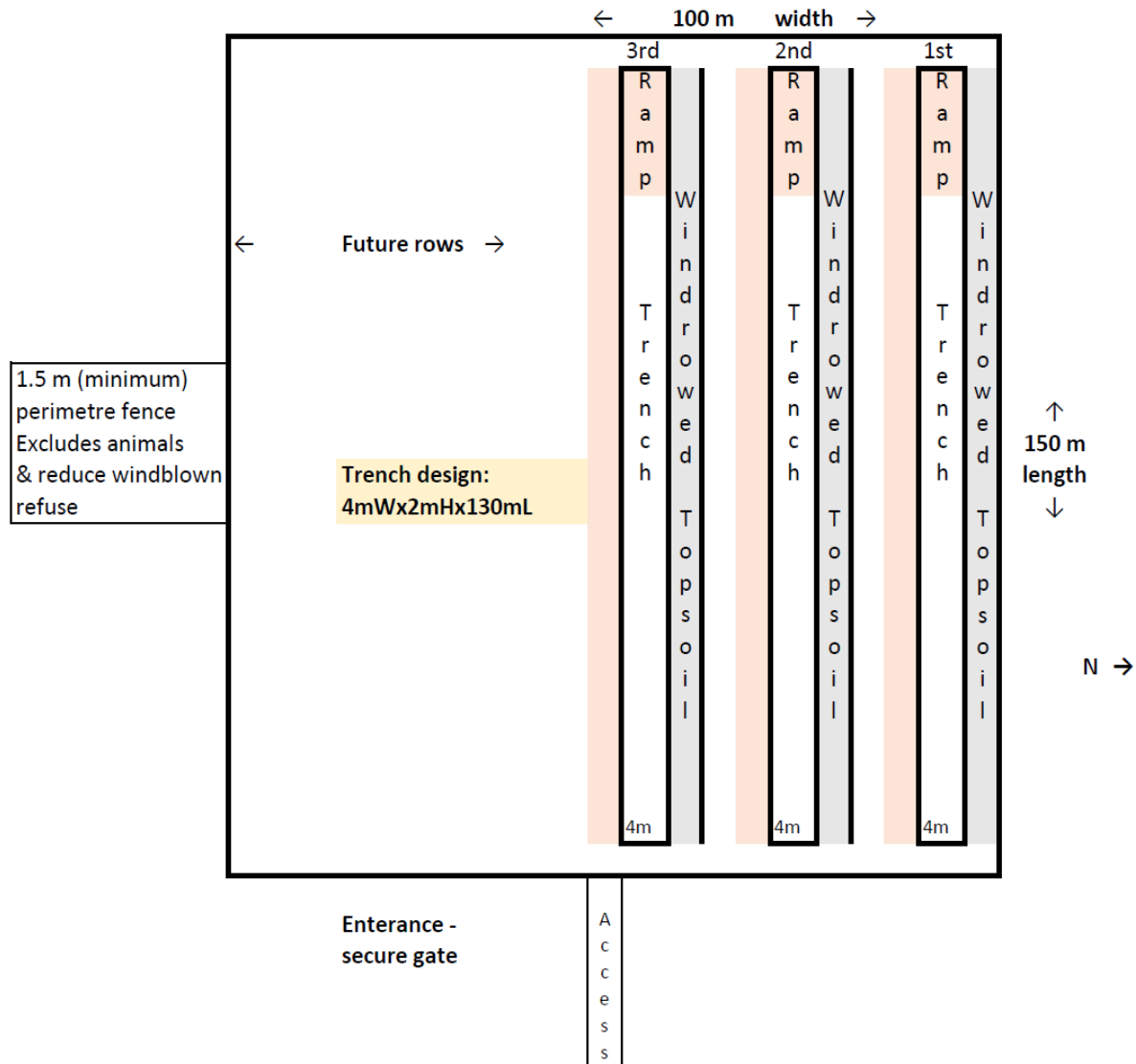


Figure 30: Landfill Facility Schematic Layout

5.4.1.7 Land that is Cleared of Vegetation (other cleared land)

NorGold/North Gold previously mined and processed gold ore and successfully relinquished the mine back to the State following successful rehabilitation of the site. However, although rehabilitated waste landforms located are rehabilitated, other areas of tracks and hardstand/laydown remain as land cleared of vegetation, and small areas of disturbance exist associated with old NOIs.

5.4.1.8 Water Services

Initially, processing water requirements will be met by dewatering the two mining void pit lakes (VB and Boags). Production bores will be established as shown on the site layout to supply water to the Plant.

A RIWI Act licence to dewater is in place and a Part V dewatering licence will be sought if the threshold for release to the environment (water cart spraying for dust suppression) will be triggered (50 000 tonnes or more per year, as defined in Regulation 5 of the EP Act, Schedule 1 – Prescribed Premises).

The water balance for is shown in **Figure 31**. Future water for the Processing Plant will be met by the return water from the IWL decant.

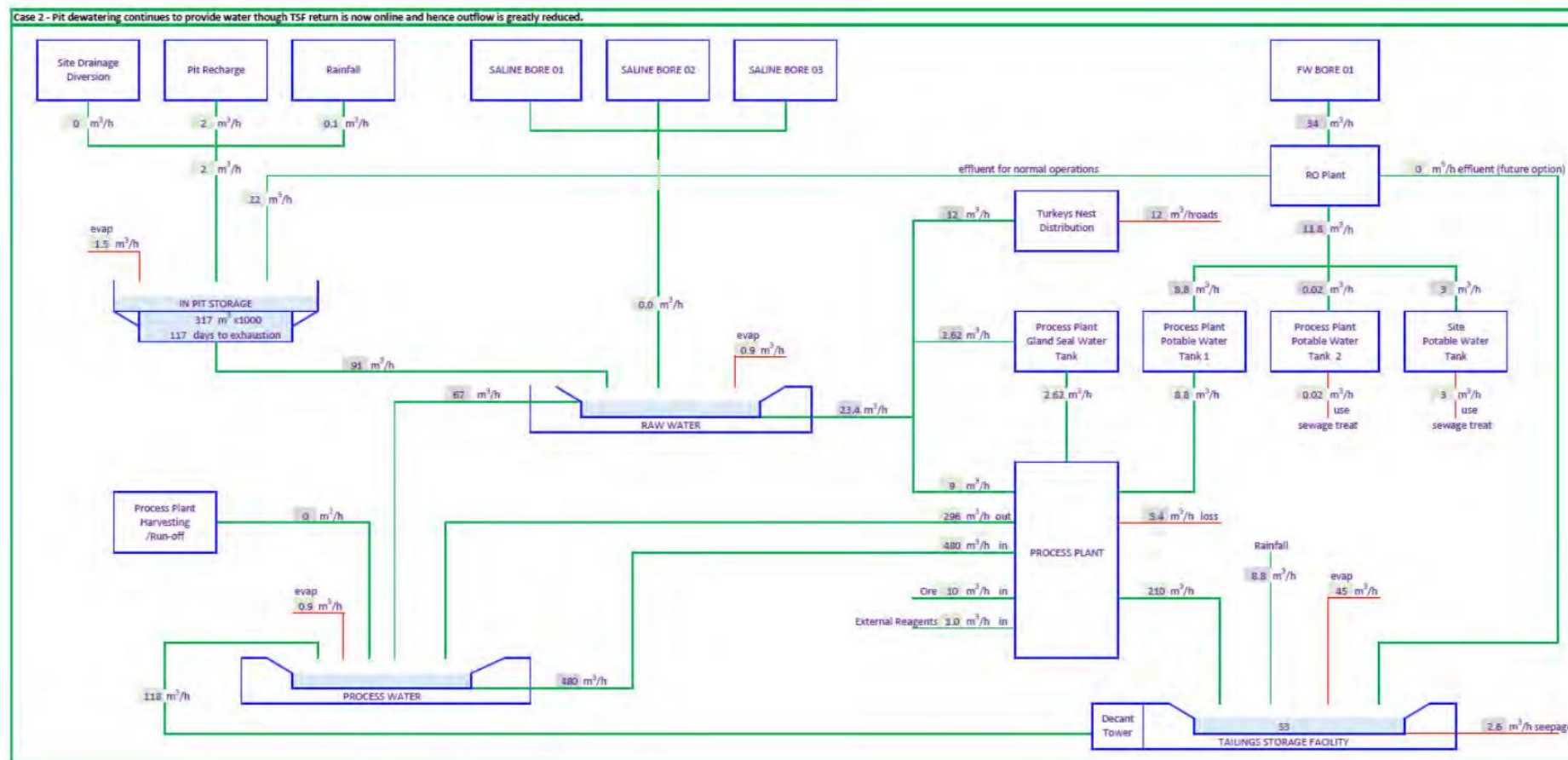


Figure 31: MIG Water Balance

5.5 Materials Balance

A mine material balance is provided in **Table 38** and a breakdown of waste material in **Table 39**. Landform volume estimates are also provided in **Table 40**.

An estimated total of 2,000,000 m³ of topsoil will be stripped and stockpiled in designated areas for future rehabilitation purposes.

Table 38: Mine Material Balances (Estimates Only)

Pit	Ore (BCM)	Au grade (g/t)	Waste (BCM)	Total material movement (BCM)
Cascade	800,000*	2.0	10,461,951	10,961,951
Emu	1,400,000	2.0	8,300,000	9,700,000
VB North	72,466	1.26	1,325,103	1,397,569
Southwark	525,000	2.0	3,000,000	3,525,000
VB	1,918,604*	1.26	22,953,448	24,872,052
Boags	516,817*	1.19	9,219,790	9,736,607
Single Fin	559,904*	1.27	12,212,310.51	12,772,214
			Total	72,965,393

**Estimated further resource drilling ongoing*

Table 39: Mine Waste Material Balance Estimates

Pit	Oxide (BCM)	Transitional (BCM)	Fresh (BCM)	Total Waste (BCM)
Cascade	9,472,553	989,398	0	10,461,951
Emu	7,700,000	600,000	0	8,300,000
VB North	1324753.25	349.94	0	642,000
Southwark	2,715,000	210,000	75,000	3,000,000
VB	13,343,355	3,783,384	5,826,709.00	22,953,448
Boags	6,028,857	1,327,758	1,863,175	9,219,790
Single Fin	11,348,396	704,723	159,191	12,212,310

**Depended on ore recovery from fresh material – unlikely*

Table 40: Mine Landform Balance Estimates

Landform	Fresh (BCM)	Total Material (BCM)
IWL TSF	0	2,600,000
Total		2,600,000

5.6 Site Plan and Disturbance Envelope

A disturbance envelope has been developed containing all site activities detailed in this Mining Proposal. The disturbance envelope allows operational flexibility to make minor changes to the exact location of an activity, without need for subsequent revisions to the Mining Proposal. An environmental risk assessment has been completed for entire disturbance envelope.

The disturbance envelope has been amended to include new proposed activities outlined in this MP/MCP. The total area of disturbance envelope is 3,667 ha. See **Figure 32** for a map of the disturbance envelope. The disturbance envelope has been amended to include the previously excluded tenement G29/32. **Figure 33 shows** an overall indicative site layout.



Legend

Disturbance Envelope

Bottlecreek Stage 3

Bottlecreek Stage 3



Figure 32:Disturbance Envelope

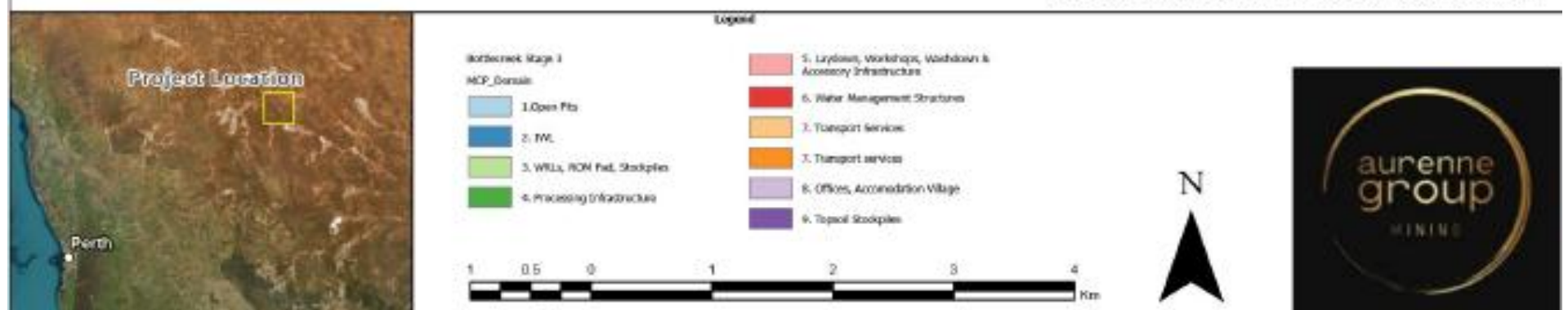


Figure 33: Indicative Site Layout

6 ENVIRONMENTAL LEGISLATIVE FRAMEWORK

Relevant environmental (and other) approvals and statutory requirements for environmental management of the Project are provided in **Table 41**.

Table 41: Environmental regulatory instruments relevant to MP/MCP

Relevant legislation	Environmental factor regulated	Relevant approval/requirement	Regulating authority; and how managed
Commonwealth			
Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act)	Biodiversity/ Commonwealth lands	Not applicable; no MNES likely to be significantly impacted by the Project	The Commonwealth Department of Agriculture, Water and the Environment (DAWE) regulates the EPBC Act and Aureenne Mining is responsible for the self-assessment to determine if a Project requires referral as a significant impact to an MNES There will be no significant impact from the Project to a MNES; however a Malleefowl Management Plan E-PLA-005 and strict procedures and assessment for clearing (E-FRM-002 Vegetation Clearing Permit Assessment & Authorisation Form; E-FRM-0002 Vegetation Clearing Request Form; E-PRO-001 Vegetation Clearing Procedure) are in place to ensure no significant impact to utilisation of the area by Malleefowl Further ,CPS 8993 regulates clearing activities that may impact Malleefowl
State			
Biodiversity Conservation Act 2016 (BC Act)	Biodiversity	Not applicable; no conservation significant flora/fauna will be significantly impacted or require taking or relocation Management measures to ensure biodiversity values (Mallee Fowl mound survey, Priority flora avoidance, and clearing controls) are included in EMS Procedures	No BC Act listed threatened species nor ecological community (PEC/TEC) will be taken/significantly impacted by the Project. Therefore, no DBCA/EPA referral/application to take is required Liaison with DBCA regarding the local population of Priority 1 flora Jacksonia lanicarpa has occurred and will continue over LoProject. Should further Priority flora be located during on-going survey, DBCA will be provided the information. Native Vegetation Clearing Permit (NVCP) CPS 9383 has conditions relating to the taking of J. lanicarpa; and clearing restrictions to protect Malleefowl potential nesting sites (Appendix C1)
Environmental Protection Act 1986 (EP Act), Part IV	Biodiversity/ Landforms/Soils Water Resources	Not applicable; proposal does not warrant referral to the EPA for assessment as no referral criteria triggered	The Project does not require referral to the EPA as there is no significant impacts to EP Act factors Aureenne maintains EMS which guides potential impacts to the environment to avoid, 111tilizat, mitigate and management
EP Act – Part V	Biodiversity/ Water Resources/Env. Discharges	A Works Approval will regulate the following activities/infrastructure construction /operation/monitoring/reporting contained in this MPMCP: • Bottle Creek Processing Plant • IWL (with TSF) • Leaching, smelting and refining of gold & silver • Domestic & putrescible waste facility • WWTP & irrigation sprayfield All other proposed activities and EP Act Schedule 1 categories were reviewed but other items do not meet thresholds that require licensing (i.e. tyre storage, dewatering of pit lakes for dust suppression/process water, bulk chemical storage, etc)	The Department of Water & Environmental Regulation (DWER) regulates activities that are listed under Schedule 1 – Prescribed Premises; the WWTP and sprayfield are subject to Works Approval W6574-2021-1. Works Approval (W6640/2022/1) has recently been granted for the following works: • Category 64 Class II or III putrescible landfill site • Cat. 5 Processing (Processing Plant and IWL/TSF) • Cat. 7 Vat leaching Therefore all these activities (including design, construction, time limited operation, full operation and monitoring/recording/reporting) will be assessed, licensed and regulated by DWER
EP Act – Part V Environmental Protection (Clearing of Native Vegetation) Regulations 2004	Biodiversity/ Vegetation	The Project is not within a mapped ESA nor Schedule 1 area (Department of Water & Environmental Regulation (DWER) 2021); under Regulations 5, Item 20 of the Clearing Regulations, clearing of up to 10 ha within a financial year per tenement is possible if consistent with an approved Mining Proposal A strategic clearing permit for the Project has been applied for (CPS 9383) across the majority of Project tenements	DWER and DMIRS (under delegated authority) regulate native vegetation clearing with WA. DMIRS has provided guidance to Aureenne as regards to the utilization of Regulations 5, Item 20 of the Clearing Regulations for early works and Aureenne has undertaken due diligence to ensure that its proposed clearing activities meet the purpose & intent of this exemption and that no conservation significant species nor communities will be impacted by any exempt clearing, and that the clearing is not within a mapped ESA. Interim (early works) utilized the clearing exemption. CPS9383-3 (Appendix C1)
Environmental Protection (Rural Landfill) Regulations 2002	Ecosystem Land and Soils Water Resources Rehabilitation & Mine Closure	The putrescible waste (as defined in the Landfill Waste Classification and Waste Definitions 1996) landfill facility will be operated and developed in accordance with the Rural Landfill Regulations and industry best practice. A Works Approval will regulate the Bottle Creek waste facility for domestic & putrescible waste	DWER regulates activities that are listed under Schedule 1 – Prescribed Premises which includes facilities that accept waste for burial. The Waste Facility will be regulated by DWER under Works Approval conditions of W6640/2022/1
Rights in Water & Irrigation Act 1914 (RIWI Act)	Water Resources	A licence to take water has been granted under Section 5C of the RIWI Act. GWL204119(1) provides an annual water entitlement of 250,000kL and authorises the taking of water at several locations for dewatering for mining and dust suppression and mining camp purposes Additionally, CAW 26D licence 204120(1) to develop multiple additional bores will be used to source potable water	DWER regulates the taking of groundwater and the development of well/bore construction Aureenne has a license appropriate for water requirements (GWL204119(1) & CAW 204120(1)) with annual license reporting commitments to DWER (Water Online). Further reviews of the water requirements as the Project develops its bore field, will require a licence amendment, regulated by DWER
Mining Act 1978	Biodiversity Water resources Mine closure	Mining Proposal to detail disturbance and operations Reporting requirements are imposed as tenement conditions	DMIRS regulates exploration and mining activities relevant to the is Project. Aureenne will comply with all commitments made in this Mining Proposal.
Mining Rehabilitation Fund Act 2012	Rehabilitation & Mine Closure	Disturbance for the mining area will be reported (and levies paid) on commencement of compulsory reporting. Disturbance and contributions to the MRF will continue until relinquishment	DMIRS administers the MRF to which Aureenne contributes financially according to disturbance & submits annual reports
Aboriginal Heritage Act 1972	Aboriginal Heritage	No Native Title exists over the Project area One desktop and two field-based surveys have been completed over the Project area No sites were identified, and no further approvals or permits are required	The Department of Planning, Lands and Heritage (DPLH) administer Aboriginal Heritage in WA. As no Native Title currently exists over the Project area, no heritage agreement is required. No sites have been identified within the Project area.
Conservation & Land Management Act 1984	Biodiversity	Not applicable; Project/Village is not located within or adjacent to any lands managed for the purpose of conservation (including reserves, parks and UCL)	DBCA manage conservation estate on behalf of the Conservation & Parks Commission WA. The MIG Project area does not occur on, within, or adjacent to any conservation area

Relevant legislation	Environmental factor regulated	Relevant approval/requirement	Regulating authority; and how managed
Dangerous Goods Safety Act 2004 and supporting regulations	Water Resources Land and Soils	A dangerous goods magazine will be located on M 29/150. Dangerous goods license is required for storage and transport of Dangerous Goods	DMIRS administers seven pieces of dangerous goods safety legislation that relate to the manufacture, storage, possession handling, transport, and use of dangerous goods (both non-explosives and explosives). Aurenne will engage a suitably qualified & licensed Dangerous Good transport company & will seek application for DG licence for storage in due course
OTHER STATUTORY REQUIREMENTS			
Mines Safety & Inspection Act 1994 Mining Safety & Inspection Regulations 1995	N/A	A Project Management Plan (PMP) will be submitted to DMIRS in accordance with this Act and Regulations All operations will occur in accordance with the Act All activities in accordance with tenement conditions	DMIRS is the regulating agency for mine safety and Aurenne is responsible for ensuring the health and safety of its employees and contractors mobilising to site Aurenne will operate according to the registered PMP
Local Government Act 1995	Planning & Development	Building requirements mandated by Shire of Menzies under the Building Code of Australia requirements; no DA required but as cons drawings to meet engineering and Shire standards will be submitted	The Shire of Menzies regulates building and planning activities relevant to the Project. Building permits for the WWTP and the temporary camp upgrade have been submitted & assessed. The Shire also provides certification to occupy buildings. The WWTP health requirements (approvals) are also coordinated through the Shire with assessment by the Department of Health Aurenne liaises regularly with Shire representatives in regards to local & State planning requirements. All approvals required by the Shire are in place
Department of Health (Public Health Act 2005); Health Act 1911	NA	In accordance with the Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974, health requirements for WWTP, potable water standards and monitoring requirements	The Shire of Menzies coordinates the WWTP application with the Department of Health Dept of Health regulates the treatment of wastewater and drinking water. Aurenne has received Dept of Health approval for its WWTP & Irrigation sprayfield (Appendix C4)
Environmental Protection (Noise) Regulations 1997 (Noise Regulations)	Noise	The Noise Regulations are designed to address environmental noise from one premises to another; however, the Noise Regulations do not apply to noise from aircraft The proposed aerodrome is within a mine site (and within Perrinvale pastoral lease) so in this instance the noise is generated within the same premises as it is received. Noise within a premises is generally dealt with as an occupational noise issue	Australian Standard AS 2021 Acoustics—Aircraft noise intrusion—Building siting and construction, provides guidance on: indoor design maximum aircraft noise sound levels for sleeping areas estimated maximum sound levels at site based on location relative to the runway for a range of common aircraft types; and building noise attenuation requirements. Once the aerodrome is to sufficient standard to engage a service provider, Aurenne will have an option for FIFO workers. Flights will be regular but infrequent; expected twice weekly. There is ~1 km distance between the Village and the aerodrome and given the low frequency and short noise duration of the flight schedule; and the modern double-walled and insulated Accommodation units, there is sufficient noise buffering capacity in the Village accommodation units
Civil Aviation Act 1988 (CA Act) & Regulations CA Act Safety Regulations	NA	Existing pastoral airstrip upgrade to Aerodrome with facilities The (Commonwealth) Civil Aviation Safety Authority (CASA) governs aviation safety and compliance. Part 139 Manual of Standards (MOS) sets out the standards and operating procedures for certified, registered aerodromes used in air transport operations. New basic operating rules for all pilots commence on 2 December 2021	Under the Part 135 Legislation, it is left to Aircraft Operator Company, the Pilot in Command of the aircraft and indirectly their insurers to decide where they can and cannot regularly operate based on pre-identification of hazards and treatment of risks. The Aircraft Operator Company requires technical inspection survey data and details of the facility before commencement of operations. Aurenne has received preliminary advice on the requirements to achieve CASA certification and will be working towards developing this infrastructure and approval in 2022. The Aerodrome will not be operational until it meets the requirements of the Aircraft Operator Company, the Pilot in Command
Bush Fire Act 1954	NA	The Department of Fire and Emergency Services (DFES). DFES administers the following Acts: Fire & Emergency Services Act 1988 Fire Brigades Act 1942 Bush Fires Act 1954 Emergency Services Levy Act 2002 Local governments also have responsibilities under the Bush Fires Act in relation to preventing and responding to bushfires through planning and building mechanisms	The Shire of Menzies and Aurenne's insurers require a standard of building and firebreaks to ensure the risk of wildfire is mitigated in building design and construction Aurenne is required to meet these standards and is regulated by the Shire of Menzies, and in addition meets the requirements of insurances for minimum standards of building materials to reduce fire risk

7 STAKEHOLDER ENGAGEMENT

The principal stakeholders identified for the Project are the Shire of Menzies and the pastoral lease holders within which the Project is located (Perinvale and Riverina Stations; both leases held by Zenith Australia Group); adjacent pastoralist (Waling Rock Station); and neighbouring prospecting/exploration and mining leases holders (primarily Aurum Gold, Mt Ida Pty Ltd/Red Dirt Metals, and neighbour Juno Minerals).

Aurenne Mining made initial contact with identified stakeholders to introduce the business and the Project in Q1 2021. Following this, face-to-face meetings have taken place with both parties. Aurenne is committed to open and collaborative engagement according to the **Project Stakeholder Liaison Strategy Procedure E-PR-015** with all stakeholders and maintain a **Project Stakeholder Register E-REG-003** to track all interactions. Data sharing between Aurenne and Zenith has allowed information on bores and synergies for the development of the airstrip to aerodrome standard; use of pastoral bores and access to water.

There is no Native Title that exists over the Project area but Aurenne (ALT Resources) has previously engaged with Traditional Owners from the Leonora area who have connection to country in which the Project sits. One Aboriginal heritage desktop assessment (O'Connor 2019) and two on-country surveys have occurred (Rayner 2019, 2021). No sites have been recorded within the Project area.

Aurenne has letters of consent from both parties (Ora Banda Mining has recently been acquired by Red Dirt Minerals) regarding accessing the airstrip and agreement that Aurenne will upgrade the airstrip to aerodrome standard. In addition, written notification to all required parties has been issued in regard to the proposed airstrip upgrade to contemporary Aerodrome standard.

7.1 Stakeholders

Key identified stakeholders are summarised in **Table 42**. Identified stakeholder are listed in the **Project Stakeholder Liaison Strategy Procedure E-PR-015** and the ongoing liaison records and communications are within the **MIG Project Stakeholder Register E-REG-003**.

Table 42: Key identified stakeholders

Sector	Department	Identified interest
State Government Agencies	DMIRS Mine Safety Inspectorate	• Administers (Mining Act) and Regulations • Tenement conditions • Native Vegetation Clearing Permit (NVCP) • Mining proposals/MCPs • Programs of Work (PoW) • Mining Rehabilitation Fund (MRF) • Rehabilitation standards • Safety in resource sector
	DWER	• Administers EP Act • Provision of licences to take and abstract water • Groundwater quality and quantity • Administers Part V (EP Act), Industry Regulation and Licensing, <i>Contaminated Sites Act 2003</i>
	DPLH	• Indigenous and native title requirements • Heritage, cultural, ethnographic and archaeological sites
	Department of Fire & Emergency Services (DFES)	Emergency services Fire safety training and fire breaks
	DoH	Environmental health (WWTP, potable water); building and planning compliance
	DBCA	• Administers Biodiversity Conservation Act 2016 and regulations • Conservation listed flora, fauna, plant communities, licensing
	Pastoral Lands Board (PLB)	Activities on pastoral leases (Riverina, Perrinvale)
Local Government authorities (LGA)	Shire of Menzies	• Building & planning permissions • Local roads • Employment opportunities for community
Other	Pastoral lease owners	• Zenith Australia Group own both Perrinvale & Riverina • Airstrip, bores, access & mine closure • Liaison with neighboring pastoral lease holder (K. Mader, Waling Rock Station)
	Mining & exploration individuals & companies	• Ora Banda (Mt Ida Gold/Red Dirt Metals) are neighbors and co-lease tenements relating to the airstrip • Liaison with local mining companies in regard to the Project
	Civil Aviation Safety Authority, Airservices Australia & LGA	• Proposed upgrade of Perrinvale airstrip to contemporary Aerodrome standard • Air safety, commercial interest, etc • Written advice provided to all parties
Traditional Owners	NA	• No Native Title over Project area • Heritage reviews and on country surveys undertaken • Shire of Leonora based individuals have expressed an interest in the area and Aureenne will continue to liaise and provide Project updates in conjunction with Zenith Australia Group who liaises closely with local Traditional Owners

7.2 Principles of Stakeholder Engagement

Aureenne's stakeholder engagement process and strategy (**Project Stakeholder Liaison Strategy Procedure E-PR-015**), follow the five principles from the Australian and New

Zealand Minerals and Energy Council and the Minerals Council of Australia, Strategic Framework for Mine Closure (ANZMEC/MCA, 2000):

Principle 1: Identification of stakeholders and interested parties

Key stakeholders that have been identified for the Project include:

- Internal
 - Company Directors
 - Superintendent Geologist (current)/Mine Manager (future)
 - Relevant consultants/contractors
 - Operational staff.
- External
 - Contractors, consultants and site visitors
 - State and Local Government authorities (in particular DMIRS/DWER)
 - Pastoral lease holders (Riverina and Perrinvale (Zenith Australia Group))
 - Shire of Menzies and the local community
 - Neighbouring mining companies and tenement holders (K. Mader/Walling Rock; Red Dirt Minerals; Jupiter, etc)
 - Local Aboriginal community (Leonora based)
 - Pastoral Lands Board.

Due to the remote location of the Project and its lack of adjacent sensitive receptors, some of the usual key stakeholders are not relevant to this Project, such as Main Roads, Department of Biodiversity, Conservation and Attractions, Native Title groups and various State infrastructure providers.

Principle 2: Effective engagement is an inclusive process which encompasses all parties and should occur throughout the life of the mine.

Aurenne has an open and upfront engagement style and has demonstrated this through early engagement of external stakeholders in discussing and resolving issues. The following objectives have been incorporated:

- Identification of relevant stakeholders
- Post-mining land use to be agreed with stakeholders
- Actively engage stakeholders on a regular basis
- Prioritise outcomes of community and stakeholder consultation in relation to closure are taken into consideration in development and reviews of the MCP
- Redundant surface infrastructure is to be salvaged and removed on completion of mining and processing operations unless an alternative agreement is reached with relevant stakeholders.

Principle 3: A targeted communication strategy should reflect the needs of the stakeholder groups and interested parties.

The key objectives of the communication strategy for the Project include:

- Inform local stakeholders of the closure planning process and allow opportunities for stakeholder input into planning decisions
- Inform local stakeholders of the proposed timeframe for closure, including key closure planning milestones (such as the preparation of a final decommissioning plan) and decision points (such as the designation of end land uses for rehabilitated sites)
- Identify any closure issues not covered in this or subsequent MCPs.

Consultation with stakeholders will continue on a regular basis and consultation regarding closure of the Project will be undertaken with relevant stakeholders during the life of the Project and the development of the MCP and will continue through to decommissioning and closure.

Principle 4: Adequate resources should be allocated to ensure the effectiveness of the engagement process.

The Exploration and (future) Mine Manager and COO are the key roles involved with the engagement process with both internal and external stakeholders, regularly visiting the site, and maintain contact with key stakeholders.

Principle 5: Wherever practical, work with communities to manage the potential impacts of mine closure.

Aurenne recognise that mine closure has a potential impact on the local community and will work with the community to navigate through closure issues. Stakeholders are kept informed of the Project status, and any proposed major changes to the Project and closure plan will be communicated.

7.3 Stakeholder Engagement Register

The Stakeholder Engagement Register is provided as **Appendix J1**.

7.4 Ongoing Community and Stakeholder Engagement

Aurenne is committed to ongoing and meaningful stakeholder engagement. Given the expected timeframe of operating in the Mt Ida mining area (~10 years) and the ongoing opportunities to increase this timeframe, liaison will continue with our identified stakeholders an

7.5 Aboriginal Heritage

There is no active Native Title claim over the Project area. The Darlot Claim (WC 2018/005) was filed in April 2018 but dismissed by the National Native Title Tribunal for the fifth time on 21 October 2020. The database shows the closest registered site is ~17 km to NNW and is an artefact scatter (ID 3093 (Mt Alexander Stone Arrangement); in the wider region sites are associated with the salt lakes Lakes Raeside and Ballard) (DPLH 2021).

An Aboriginal heritage desktop assessment conducted by consulting anthropologist Rory O'Connor (2019) noted that “no registered Aboriginal sites or other heritage places within those parts of the five tenements listed which make up this Prospect. One previous report is listed in the DPLH database as relevant to E29/1008, M29/151, L29/137, E29/1007 and M29/150, namely the March 2009 Assessment of Aboriginal Heritage at Mt Forrest Prospect, Bulga Downs Project, Southeast of Sandstone. All sectors ...which make up the Bottle Creek Prospect were included in their entirety in the research upon which the assessment is based. That research comprised a desktop study followed by fieldwork to re-record known sites and inspect the Mt Forrest tenements. That fieldwork included a consultation with the relevant native title claimants. As a result of that research, the assessment states that based on these findings, and on the re-recording of registered sites, it is possible to state with confidence that there was little Aboriginal activity in the land constituting the Mt Forrest Prospect. Few archaeological sites are likely to occur in the tenements and fewer ethnographic sites would be expected.”

Aurenne does not have a heritage agreement or pre-existing arrangement with any Aboriginal party that prescribes processes for compliance with the *Aboriginal Heritage Act 1972*. However, the *Aboriginal Heritage Due Diligence Guidelines* (Department of Planning, Lands & Heritage and Premier and Cabinet 2013) were applied to the proposed Project and a

consultant was engaged to consult with local elders and engage with them to undertake surveys of the project areas.

Two recent Aboriginal heritage surveys have been undertaken for the Project by A J Rayner Consulting in 2021 and further survey in 2024 for Single Fin (**Appendix J2**). No places of cultural interests or ethnographic and archaeological sites of importance and significance to the Aboriginal people were identified during the survey; areas which may have higher perspectivity for artefacts or cultural significance include water sources, elevated ranges containing shelters, pronounced landforms features. These prospective places are not within the proposed Project disturbance areas and are limited locally.

Aurenne is aware of its obligations under the *Aboriginal Heritage Act 1972* regarding future potential Native Title claims and will continue to manage its responsibilities accordingly.

7.6 European Heritage

The Project is within the locality of Ularring, a small Western Australian rural location within the local government area of Menzies, located approximately 475 km from Perth covering an area of 26,564 km². Ularring has a recorded population of 4 residents (Australia's Guide 2021).

The Mt Ida area has an historic value from a social perspective for the goldrush history still evident in the local area with gravesites, mining shafts and remnants of past goldrush towns. Less is known of the Aboriginal land-use but evidence in artefact scatters in the local area also remains. Given the lack of permanent water or springs, the area may have been less frequently visited.

The PMST results recorded no World or National Heritage places (DAWE 2021).

7.6.1 Stakeholder & Heritage Implications for risk assessment

The heritage values from an Aboriginal and European perspective, are limited due to the lack of Native Title and identified sites. However, Aurenne understands its obligations under the *Aboriginal Heritage Act* and is developing a procedure of 'stop work' should any site be uncovered.

Given the desktop report and two subsequent field-based surveys have not identified any significant values associated with the site, the development of the Project is considered low risk and Aurenne will continue to engage with local Traditional Owners as part of our **Mt Ida Gold Project Stakeholder Liaison Strategy Procedure E-PR-015**.

8 BIOPHYSICAL ENVIRONMENT

The Biophysical Environment section has been written for the entire disturbance envelope to allow operational flexibility across the landscape; therefore, minimal additional information is required for Stage 2.

Additional information has been provided for Materials Characterisation in **Section 8.3.1** and Flora and Vegetation in **Section 10.4**.

8.1 Biogeography

The Project Area lies within the Eastern Goldfields subregion of the Eremaean Province of Western Australia, as defined by the Interim Biogeographical Regionalisation of Australia classification system (Thackway and Cresswell 1995). The subregion is characterised by an Archaean basement of parallel greenstone belts and Proterozoic basic granulite, bearing structural lithological shears and rich mineralised deposits. The underlying bedrock comprises highly weathered gneiss, granite and basalt units, with ridges of greenstone and granite intermittent within gently undulating plains of lateritic gravel and poorly structured calcareous loam (Cowan 2001).

The remnants of an ancient major drainage systems exist throughout the region, evident through the presence of a series of saline playa lake systems. The region exhibits vast sandplains with vegetation dominated by mallee, acacia thicket and shrub heath. Valleys and ranges display diverse eucalypt woodlands, often hosting a range of endemic species. Salt lake systems are dominated by eucalypt woodlands and an understorey of dwarf samphire shrubland (Cowan 2001).

The Bottle Creek Project area sits within broad mulga plains and does not include significant geological surface features such as banded ironstone ridges, breakaways, or granitic extrusions. It contains no wetlands within or adjacent; the most significant surface hydrological feature in the vicinity is Bottle Creek, which does not intersect the Bottle Creek project area. There are no neighbouring towns or other sensitive human receivers. Figure 19 shows potential sensitive receptors in the local and regional vicinity (within 10 and 20 km radii).

8.2 Climate

The Project is situated within the arid to semi-arid Goldfields region, experiencing hot, dry summers and cool, wet winters (Cowan 2001). Menzies weather station (012052) is the closest Bureau of Meteorology (BOM) station to the Project area but has not recorded data since April 2019. Therefore, Kalgoorlie weather station (012038) data were used for this summary.

The area experiences average maximum temperatures between 33.7 °C and 16.8°C in January, and average minimum temperatures between 18.3°C and 5.1°C in July (**Figure 34**). The area experiences approximately 266 mm of rainfall per year, and an average of 39 days of rain per year. Rainfall is highest in February at 31 mm and lowest in September at 13 mm (2021). Mean rainfall and the average rainfall days within each month are shown in **Figure 35**. Periods of high rainfall in summer generally falls over few days, following cyclones in the north of the state or summer thunderstorms.

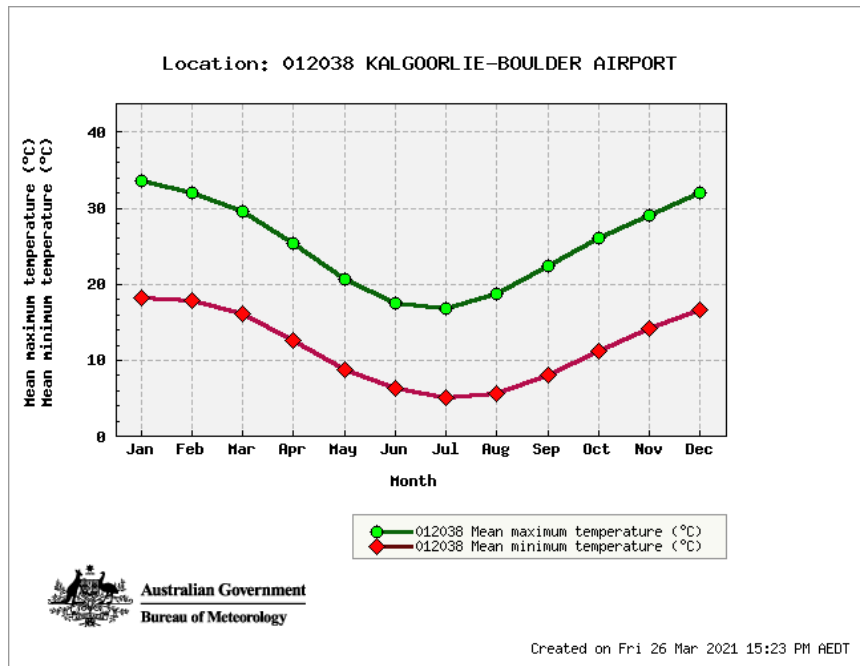


Figure 34: Mean Monthly Maximum and Minimum Temperatures (BOM 2021)

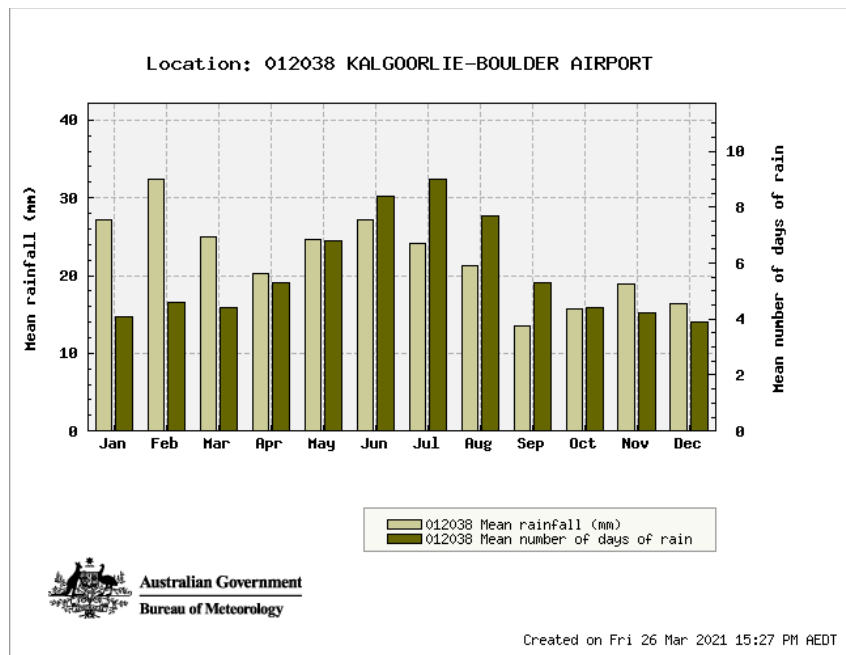


Figure 35: Mean Monthly Rainfall (1939-2021) (BOM 2021)

Annual evaporation rates of 2400 – 2800 mm/year (**Figure 36**) exceed rainfall, with surface water bodies remaining only for short periods of time after rainfall. Rain that may fall and pond on mine landforms usually evaporates quickly. Similarly, water within the pits is subject to high evaporation rates and the formation of pit lakes is usually the result of groundwater and surface water inflows rather than rainfall.

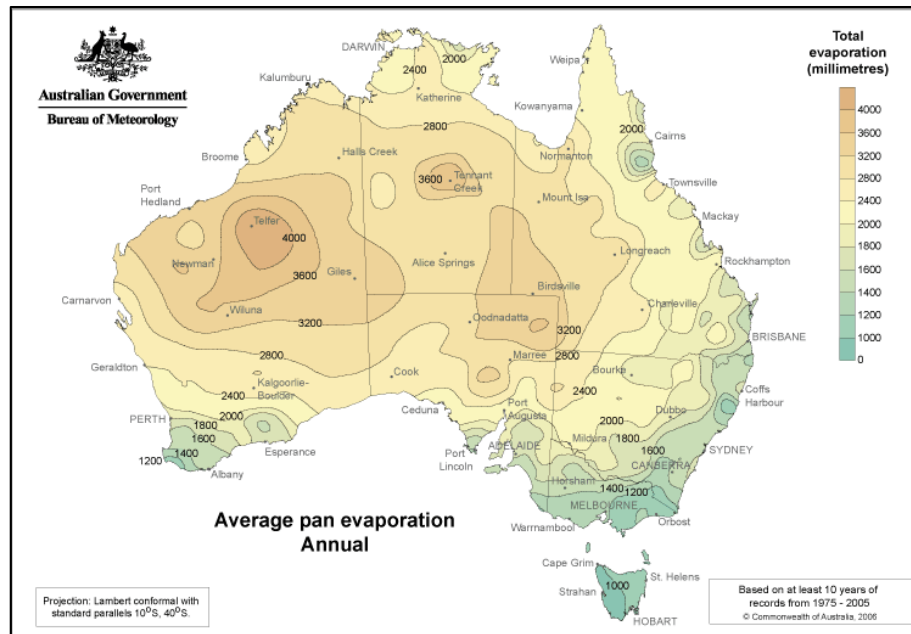


Figure 36: Annual Average Evaporation (BOM 2021)

An Annual Exceedance Probability (AEP) is defined as the chance that an extreme rainfall event will occur in any given year. Based on AEP calculations by the (BOM), there is a 1 in 100 (1%) chance that the Kalgoorlie area will receive 52 mm of rain for a 1-hour period, 159 mm for a 24-hour period and 206 mm for a 72-hour period based on AEP calculations (BOM 2016).

Across the average year, morning (09:00) humidity levels are highest in January with an average of 74%, dropping to an average of 43% in December. Afternoon humidity levels (15:00) are highest in June at an average of 48%, with the months of December and January experiencing the lowest afternoon humidity levels at 24% (BOM 2021). Average daily evaporation rates in the region range between 12.5 mm in January and 2.6 mm in June (BOM 2021).

Wind conditions are predominantly from the easterly, north-easterly, and south-easterly winds, (morning) and between 10 and 30 km/hr (**Figure 37**). Average afternoon wind direction is variable, and is most predominant as westerlies, easterlies, and south-easterlies. Stronger winds (30-40 km/hr) are commonly associated with westerlies in the afternoons. Maximum wind gusts are generally seen in January, on average (BOM 2021b).

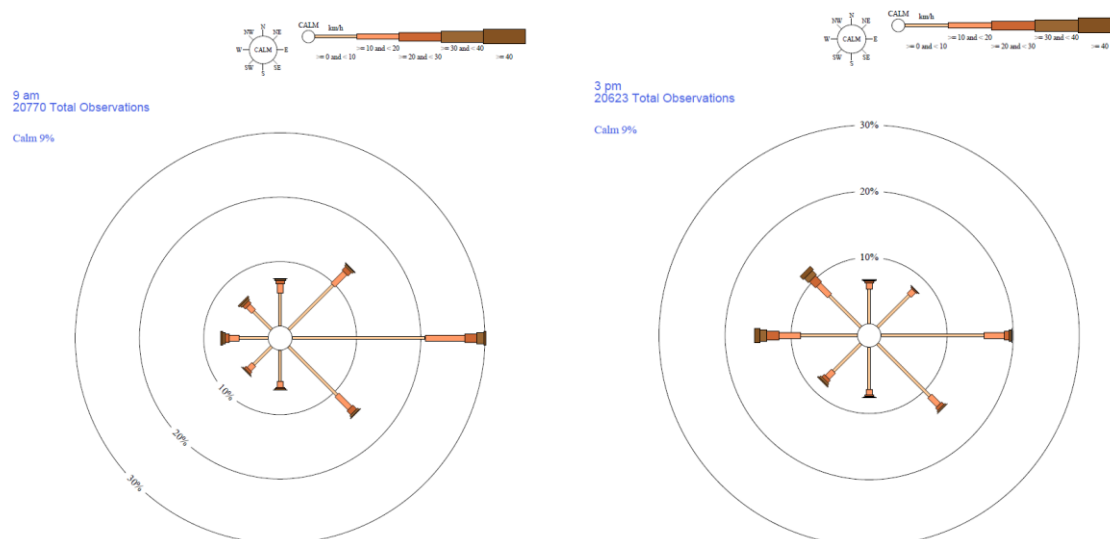


Figure 37: Wind roses 9 am and 3 pm (Leonora) (BoM 2021b)

8.2.1 Implications for risk assessment

Mine roads and other dust generating activities (clearing, bulk earthworks) will be regularly sprayed to reduce the dust generation, so the most likely dust sources will be from open pit blasting, loading and dumping operations as well as the Process Plant primary and secondary crushing operations. Water sprays will be equipped on the conveyors and blasting is an infrequent rather than constant emission. There are no sensitive receptors (**Figure 38**) in the dust generating activity areas, therefore dust is unlikely to be a significant issue. In addition, dust will be managed according to **E-PRO-003 Dust management Procedure**.

The area is characterised by two landforms: alluvial flats along the drainage courses with shallow (~1 m red, earthy loam to sand over red-brown hardpan); and low rises between drainage lines with shallow red earths overlying red-brown hardpan; rises with a stony surface mantle (Landloch 2021). There is sufficient freeboard in the existing pit lakes (Boags & VB) to prevent overtopping, particularly as the water within is only at 427 m RL and will be exhausted from the dewatering required by plant processing requirements and dust control. The annual evaporation rate far exceeds precipitation in every month of the year.

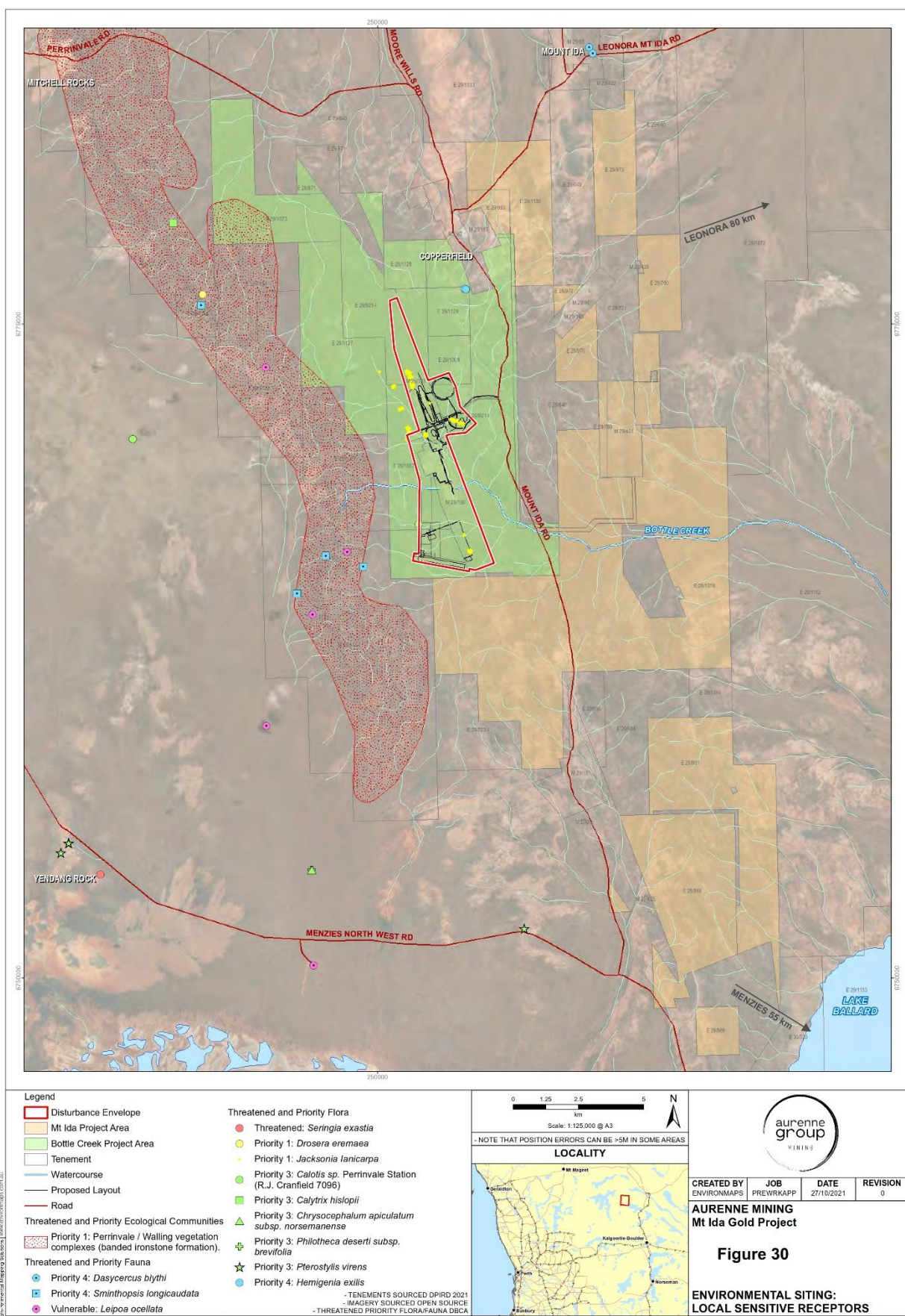


Figure 38: Sensitive Receptors in the Vicinity of Bottle Creek

8.3 Geology

The Project lies almost entirely within the Kalgoorlie Terrane of the Yilgarn Craton, encompassing Archean mafic-ultramafic intrusive and volcanic rocks with minor interflow sediments that make up the Mt Ida-Ullarring Greenstone Belt. The northern half of the belt forms a gently south plunging anticline (Kurrajong Anticline) with the Copperfield Monzogranite at its core. The belt is bounded to the east by the Ballard/Zulieka shear and the Mt Ida Shear to the west. The Mt Ida Shear is a major structural break and forms the boundary between the Kalgoorlie Terrane and the Southern Cross Terrane to the west.

The Project is located on the northern extremity of the Mt Ida-Ullarring Greenstone belt extending from Davyhurst to Mt Alexander. The Bottle Creek Emu Formation comprises carbonaceous black shale, graphitic chert and BIF and is an interflow sedimentary unit between mafic flows. Gold and silver mineralisation is found close to the contact of two sequences and coincides with a sheared, up to 20 m thick, Emu Formation which on the eastern contact is a felsic volcanic unit. The western contact appears as weathered quartz-biotite schists and mafic volcanics (Legge et al 1990).

At the surface, the sheared Emu Formation is a gossanous ironstone, oxidised and lateritised, to a depth of up to 100m below surface. Below the base of weathering and oxidation, a massive pyrite-pyrrhotite zone, up to 6m thick, occurs within the sheared black shale in a variable gangue of quartz, mica and schist.

The area is characterized by two landforms: alluvial flats along the drainage courses with shallow (1 m red, earthy loam to sand over red-brown hardpan); and low rises between drainage lines with shallow red earths overlying red-brown hardpan; rises with a stony surface mantle (LandLoch 2021).

8.3.1 Materials Characterisation

Characterisation of soil sand waste rock was assessed by subject matter experts (Landloch 2021; Pendragon 2021, 2023 and 2024 (**Appendices F & D**) and reports prepared, taking due cognisance of the *Draft Guideline - Materials Characterisation - Baseline Data Requirements for Mining Proposals* (DMIRS 2016). The primary objectives were to ensure that the quality of land, soils, sediment and surface and groundwater are maintained to protect environmental values, existing and potential future uses, and to facilitate decommissioning and closure in an ecologically sustainable manner.

The materials characterisation (Pendragon 2024; **Appendix D**) assessment pertained to the characterisation of waste rock from open pit mining of VB North, Emu and Southwark Open Pits. Representative samples were obtained from completely oxidised, transitional and fresh rock and assessment following field sampling included:

- a review of geological, hydrological and hydrogeological data, information and reports
- facilitate sampling and analytical laboratory testing to characterise waste materials in terms of their potential to cause acid mine and metalliferous drainage excluding Soils (characterisation by Landloch (2021; **Appendix F**) and Tailings (characterisation by Graeme Campbell and Associates, 2021; **Appendix E**)
- characterisation of samples of waste rock to be mined for each lithology, weathering and alteration type; the number of samples will be determined by their spatial representativeness of the materials both horizontally and vertically

- geochemical laboratory analytical work included: pH, Electrical Conductivity, Total Sulfur (as %S), Net Acid Generation (NAG), Acid Neutralising Capacity (ANC), Total Metals and Leachable Metals (using the Australian Standard Leaching Procedure, ASLP, with de-ionised water), Cation Exchange Capacity (CEC), Exchangeable Cations, Exchangeable Sodium Percentage (ESP) and Emerson Aggregate Test (EAT)
- provide recommendations on the assessment and management of wastes.

Waste characterisation was undertaken by Pendragon (2024) with Figure 3.1 of the report showing where representative samples were obtained from, including completely oxidised, transitional and fresh rock. Twenty samples from Bottle Creek were taken along the linear deposit that include VB North, Emu and Southwark Open Pits. Samples were also taken for the wider Project for future and comparative sampling and analysis. 37 samples were from the oxide zone (85% of the waste), 4 from the transitional (9% of the waste), 6 from fresh rock (4% of the waste), 7 samples from the ore body and 2 samples of ore mixed with waste rock.

The limited number of samples can be justified by the outcomes of pre-screening coupled with:

- The lithologies along Bottle Creek remain the same along the 6 km strike with mafic volcanics on the west and felsic volcanics to the east. The orebody comprises sediments that are mineralised along the felsic contact.
- Mt Ida comprises Tim's Find, a quartz vein type (talc schist) ore body surrounded by felsic porphyry and Shepherds Bush which contains paleochannel material at surface and ferruginous clays below; all heavily oxidised.
- The waste and ore bodies display uniform, consistent and homogenous lithologies within the disturbance footprints.

8.3.1.1 Soils Characterisation

- Materials characterisation for soils undertaken by Landloch (2021; Appendix F) to assess and categorise the materials that will require management. The following summary is below:
- Surface soils have a dominant sandy loam to clay loam texture with a weak to moderate structure
- Topsoils, as well as the subsoils for the Shallow Loams and Deep Earthy Loams, are classed as non-saline ($EC_{1:5} < 0.8dS/m$) but sodic to variably sodic and are not likely to adversely affect vegetation growth or establishment
- The C horizon observed at depth in the Deep Loamy Earths and Shallow Loams is a rigid cemented layer between 0.15m and 1.20m deep and where the layer was not observed it is anticipated that the layer exists at deeper depths across the survey area. Disturbance (excavation and/or subsequent placement during rehabilitation) are therefore unlikely to increase the already high salinities of ground water
- All subsoils of the Calcareous Loamy Earths are classed as having elevated salinity ($> 1dS/m$), with $EC_{s1:5}$ ranging from 1.1dS/m to 3.5dS/m generally increasing with depth

- The distribution of these soils across the Bottle Creek (including the airstrip) and Mt Ida survey areas and the Haul Road Corridor is Deep Loamy Earths (72.5%; generally located on low gradient areas or areas of sediment deposition), Shallow Loams (15.2%; generally on the low rises or low hills and/or the mid-upper slope areas), Calcareous Loamy Earths (11.8%; generally located on the upper slopes and areas adjacent to the Rocky Ridges) and Rocky Ridges (0.5%).
- Whilst soils are non-water repellent throughout the profile, infiltration and/or vertical migration of seepage are likely to be inhibited by the relative vertical impermeability of the soil/sub-soil profile.
- The pH1:5 (water) for soils supporting mid-dense foliar cover levels (30% to 90%) and common rooting abundance (>10 to 25 roots present) varies between 5.3 and 8.0 (strongly acid to slightly alkaline). pH generally increases with depth. Since the pH levels are well above 4.0 and at a level of between 350mAHD and 420mAHD, the presence of Acid Sulfate Soils can be ruled out

8.3.1.2 Waste Rock Geochemical Characterisation

The waste rock characterisation assessment aimed to ascertain if the oxidised material is benign (as inferred from pre-screening: absence of existing acidity in existing landforms comprising open pits, WRLs and TSF coupled with observations made during geological sampling and analysis); and to identify any problematic material in the transitional zone and underlying fresh bedrock that may require analysis and assessment to determine management requirements during operations and post-closure.

The assessment found that the lithologies along Bottle Creek remain the same along the 6 km strike with mafic volcanics on the west and felsic volcanics to the east. The orebody comprises sediments that are mineralised along the felsic contact.

The waste and ore bodies display uniform, consistent and homogenous lithologies within the disturbance footprints.

Waste characterisation was undertaken by Pendragon (2024) with Figure 3.1 of the report showing where representative samples were obtained from, including completely oxidised, transitional and fresh rock. One hundred and thirty one samples from Bottle Creek were taken along the linear deposit that include VB North, Emu Southwark, Cascade, VB, Boags and Single Fin. 37 samples were from the oxide zone (85% of the waste), 4 from the transitional (9% of the waste), 6 from fresh rock (4% of the waste), 7 samples from the ore body and 2 samples of ore mixed with waste rock.

- An additional 40 samples were obtained from the proposed Cascade open pit during October 2023. The relatively small number of samples can be justified by the outcomes of pre-screening coupled with:
 - The lithologies along Bottle Creek remain the same along the 6 km strike with mafic volcanics on the west and felsic volcanics to the east. The orebody comprises sediments that are mineralised along the felsic contact.
 - Mt Ida comprises Tim's Find, a quartz vein type (talc schist) ore body surrounded by felsic porphyry and Shepherds Bush which contains paleochannel material at surface and ferruginous clays below; all heavily oxidised.
 - The waste and ore bodies display uniform, consistent and homogenous lithologies within the disturbance footprints.

- A further 22 samples were obtained from the proposed Single Fin Open pit October 2024. The relatively small number of samples can be justified, in addition to the above, by the outcomes of pre-screening a detailed assessment of the elemental composition of materials obtained by X-ray Fluorescence (XRF) analysis.
- For the proposed VB North, VB and Boags open pits, 40 samples were obtained November 2024. The relatively small number of samples can be justified, taking due cognisance of the ore and waste body and the analytical results to date coupled with the outcomes of pre-screening including a detailed assessment of the elemental composition of materials obtained by X-ray Fluorescence (XRF) analysis.:
- 51.9 million m³ oxide waste materials, 84% of the waste stream, classified as predominantly NAF materials with average concentrations of 0.18%S and 7.3kgH₂SO₄/t ANC.
- 9.8 million m³ transitional waste materials, 16% of the waste stream, classified as predominantly UC (for the purposes of this assessment assumed to be PAF-LC), NAF and PAF materials with an average concentration of 0.65%S. The average ANC of 6.6 kgH₂SO₄/t is exceeded by an average NAPP of 19.6kgH₂SO₄/t
- The deeper transitional and fresh potentially acid forming materials will not be disturbed or mined under the current approvals and applications. In addition, the current processing plant has not been designed for high sulfur content ore.
- The waste rocks are predominantly low saline but sodic, potentially dispersive materials.

It should be noted that when the ESP is interpreted in conjunction with the Emerson Class, 66% of the samples are considered slaking with potential dispersion after mechanical work such as compaction with 24% of the samples having no dispersion with carbonate or gypsum present. Since these materials will not be used as construction materials, it is unlikely that they will pose a risk and due cognisance must be taken of the long-term stable behaviour of the existing WRLs.

The samples from classify predominantly as Emerson Classes 4, 5 and 6 with some samples as Classes 2 and 3 (Appendix A). The texture of these materials varies between light and medium clays compared to the clayey sands at Emu. Further investigations are required to assess the characteristics of these materials and particularly their suitability for use in the construction of containment cells.

Laboratory leachate testing indicated that waste materials have the potential to leach elevated concentrations of Al, As, Co, Pb, Cd, Cr, Ni, Se and Zn.

8.3.1.3 Analytical Assessment

Samples from the VB, Boags and Single Fin prospects were analysed by XRF for Total S. Results were collated and supplied to Pendragon.

XRF Analysis (Single Fin Exploration Program)

- Oxide materials: out of 831 samples only 1.4% (12 samples) exceeded the threshold of 0.3% Sulfur.
- Transitional materials: out of 118 samples, 29.7% (35 samples) exceeded the threshold.

- Fresh Materials: out of 129 samples, 65.1% (84 samples) exceeded the threshold.

Based on the above XRF assessment indicating that the shallow oxide materials up to 50m depth may be considered NAF due to their low sulfur concentration (less than 0.25%), taking due cognisance of the sulfur distribution in the waste materials and excluding the fresh materials which will not be mined, coupled with the knowledge gained from earlier assessments and availability of samples, 12 samples were obtained from oxide materials (9 samples from depths deeper than 58m) and 10 samples of the transitional materials (between 81m and 100m depth).

XRF Analysis (VB North, VB and Boags Exploration Program)

The statistics regarding % Sulfur for this data set (sample locations appear in Figure 3.1) includes:

- Oxide materials (on average between 50m and 60m thick):
 - n: 2,108
 - Minimum: 0.00%S
 - Maximum: 0.61%S
 - Average: 0.12%S (on average well below the threshold of 0.3% Sulfur).
 - StDev: 0.09
- Transitional materials (on average between 20m and 30m thick): n: 815
 - Minimum: 0.00%S
 - Maximum: 6.50%S
 - Average: 0.27%S (on average marginally below the threshold of 0.3% Sulfur)
 - StDev: 0.47

The above XRF assessment indicates that the shallow oxide materials up to 60m depth may be considered NAF due to their low sulphur concentration, taking due cognisance of the sulphur distribution in the waste materials and excluding the fresh materials which will not be mined, coupled with the knowledge gained from earlier assessments and availability of samples, 17 samples were obtained from oxide materials (8 samples from depths deeper than 60m) and 17 samples of the transitional materials (between 82m and 128m depth) and 6 samples of fresh materials deeper than 90m below surface (Pendragon 2024).

8.3.1.4 Acid Mine Drainage

pH characterises the chemical environment and is a measure of the acidity in the waste materials. The pH of the materials at Emu and Cascade varies between 4.4 and 9.3 averaging 7.4.

The majority (87%) of samples have a pH greater than 5.5 and may be regarded as alkaline. Only 13% (two fresh and two oxide) of the samples have a pH below 5.5. At Single Fin pH varies between 2.5 and 8.9 averaging 6.8 with only 4 samples having a pH below 5.5; hence materials across Bottle Creek have a dominant alkaline character

The pH of open pit and ground waters vary between 7.6 and 8.3; consequently, ground water sampling confirms a slightly to moderately alkaline pH environment.

The classification of the analytical data of waste materials employs primarily three methods, each refining the last:

- A worst-case Total Sulfur based Maximum Potential Acidity (MPA = $30.6 \times \%S$) method.
- An Acid Potential Ratio (APR) which is calculated by dividing the Acid Neutralising Capacity (ANC) of the sample by the Total Sulfur-derived MPA (excluding a reduction for sulfate-sulfur).
- A Net Acid Production Potential (NAPP) value, calculated by subtracting ANC from MPA (excluding a reduction for sulfate-sulfur).

In addition to the above NAG pH with a threshold of 4.5 is also considered (a NAG pH less than 4.5 is considered potentially acid forming whilst a pH above 4.5 is considered non-acid forming).

The NAPP classification categories are outlined in **Table 43** (Pendragon 2024)

Table 43: Net Acid Producing Potentials (NAPP) Classification Categories

AMD classification	NAPP value 9kgH ₂ SO ₄ /t)
Potentially acid forming (PAF)	>10
Uncertain (UC)	0 to 10
Non-acid forming (NAF)	-50 to 0
Acid consuming material (AC)	<-50

Based on this approach, the samples were classified as follows:

Emu and Cascade Deposits

- Total Sulphur concentrations vary between <0.01%S and 5.03%S. Only six samples have Total Sulphur concentrations equal or greater than 0.30%S: 4 samples from fresh and one each from oxide and transitional materials
- Acid Potential Ratios (APRs=ANC:MPA) vary between 0.1 and 68.3 averaging 16.8 with 48% of the samples having an APR <2 (4 samples from fresh, 7 from oxide and 5 from transitional and mixed transitional/oxide materials). This ratio is an alternative way of reporting laboratory data to ascertain initial AMD risk and provides an indication of the relative margin of safety (or factor of safety) with respect to the potential for net acid generation (INAP, 2009 cited in Pendragon (2024).

Generally speaking, and depending on the mineralogy, an APR of less than 1 indicates the material is likely to be acid forming (PAF) as it contains more acid generating than acid neutralising minerals. An APR ratio of between 1 and 2 generally indicates an area of uncertainty (UC) that requires additional investigation, while an APR of greater than 2 generally indicates that the material is likely to be self-buffering upon oxidation, again depending on which minerals are present (AMIRA 2002). High ANC:MPA values indicate a high probability that the material may remain circum-neutral in pH and should not be problematic by generating acid rock drainage

Maximum Potential Acidities (MPAs) vary between 0.3 and 153.9kgH₂SO₄/t averaging 8.5kgH₂SO₄/t. The same samples with Total Sulfur concentrations >0.3%S have MPAs above the accepted low capacity value of 10kgH₂SO₄/t (DITR, 2007).

Acid Neutralisation Capacities (ANCs) vary between 1.0 and 176.0kgH₂SO₄/t averaging 20kgH₂SO₄/t. The larger concentrations occur within the fresh materials whilst the oxide materials have an average concentration of 5.8kgH₂SO₄/t.

- Net Acid Producing Potentials (NAPPs=MPA-ANC) vary between -146.6 and 171.4kgH₂SO₄/t averaging 0.8kgH₂SO₄/t.
- NAPP calculates a theoretical net acid producing (or consuming) value of a sample by subtracting the theoretical Acid Neutralising Capacity (ANC) of a sample from the Maximum Potential Acidity (MPA) of a sample (Total Sulphur in this instance). This calculation identifies the severity and extent of the potential of the materials to produce acid across the site in general.
- Four samples may be classified as acid consuming (AC) having positive NAPP values >10 (all from fresh materials whilst six samples (two oxide and four from transitional and mixed materials) fall in the uncertain category with NAPP values between 0 and 10. (Pendragon 2024; Appendix D):

Single Fin Deposit

- Total Sulfur concentrations vary between 0.06%S and 2.48%S averaging 0.69%. Only five samples have Total Oxidisable Sulfur concentrations equal or greater than 0.30%S: four samples from the deeper oxide materials and one from transitional materials.
- Acid Potential Ratios (APRs=ANC:MPA) vary between -0.8 and 32.4 averaging 1.9 with only three samples having an APR greater than 2.
- Maximum Potential Acidities (MPAs) vary between 1.8 and 75.9kgH₂SO₄/t averaging 21.3kgH₂SO₄/t with ten samples having MPAs below the accepted low-capacity value of 10kgH₂SO₄/t (DITR, 2007).
- Acid Neutralisation Capacities (ANCs) vary between 0.5 and 34.1kgH₂SO₄/t averaging 7.9kgH₂SO₄/t. The larger concentrations occur within the fresh materials whilst the oxide materials have an average concentration of 5.8kgH₂SO₄/t.
- In general, the MPA of the deeper oxide and transitional materials exceeded a somewhat depleted ANC in these materials.
-
- Net Acid Producing Potentials (NAPPs=MPA-ANC) vary between -24.1 and 75.9kgH₂SO₄/t averaging 13.7kgH₂SO₄/t.
-
- NAG pH varies between 2.6 and 8.4 averaging 5.9 with two samples of oxide and four samples of transitional materials having pH's below the 4.5 threshold potentially classifying as PAF
-

Consequently, in general:

- Oxide and shallow transitional materials classify as NAF.
- The deeper oxide materials and transitional materials classify predominantly as Uncertain (UC) i.e. 100m and below:
- A graphical illustration of all samples taken to date of ANC and MPA (overleaf second or bottom graph) indicates that most of the UC materials fall within a Low Capacity (LC) zone primarily due to their low ANCs.

- The ECs of the waste rock materials vary between 6mS/m and 426mS/m. Four samples (two fresh, one oxide and one transitional) have ECs >200 and classify as slightly saline; consequently, the waste rocks are considered low saline materials.

A graphical illustration of all samples taken to date of ANC and MPA (Figure x) indicates that most of the UC materials fall within a Low Capacity (LC) zone primarily due to their low ANCs.

VB North, VB and Boags:

- Total Sulfur concentrations in the oxide materials vary between <0.005%S and 0.81%S averaging 0.21%, between <0.005%S and 24.4%S in the deep transitional materials and between <0.005%S and 2.4%S in the underlying fresh materials.
- Acid Potential Ratios (APRs=ANC:MPA) vary between 0.0 and 36.0 resulting in Uncertain classifications for materials deeper than 100m below surface.

Maximum Potential Acidities (MPAs) vary between 0.1 and 746.7kgH₂SO₄/t with twenty-two samples having MPAs below the accepted *low-capacity* value of 10kgH₂SO₄/t (DITR, 2007).

Acid Neutralisation Capacities (ANCs) vary between 0.7 and 110.0kgH₂SO₄/t averaging 18.2kgH₂SO₄/t. The larger concentrations occur within the transitional and fresh materials whilst the oxide materials have an average concentration of 7.1kgH₂SO₄/t.

- Net Acid Producing Potentials (NAPPs=MPA-ANC) vary between -57 and 740kgH₂SO₄/t averaging 27kgH₂SO₄/t.
- NAG pH varies between 1.7 and 10.8 averaging 6.1 with the transitional and fresh materials below 90m having pH's below the 4.5 threshold potentially classifying as PAF.

Consequently, in general:

- Oxide and shallow transitional materials classify as NAF.
- The deeper transitional and fresh materials classify predominantly as Uncertain (UC potentially PAF-LC as a result of elevated %S concentrations and low APRs).
- A graphical illustration of all samples taken to date for the Mt Ida Gold project of ANC and MPA (Figure 38) indicates that most of the UC materials fall within a Low Capacity (LC) zone primarily due to their low ANCs.

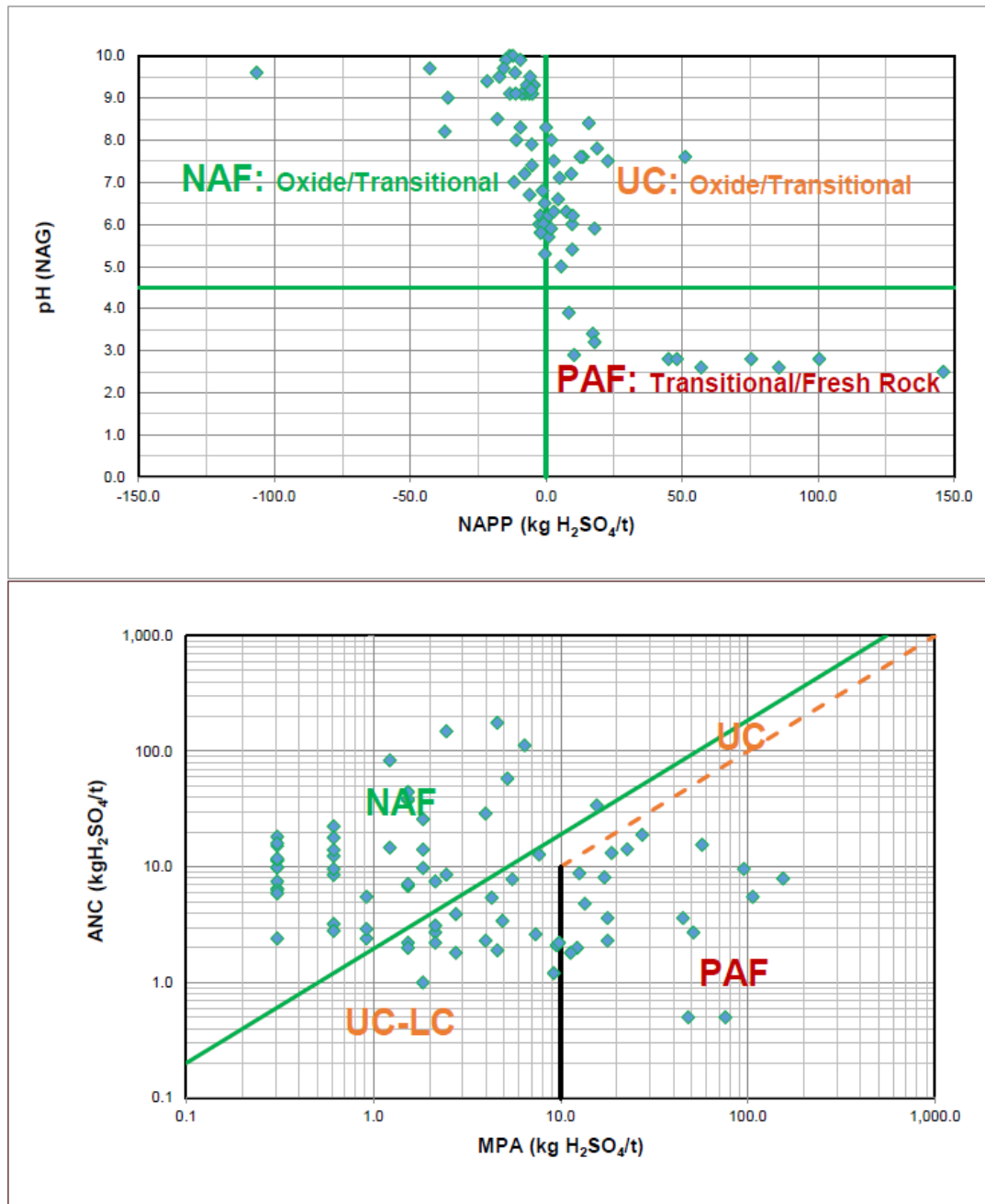


Figure 39 Distribution of Samples according to MPA and MAPP

Fibrous Materials and Silicates

Based on the physical descriptors of the waste rocks and ore bodies, fibrous materials are absent.

Naturally Occurring Radioactive Material (NORM)

Based on the physical descriptors of the waste rocks and ore bodies, coupled with the absence and/or low concentrations of U (between 0.1mg/kg and 3.1mg/kg), Pb (between 10mg/kg and 118mg/kg) and Th (<20mg/kg), NORM is absent, alternatively may occur at very low to low levels. These metals have GAI less than 1 indicating that they are present at a concentration less than, or similar to, the average crustal abundance.

Metals

Laboratory leachate testing indicated that waste materials have the potential to leach elevated concentrations of Al, As, Co, Pb, Cd, Cr, Ni, Se and Zn.

Salinity

The ECs of the waste rock materials vary between 6mS/m and 1,460mS/m. At Emu and Cascade, eleven samples (out of 69: one fresh, four oxide and six transitional) have ECs greater than 400mS/m and classify as slightly saline; consequently, the waste rocks are considered low saline materials. At Single Fin the ECs of waste rock materials vary between 32mS/m and 357mS/m averaging 135mS/m with only two samples (one of the deeper oxides and one transitional) having ECs above 200mS/m and classify as predominantly non-saline.

Dispersive Potential

Most of the waste materials, and particularly the oxide wastes (35% of the samples have ESP's above 6 with 15% having ESP's above 14), classify as moderately to strongly sodic.

Since these materials will not be used as construction materials but rather placed as waste rock with minimum disturbance, it is unlikely that they will pose a risk with regard to dispersion. Due cognisance must be taken of the long-term behaviour of the existing WRLs and the consideration that these materials placed in the existing WRL remained stable over a long period of time; however, consideration must be given during design that it is best not to expose them subaerially because they do not provide an effective substrate for vegetative rehabilitation/stabilisation and the clay fines may be elutriated by rainfall and cause increased turbidity in runoff.

The samples from Cascade classify predominantly (77%) as Emerson Classes 4, 5 and 6 with 23% of the samples as Classes 2 and 3. The texture of these materials vary between light and medium clays compared to the clayey sands at Emu. Further investigations are required to assess the characteristics of these materials and particularly their suitability for use in the construction of containment cells.

The materials at Single Fin are predominantly Emerson Class 4 (one sample is Class 5 and one sample Class 7) hence classify as having no dispersion with carbonate or gypsum present. consideration that these materials placed in a WRL remain stable; however, consideration will be given during construction not to expose subaerially because they do not provide an effective substrate for vegetative rehabilitation/stabilisation and the clay fines may be elutriated by rainfall and cause increased turbidity in runoff.

Tailings

All tailings-solids samples classify as Non-Acid Forming (NAF), reflective of a negligible content of sulphides (Chromium Reducible Sulfur values range between <0.005%, and 0.042%. The gangue of all tailings-solids samples was devoid of carbonate-minerals, except for the Boags-Transitional-Ore-Tailings-Solids sample which contained dolomite as a trace component. The shape of the pH-buffering curve for this sample is consistent with that typically recorded for dolomite.

9 Volumes and Rehabilitation Requirements

Waste materials summary is presented in **Table 44 and 45** and shows that sufficient transitional (competent) rock classified as NAF (Total S below 0.30% as per Pendragon classification 2024) available at shallow levels to construct both the WRLs and the base for the IWL. PAF includes any material classed as UC PAF. NAF includes all material classed as UC NAF as per Pendragon (2024).

Table 45 balance encompasses all pits in the southern domain, VB North, VB, Boags and Single Fin. Fresh material is unlikely to be mined due to economic value extracting the gold at the base of the pits. Materials which classify as PAF are predominantly located in and around the orebody at depth as displayed in an example cross section of VB pit (**Figure 39**). Pendragon (2024) characterised all shallow oxide and transitional as NAF. All deeper transitional materials which are UC-PAF and PAF will be encapsulated in the middle of the waste dump.

Table 44: Mine Waste Material Balance Estimates for Bottle Creek Stage 2

Pit	Oxide (BCM)	Transitional (BCM)	Fresh (BCM) (PAF)	Total Waste (BCM)
Cascade	9,472,553	989,398	0	10,461,951
Emu	7,700,000	600,000	0	8,300,000
Southwark	2,715,000	210,000	75,000	3,000,000

Table 45: Mine Waste Material Balance Estimates for Bottle Creek Stage 3

VB North	PAF/NAF	Volume
		BCM
Oxide	NAF	1,164,909.92
	PAF	159,843.33
	Total	1,324,753.25
Transitional	NAF	191.3
	PAF	158.64
	Total	349.94
Total	NAF	1,165,101.22
	PAF	160,001.97
	Total	1,325,103.19
VB	PAF/NAF	Volume
		BCM
Oxide	NAF	12,786,900.28
	PAF	556,454.31
	Total	13,343,354.59
Transitional	NAF	3,133,753.74
	PAF	649,630.75
	Total	3,783,384.49
Fresh	NAF	4,030,120.40
	PAF	1,796,589.26
	Total	5,826,709.66

Total	NAF	19,950,774.42
	PAF	3,002,674.32
	Total	22,953,448.74
Boags	PAF/NAF	Volume
		BCM
Oxide	NAF	5,999,036.76
	PAF	29,819.96
	Total	6,028,856.72
Transitional	NAF	1,051,787.59
	PAF	275,970.59
	Total	1,327,758.18
Fresh	NAF	1,110,306.39
	PAF	752,868.74
	Total	1,863,175.13
Total	NAF	8,161,130.74
	PAF	1,058,659.28
	Total	9,219,790.02
Single Fin	PAF/NAF	Volume
		BCM
Oxide	NAF	11,164,703.85
	PAF	183,692.34
	Total	11,348,396.20
Transitional	NAF	436,119.56
	PAF	268,603.17
	Total	704,722.73
Fresh	NAF	63,625.51
	PAF	95,566.07
	Total	159,191.58
Total	NAF	11,664,448.93
	PAF	547,861.59
	Total	12,212,310.51

For comparison, the NorGold WRLs which remain successfully rehabilitated after 30 years with no significant erosion or AMD are constructed from the same Bottle Creek shear materials and to the same 14° slopes and similar heights and remain a non-erosive, structurally sound waste rock landform.

The waste rocks are predominantly nonet to low saline but sodic materials. It should be noted that when the ESP is interpreted in conjunction with the Emerson Class, 66% of the samples are considered slaking with potential dispersion after mechanical work such as compaction with 24% of the samples having no dispersion with carbonate or gypsum present.

Since these materials will not be used as construction materials, it is unlikely that they will pose a risk and due cognizance must be taken of the long-term stable behavior of the existing (Norgold c.1990) WRLs (Pendragon 2024).

Bottle Creek South Mining Proposal - NAF/PAF estimation

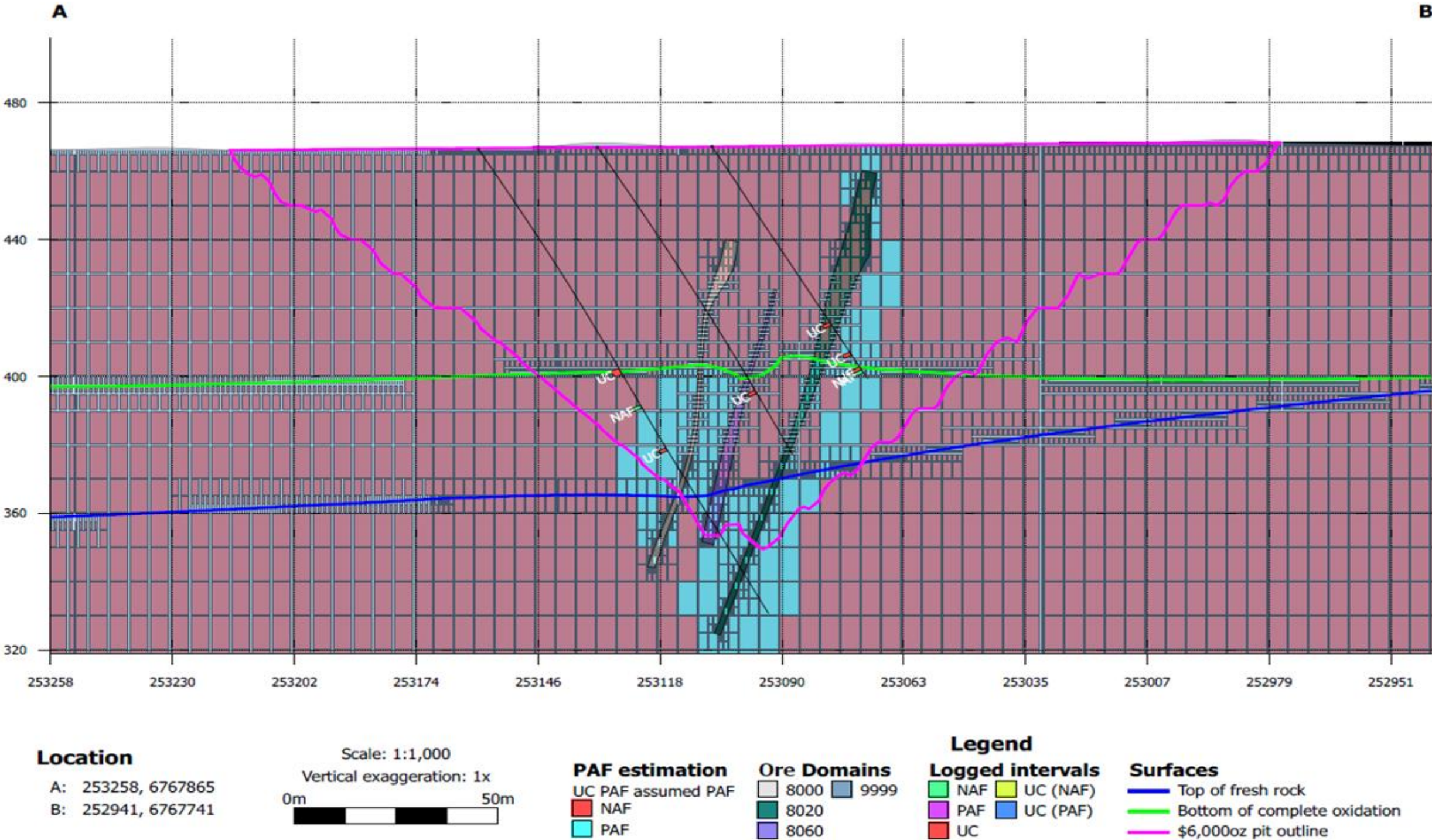


Figure 40 Cross Section of VB Pit displaying distribution of PAF waste blocks around the ore zone

9.1.1 Tailings Characteristics

To understand the implications and potential management of tailings, a geochemical assessment of tailings-slurry samples was commissioned. Tailings characteristics were tested on slurried samples and geochemical assay by Graeme Campbell & Associates Pty Ltd (2021; **Appendix E**); and the results of testing indicate:

- Particle Size Distribution and Atterberg Limits testing indicate that the tailings can be classified as non-plastic silt with sand with 92% fines (i.e. material passing the 75 micron sieve)
- tailings have relatively good consolidation characteristics with a C_v varying between 2,400 and 3,300 m^2/yr
- tailings have a particle density of 2.7 t/m^3
- All tailings-solids samples classify as Non-Acid Forming (NAF), reflective of a negligible content of sulphides (viz. Cr(II)-Reducible-S values ranging from less than 0.005 %, to 0.042 % %)
- tailings-solids samples were typically dominated by quartz with sub-ordinate clays (chiefly kaolinites), feldspars, muscovites, and goethites. Halite was consistently a trace component reflect of the hyper-salinity of the associated tailings slurry-waters
- undrained settling test (UST) and drained settling test (DST) to monitor the tailings settlement and the development of clear supernatant water to how much water will be available for recovery and the speed at which this water is released can be assessed by monitoring the percentage of supernatant and underdrainage with respect to the initial water volume. The tailings have relatively good settling characteristics.

The tailings streams to be discharged to the TSF should be NAF and saline with enriched-elements (e.g. As, Sb, etc.) in geochemically stable forms reflective of ores containing 'negligible-sulphides' (Graeme Campbell & Associates Pty Ltd 2021)

10 Implications for Mining

In general, oxide materials classify predominantly as NAF; Transitional materials classify as NAF or UC; and Fresh materials classify predominantly as PAF, albeit some fresh materials with large ANC capacities classify as NAF. Waste rock throughout the project area is expected to be benign with a low risk of acid generation (and low metals concentrations).

The long-term behaviour of the existing (NorGold) TSF and WRLs, which remain stable after 30 years with no indications of acid and/or metalliferous drainage (Pendragon 2024), even though these structures contain oxide materials should be noted.

Fibrous materials, silicates and radioactive materials are absent and/or considered not to warrant further investigation and assessment and/or management measures (Pendragon 2024).

The existing and proposed open pits are dominated by a NAF oxide waste stream. Waste rock throughout the project area is expected to be benign with a low risk of acid generation (and low metals concentrations); however, this risk may increase as the open pits are mined at increasing depth. To manage and control this risk, if it was to occur, and for the WRLs to be

managed both during operations and at closure, a thorough understanding of the composition of the waste stream is an important requirement.

Fibrous materials, silicates and radioactive materials are absent and/or considered not to warrant further investigation and assessment and/or management measures (Pendragon 2024).

10.1.1 PAF Management

An appropriate Acid and Metalliferous Drainage Management Plan (AMDMP), coupled with a WRL design that includes encapsulated PAF waste cells, is to be developed for the further investigation, assessment, management and monitoring of all waste materials and WRLs during future stages of the project to guide the performance of measures put in place to prevent and mitigate potential AMD, metalliferous drainage and/or any other contaminant issues that may arise.

The AMDMP will include a placement schedule. The detailed placement schedule of the mined material will include the volume and the allocated dumping locations which in turn will be integrated into the mining schedule. The compositional elements of the WRL through the monitoring of the physical, geochemical and geotechnical characteristics of waste will be assessed on an ongoing basis. This data will be used to monitor the performance of measures put in place to prevent and mitigate potential AMD, metalliferous drainage and other potential contaminant issues.

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The AMDMP will also ensure the effective characterisation of the mining waste to predict any changes, under the proposed placement and disposal strategy, through a program of progressive sampling and characterisation to identify dispersive and non-dispersive waste rock and the salinity, acid and alkali producing potential and metal concentrations of mining waste

Indicative components of the above include:

Ongoing assessment during grade control drilling will include the collection, characterisation, assessment and management of actual waste rock to confirm the expected geochemical properties of these materials. This may employ a sampling approach starting from set Total Sulphur and pH triggers (**Table 46**) and extending through to laboratory testing as required:

Table 46 : Trigger Values for Field Spoil Characterisation and Disposal (Pendragon 2024)

XRF/Laboratory	Paste pH	NAGpH	Geochemical Characteristic	Further Assessment
Total S < 0.25%	<4.6	<4.5	Uncertain/NAF	ABA
Total S < 0.25%	>4.6	>4.5	NAF	-
Total S >0.25% - <0.30%	<4.6	<4.5	Uncertain/NAF	ABA

XRF/Laboratory	Paste pH	NAGpH	Geochemical Characteristic	Further Assessment
Total S>0.25% - <0.30%	>4.6	>4.5	NAF	ABA
Total S>0.30% - 0.75%	>4.6	>4.5	<i>Uncertain/PAF</i>	ABA
Total S>0.30% - 0.75%	<4.6	<4.5	Low PAF	-
Total S% >0.75%	<4.6	<4.5	High PAF	-

Owing to the relatively small volume of UC and PAF materials, coupled with their location and the life of mine, kinetic testing is currently excluded from this approach. The frequency of sampling will consider risk and as such should be increased with increased depth of mining.

PAF material located during sampling and analysis and subsequently excavated may be placed selectively and/or encapsulated by/in NAF materials to minimise the potential generation of AMD. Design criteria to consider, in addition to a sampling program to verify placement/encapsulation and contingency plans when encapsulation has not been successful, with the objective to create a stable, safe and non-eroding and polluting landform (Pendragon 2024).

Internal PAF Cells will be constructed in the central core of the WRL taking cognisance that the PAF materials will be mined late in the schedule. These cells will be sized, pending final layout and dimensions of the WRL but usually as a cell between 50m and 100m long and wide and up to 10m thick and shall have a base, sides and a cover of compacted NAF materials of a nominal 2.5m thickness for the base and cover and a nominal 4.0m thickness for the sides. Their total capacity shall be a nominal 4Mm³ pending further waste characterisation. It is planned to have only one PAF cell open at any one time, with the area of any one cell open, minimised during the cyclone/wet season (Pendragon 2024).

Aurenne Mining is committed to develop an environmentally sound AMDMP and is aware that prevention will help avoiding many of the long-term issues and difficulties faced at mine rehabilitation and closure. The measures committed to include:

- Identification of clay and weathered NAF materials suitable for constructing impermeable bases for the WRL and for providing landscaped caps during rehabilitation with the view to minimize ingress of oxygen and infiltration of rain. Weathered NAF rock materials will be used for constructing pads and walls.
- Inhibition of oxygen and water into PAF materials can be achieved by engineered dry covers. The applicability of store-release cover types as an option is being investigated currently.
- Monitoring will include surface water structures conveying and containing waters from ore and waste rock dumps. Shallow and deep bores for ground water monitoring will be constructed up and downstream of the IWL.
- Processes and methodologies which may include pit back filling, subaqueous disposal of reactive waste in mine voids and/or in-pit disposal of waste rocks with the addition of alkaline materials will also be considered for investigation and, if needed to be implemented, these will be consulted with the relevant authorities.
- PAF Management: It is expected that AMD management processes implemented in Year 1 will be extended and improved upon to achieve adequate encapsulation of PAF

materials in years to come. Wherever a need arises for more cells for PAF encapsulation, these will be designed immediately and incorporated into the overall waste rock design and construction program. This will occur following a risk assessment resulting from exceedances of trigger values. In order to evaluate performances of methodologies and processes that aim to prevent AMD occurrences and long-lasting environmental impacts, the risk assessment is to incorporate the outcomes of investigative and monitoring programs (further AMD assessments and surface and ground water monitoring programs).

- In the case where ongoing waste characterisation identifies larger quantities of PAF materials than anticipated in the unlikely event mining goes into fresh rock, the PAF encapsulation and management approach will be extended and additional PAF cells will be added. This will be risk assessed as a priority and if needed, an updated PAF encapsulation model will be engineered.
- Analytical testing, data evaluation and reporting undertaken during the various phases of the project including exploration/feasibility and operations would provide the basis for generating and then updating a Mining Proposal and Mine Closure Plan in consultation with all relevant stakeholders. Relevant information will also be included in annual compliance reports. If risk management processes identify that the implemented investigative approach and monitoring have obtained enough data to allow implementation of effective minimisation or control strategies during operations, these will be reviewed and adequately adjusted. (Pendragon 2024).

The IWL will be constructed according to detailed design and specialist input regarding waste and tailings characteristics. Implications for Tailings Management include:

- The tailings stream should be NAF and saline with enriched-elements (e.g. As, Sb, etc.) in geochemically stable forms reflective of ores containing negligible-sulphides
- decant water quality WAD CN concentrations should be below the accepted industry guideline value of 50mg/L for protection of fauna (e.g. birds)
- At decommissioning, the IWL should be covered with some form of covering with benign waste-rock and topsoil will likely be required to prevent dust and to establish vegetation as part of rehabilitation using salt-tolerant plant species endemic to the mine-site region
- Except for salinity (halite) from the groundwaters sourced for make-up water for processing the disposal of tailings pose no environmental demands for design, operation, and decommissioning/rehabilitation. The resulting IWL will comprise saline-NAF-tailings as commonly produced at gold mines throughout the WA Goldfields (Pendragon 2024)
- A store and release cover is proposed for the IWL at Closure; however given the long term proposed Closure of the IWL (7-10 years) the appropriate closure rehabilitation methods will be applied as research and industry best practice matures.

Groundwater monitoring bores over the LoM will ensure that where monitoring data trends significantly away from baseline data that adaptive management measures are implemented to ensure no negative impacts to the surrounding environment ensue. Groundwater monitoring data will be submitted to DWER as per Works Approval/licencing conditions.

10.2 Land Systems and Soils

An assessment of WA Department of Agriculture and Food land systems mapping indicates that the Rainbow and Bevon systems comprise the majority of the Project area (**Table 47** and **Figure 41**). Soils in these systems are characterised by red loamy earths, shallow loams, deep sands, and sandy duplex soils.

Table 47: Project Land Systems

Land System	Land System Description
Rainbow (279Rb)	Hardpan plains supporting mulga tall shrublands
Bevon (279Bv)	Irregular low ironstone hills with stony lower slopes supporting mulga shrublands
Leonora (279Le)	Low greenstone hills and stony plains supporting mixed chenopod shrublands
Brooking (279Br)	Prominent ridges of banded iron formation supporting mulga shrublands and occasional minor halophytic communities

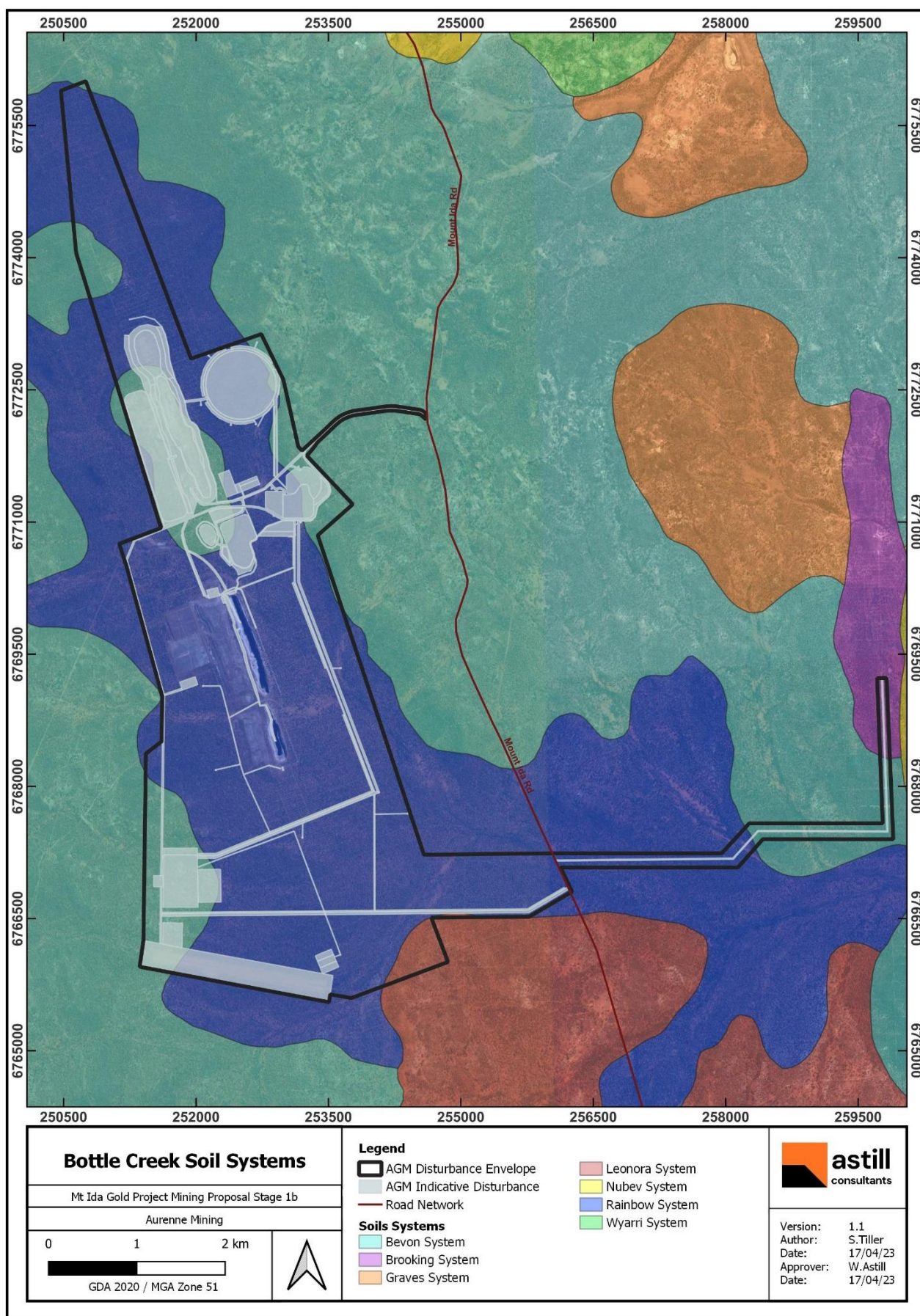


Figure 41: Land systems of the proposed disturbance areas

10.2.1 Soils Characterisation

A soils assessment and characterisation (Landloch 2021; **Appendix F**) was undertaken in accordance with DMIRS (2020a and 2020b) and DMP (2016) guidance to:

- Describe the type and characteristics of the topsoils and subsoils
- Classify the soils in line with the Australian Soil Classification (ASC) and Soil Groups of WA (SGWA)
- Allocate Soil Mapping Units (SMUs) on the basis of soil properties
- Map the ASC, SGWA, and SMUs
- Estimate soil stripping depths and useable soil volumes
- Provide soil handling recommendations
- Provide beneficial soil properties and soil limitations, and associated soil amelioration recommendations.

The Australia Soil Classification (ASC) (Isbell & National Committee on Soil and Terrain 2021) maps the site as:

- predominantly Kandosol (lack strong texture contrast, have massive or only weakly structured B horizons, and are not calcareous throughout the profile)
- a very small area around Boags pit Rudosol (soils with negligible (rudimentary) pedological organisation)
- the Accommodation Village, which is higher in the landscape, is mapped as Calcarosol (calcareous throughout the solum, or calcareous at least directly below the A1 horizon or a depth of 0.2 m (whichever is shallower)).

The Soil Group of WA (SGWA) (Schoknecht & Pathan, 2013) describes the site as almost entirely Loamy Earths, being uniform loam and loam grading to clay loam or clay with very small areas mapped and described as Shallow Loams. The ASC and SGWA classifications were used to provide insight into the soils present on site and to inform Landloch's classification of Project's Soil Mapping Units (SMUs). The SGWA classification system resulted in only slightly different classifications for some of the inspection sites and provided limited detail useful for defining soil spatial distributions. The ASC provided greater detail and was the primary scheme used to inform the definition of SMUs.

Soils were assessed for a range of parameters in line with regulatory guidance with four SMUs were defined and mapped within the survey area; three of which are present at Bottle Creek Project area:

1. Deep Loamy Earths
2. Calcareous Loamy Earths
3. Shallow Loams

An association between the soils and their landscape position (relief and gradient, i.e., upper slopes - lower slopes - flat areas) was observed; in general, the Deep Loamy Earths were found on the low gradient areas or areas of sediment deposition, the Shallow Loams were found on the low rises or low hills and/or the mid-upper slope areas, and the Calcareous Loamy Earths were found on the upper slopes and areas adjacent to areas of higher elevation. **Figure 42** shows the SMUs mapped for the Project.

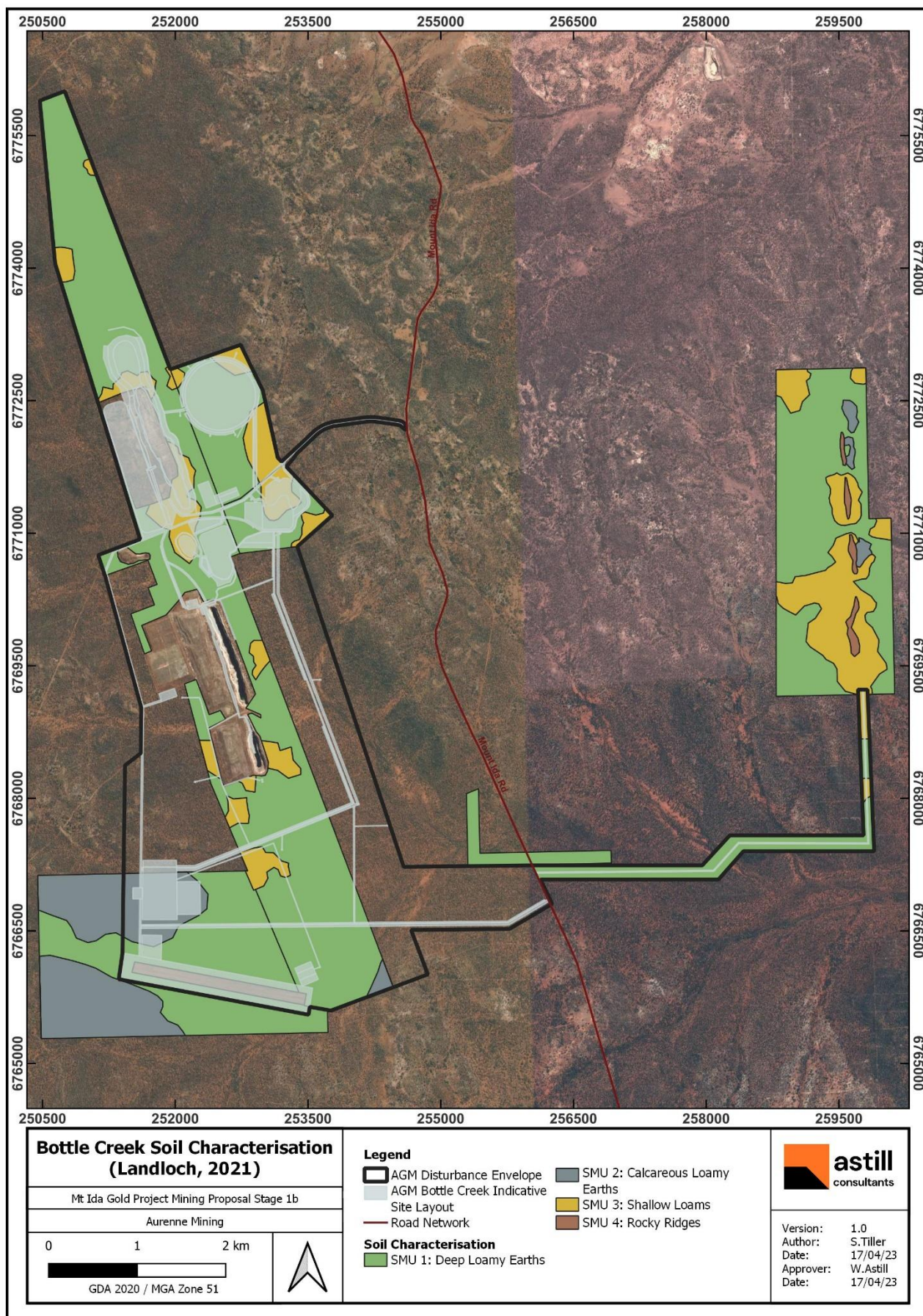


Figure 42: Soil mapping units (SMUs) (Based on Landloch, 2021)

Landloch (2021) further described the site's SMUs:

SMU1: Deep Loamy Earths are located on low gradient areas or areas of sediment deposition. They are expected to have mostly formed from a combination of *in situ* soil formation processes and depositional processes. In general, this SMU consists of a deep (>800mm), red-reddish brown soil, with generally uniform sandy loam to clay loam textures in the A and B horizons, and often overlying a sandy/rigid C horizon. Where the rigid C horizon was not observed, the layer is expected to exist at deeper depths than the excavation limit of this study (1.2m). The key defining attributes of the Deep Loamy Earths are their deep loamy soil profile (>800mm depth) and their typically low coarse fragment abundance (<50%) and small size (<20mm) in the topsoils, that generally increases in abundance and/or size with depth and summarised in **Table 48**.

Table 48: Soil Type Characteristics – SMU1 Deep Loamy Earths

Characteristics	Topsoil	Subsoil	Subsoil
Horizon	A	B2	C
Depth (mm)	0-150	150-700	800-1200
Texture (class)	Sandy loam - clay loam	Sandy loam - clay loam	Sand - clayey sand
Structure (grade)	Weak - moderate	Weak - massive	Massive
Consistency	Very weak - weak	weak (dry)	Firm - rigid (dry)
Coarse fragments	~20% 2-6mm	20-50% 6-20mm	~50% 2-15mm
pH	5.5 - 6.0 (5.5)	5.5 - 7.0 (6.0)	6 - 8.7 (7.0)
Salinity (dS/m)	0.03 - 0.13 (0.04)	0.03 - 0.17 (0.05)	0.05 - 0.28 (0.13)
Sodicity ESP (%)	8.4 – 9.7 (9.1)	8.6 – 9.8 (8.7)	12.3
ESI	<0.05	<0.05	<0.05
Ca:Mg	3.0 - 3.6 (3.4)	1.7 - 2.6 (2.1)	7.0
Emerson Class	3 - 7 (5)*	3 - 6 (5)*	3 - 5 (4)*
Fertility Class	Very low - moderate	Very low - moderate	-

SMU2: Calcareous Loamy Earths described following soil assay as “generally located on the upper slopes and areas adjacent to the rocky ridges of the survey area”. They are expected to have mostly formed from a combination of *in situ* soil formation processes and depositional processes. In general, this unit consists of a deep (>1000mm), red-reddish to light red soil, with sandy loam to clay loam textures in the A horizon, loamy sand to loam in the B horizons and a loamy sand C horizon. The key defining attributes of the Calcareous Loamy Earths are their deep calcareous loamy soil profile (>1000mm depth) and their elevated abundance (>50%) and size (>~50mm) of coarse fragments in the B horizon, that generally increases in abundance and/or size with depth.” Typical soil characteristics are summarised in **Table 49**.

Table 49: Soil Type Characteristics – SMU2 Calcareous Loamy Earths

Characteristics	Topsoil	Subsoil	Subsoil
Horizon	A	B2	C
Depth (mm)	0-150	150-800	800-1200
Texture (class)	Sandy loam - clay loam	Loamy sand – sandy clay loam	Loamy sand - sandy clay loam
Structure (grade)	Weak - moderate	Weak - massive	Massive - single grain
Consistency	Weak (dry)	weak (dry)	Weak - rigid (dry)
Coarse fragments	20-50% 6-20mm	50-90% 60-150mm	50-90% 20-100mm
pH	8.0 - 8.6 (8.0)	8.0 - 8.8 (8.0)	8.0 - 8.9 (8.4)
Salinity (dS/m)	0.12 - 0.8 (0.2)	1.1 - 2.7 (2.3)	2.3 - 3.5 (2.9)
Sodicity, ESP (%)	1.4	25.1	24.1
ESI	0.145	0.07	0.09
Ca:Mg	7.5	2.34	1.23
Emerson Class	4	3 - 4	4
Fertility Class	Very low - moderate	Very low - moderate	Very low - moderate

SMU3: Shallow Loams are generally on the low rises or low hills and/or the mid-upper slope areas of the survey area and are expected to have formed from pedogenic and depositional processes. In general, this SMU consists of a shallow profile (<~300mm) with sandy loam - clay loam textures, overlying a sandy rigid C horizon. The key defining attribute is their shallow profile (~300mm) and lack of coarse fragments. **Table 50** summarises the typical characteristics of the Shallow Loams with median values shown in brackets.

Table 50: Soil Type Characteristics – SMU3 Shallow Loams

Characteristics	Topsoil	Subsoil	Subsoil
Horizon	A	B2	C
Depth (mm)	0-150	150-300	300-600
Texture (class)	Sandy loam – clay loam	Sandy loam – clay loam	Clayey sand - sand
Structure (grade)	Weak - moderate	Weak - moderate	Massive - single grain
Consistency	Weak (dry)	weak (dry)	Weak - rigid (dry)
Coarse fragments	10-20% 2-6mm	20-50% 6-20mm	20-50% 6-20mm
pH	5.5 - 8.0 (6.5)	5.3 - 7.5 (6.25)	8.0 - 8.5 (8.0)
Salinity (dS/m)	0.03 - 0.1 (0.05)	0.4 - 2.3 (0.06)	0.1 - 1.8 (0.2)
Sodicity, ESP (%)	11.4	10.3	16.5
ESI	<0.05	<0.05	0.06
Ca:Mg	2.12	3.2	3.5
Emerson Class	5*	5*	4*
Fertility Class	Low - moderate	Very low - moderate	Very low - moderate

*Signifies the mode value rather than the median value

10.2.2 Implications for Risk Assessment

In line with regulatory guidance, the purpose of baseline soil characterisation was to:

- Estimate the quantity and quality of the soil resource (topsoil and subsoil) including each major soil type
- Characterising the baseline growth media attributes of each major soil type including nutrient status
- Evaluate potential risks associated with salinity, wind erosion, and water erosion.

The clearing and ground disturbance is up to ~362 ha with a ~1,670 ha Disturbance Envelope) and will be undertaken in stages as the Project develops. Designated topsoil and vegetation Stockpile areas according to the SMUs will be stored and handled according to **E-PRO-009 Topsoil Management Procedure**. The management of topsoils is critical to facilitating the optimum rehabilitation outcomes post-closure. Appropriate handling reduces costs and limits the potential for materials to impact the surrounding environment. Fortunately, no overly problematic soils are mapped for the Project area but due to the varying characteristics of the topsoil there will be different rehabilitation uses and therefore to ameliorate risks for mine closure and rehabilitation, topsoils shall be stockpiled according to their identified SMU, and sign posted accordingly.

The following summary in regard to the potential constraints and opportunities for each soil unit are provided:

Deep Loamy Earths (~90% of the Project area)

Typically sandy loam to clay loam textures, often overlying a rigid cemented C horizon. The key defining attributes are their deep loamy soil profile, and their typically low coarse fragment abundance (<50%) and small size (<20mm) in the topsoils, that generally increases in abundance and/or size with depth. These materials are considered as a potential rehabilitation resource; however, their usefulness on sloping surfaces is limited. They are variably sodic in the topsoils and subsoils and considered prone to structural decline (especially in the topsoils) potentially causing low permeability, hard setting surfaces, and/or tunnel erosion. They are likely to be prone to water erosion and are potentially susceptible to wind erosion. They have a relatively high capacity to hold water and nutrients due to their elevated clay content (especially in the topsoils). They typically were found to be non-saline, with pH values within acceptable bounds for soils of the region and on site.

Shallow Loams (infrequent occurrences within the Deep Loamy Earths; relevant to the IWL, Mill site, and pit development)

Shallow (~300mm) loam textured soils that generally lack coarse fragments, overlying a rigid cemented C horizon. This SMU is generally located on the low rises or low hills and/or the mid-upper slope areas of the survey area. They are typically non-saline and have pH values that support vegetation. They are considered a potential rehabilitation resource, though limited by their susceptibility to structural decline and clay dispersion. They have limited durable rock present, are potentially susceptible to wind and water erosion, and are not likely to be suited to use as a rehabilitation material on batter slopes. Stripping depths may be limited in areas by the underlying C horizon.

Calcareous Loamy Earths (relevant only to Accommodation Village)

Deep (>1,000mm), reddish soils with sandy loam to clay loam textures in the A horizon, loamy sand to loam in the B horizons and a loamy sand C horizon. The key defining attributes are their deep calcareous loamy soil profile (>1,000mm depth) and their elevated abundance

(>50%) and size (>~50mm) of coarse fragments in the B horizon, that generally increases with depth. They are considered a potential rehabilitation resource as the topsoils are non-saline with pH values that support vegetation and are non-sodic. However, they are considered to be prone to soil erosion by water and wind due to their particle size distribution. The subsoils have elevated levels of salinity, that increase with depth. They are not considered prone to structural decline due to their low clay contents and appreciable coarse fragment content.

Given these properties, recommendations for stripping depths are:

- **Deep Loamy Earths** topsoils are recommended to be stripped to a depth of 150mm and the subsoils a further 650mm, with a total depth of 800mm.
- **Shallow Loams** topsoils of the are recommended to be stripped to a depth of 150mm and the subsoils a further 150mm, with a total depth of 300mm.
- **Calcareous Loamy Earths** topsoils are recommended to be stripped to a depth of 150mm and the subsoils a further 350mm, with a total depth of 500mm.

The nutrient status for the Loamy Earths, Calcareous Loamy Earths and Shallow Loams typically ranges from low to moderate for soils of the area and therefore application of fertiliser is recommended (Landloch 2021; **Appendix F**). Nutrient status will be assessed for the stripped and stockpiled soils prior to use in rehabilitation to identify fertilisation rates.

The proposed limited clearing and ground disturbance is low risk for erosion or the mobilisation of soils that may have an adverse impact on surrounding vegetation or groundwater due to the staged clearing and construction of surface water management structures, which will be staged according to the development of the Project (Section 7.5.2). As there is limited excavation outside of the two pits (VB North, Emu), the likelihood of interacting with problematic soils is not anticipated. Landloch (2021) recommended stripping to a depth of ~150 mm and topsoil will be stockpiled according to procedure and conserved as a valuable resource for rehabilitation. The topsoil stockpiles will be managed for erosion, dust and weeds and are included in the monthly Environmental Audit (**E-PRO-016 Environmental Audit Procedure**).

The implications of soil and SMU characteristics informs the Mining Proposal of topsoil stockpiling management but is particularly important for mine closure as it informs the MCP of the fertility, suitability to revegetation and therefore success potential of rehabilitation. Almost the entire Project area is mapped as Deep Loamy Earth. As such, without stripping of these soils (both topsoil with seed bank and subsurface profile, excluding hard pan subsurface profile C) there would be minimal rehabilitation resource available at closure. These soils are prone to structural decline and are potentially susceptible to erosion, however they may be a valuable rehabilitation resource for low gradient areas and/or a rehabilitation resource to be mixed with more durable - erosion resistant waste rock (when it becomes available) and potentially used on slopes (though further works would be required to determine their erosion potential). Further, these soils could be amended with gypsum to lower their susceptibility to structural decline and erosion. There are no other limitations to stripping or the use of these soils as a rehabilitation material.

These soils support native vegetation evolved to grow in the physiochemical properties of that soil type. In addition, the soil-stored seed bank, if it is able to be maintained over the term of the topsoil stockpiling is a valuable resource to rehabilitation.

Subsoil (C Horizon) will not be utilized for rehabilitation. The priority for rehabilitation is the use of topsoil from A Horizon for its potential seed and biotic values but to ensure sufficient material

is available at closure, up to 150 mm of topsoil and 50mm of subsoil will be harvested. The Emersen Class for both the topsoil (A horizon) and subsoil (B2) horizon average 3-7 and therefore with management can and will be a future resource for rehabilitation.

10.3 Hydrology

The local and regional aquifers are characterised by weathered and fractured bedrock with faulting and shearing which controls the occurrence and movement of groundwater. The Raeside Fractured Rock Aquifer extends across the northern third of the tenements whilst the south is occupied by the Rebecca Fractured Rock Aquifer with the Rebecca Paleochannel underlying the Bottle Creek drainage line.

Surface and groundwater assessments were commissioned for the Project to understand the local and regional catchment conditions and to incorporate these features into planning and design of the Project (Pendragon 2024 , **Appendix G1**) (Hydrologia 2024 **Appendix H**).

The Project and its position in the catchment and relative to Lake Ballard is shown in **Figure 43**.

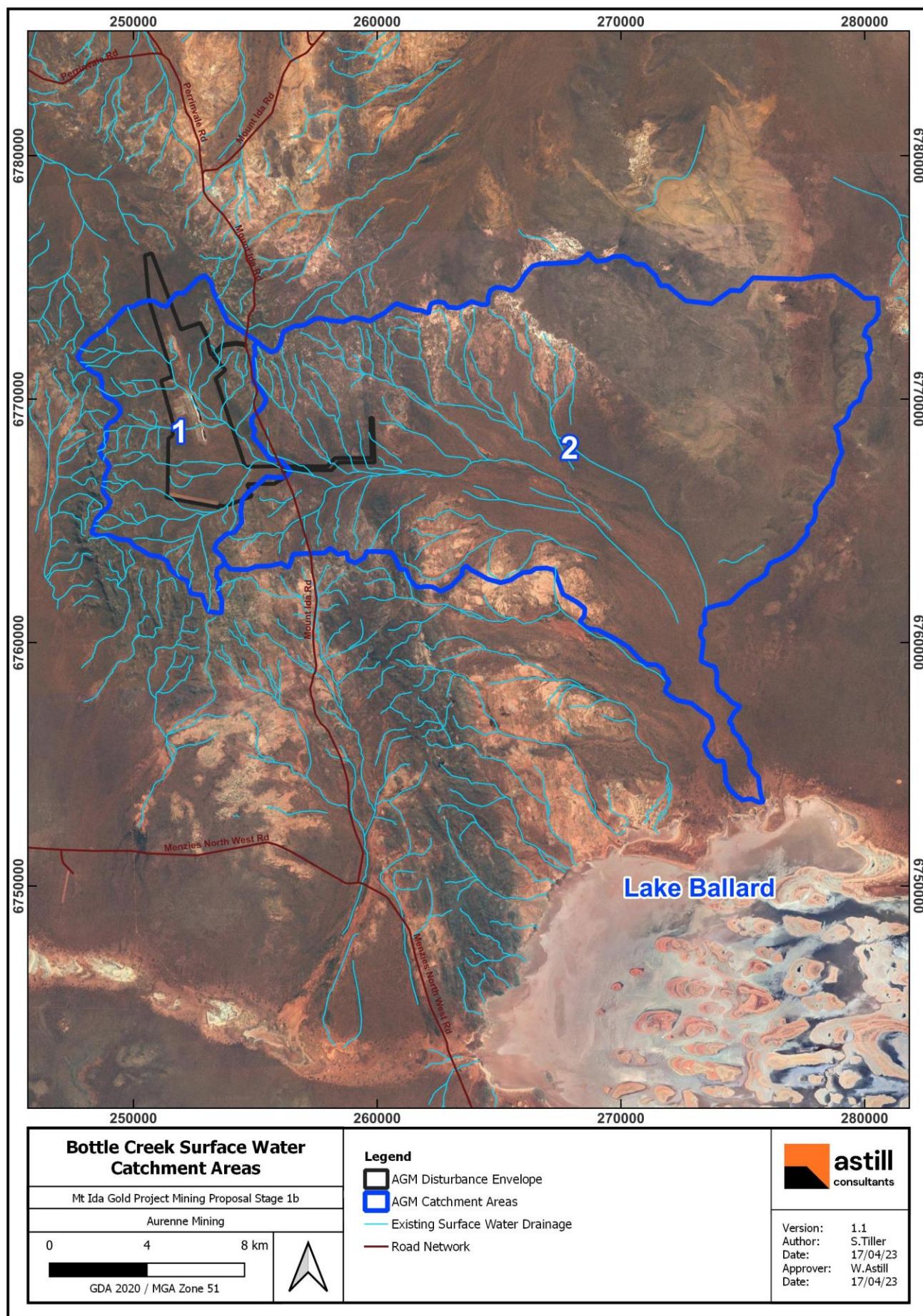


Figure 43: Project Catchment Areas

10.3.1 Groundwater

A hydrogeological assessment for the proposed Mt Ida Gold Project, was undertaken in 2021 in accordance with Department of Water Operational Policy No. 5.12 (DoW 2009) (Pendragon 2024 (**Appendix G1**)).

The Project lies within the Rebecca and Raeside subareas of the Goldfields which include fractured rock and paleochannel aquifers. The Project is within the Goldfields RIWI Act Groundwater Proclamation Area (DWER 2020) and it is illegal to take water from a watercourse or groundwater aquifer without a licence in a proclaimed area. A Groundwater Licence has been granted for 250,000kL over the Project area with a supporting Licence to Construct Well application to draw water for mining related activities and dust suppression purposes from the proposed bores.

Generally, the geology of the area comprises weathered and fractured mafic-ultramafic intrusive and volcanic rocks with minor interflow sediments. Groundwater across the region occurs in basins of weathering and shear/fracture systems, which vary in vertical and lateral extent, and which may be compartmentalised on a regional scale where there is little if any hydraulic connection between the different compartments. Consequently, ground water is likely to move or drain very slowly and may be considered stagnant (Pendragon Environmental 2024; (**Appendix G1**)) and therefore localised drawdown for the early project activities is likely to be negligible in the catchment.

Groundwater in the existing bores and open pits are sampled and analysed quarterly and are slightly to moderately alkaline and saline to highly saline (Gecko data 2021). The heavy metals Al, Be, Co, Pb and Mo are absent and there are sporadic trace concentrations of Cd, Cr, Cu, Ni and Zn. As, Ba, B and Mn as the most dominant metals in ground and pit waters. The current pit water quality may be considered as indicative of future open pit and groundwater qualities (Pendragon 2024).

10.3.2 Surface Water

The proposed Project area lies in the headwaters of Bottle Creek, which drains to Lake Ballard. Lake Ballard is an internally drained, intermittent salt lake in the wider Raeside-Ponton catchment and has substantial environmental values and has been nominated Nationally Important Wetland (RAMSAR listing). Topography in the area of the site is characterised by low hills and rises with broad valleys and indistinct drainage lines. It is located in the Salt Lake Basin surface water management area (DWER 2019), which is not in a proclaimed surface water management area. Existing surface drainage in the area has been modified by previous mining activities at the site and further surface water management is proposed for the Project to ensure both pit integrity and safety, and to maintain ecological hydrology regimes. Drainage within the Project area is shown in **Figure 44**.

Surface water assessments have been undertaken for both the Bottle Creek and Tims Find project areas (Hydrologia 2020, 2021-2022 and 2024), which included surface water feature review, site visit, hydrological modelling and conceptual diversion plan. The baseline assessment was developed to meet the WA guideline for mining proposals (DMIRS, 2020b). Flooding characteristics for the site were defined using detailed hydraulic modelling of drainage lines that pass through the site. Potential risk of flood impacts to human life and mine operation was considered (Hydrologia 2024, **Appendix H**). For characterisation of climate, a daily record generated for the site using SILO Data Drill (Queensland Government 2019) and Bureau of Meteorology observed weather data for Station 012052 Menzies (BoM 2018a) were used. 2016 design rainfall intensity data were used (BoM 2018a). Probable maximum precipitation (PMP) was derived for the site using the Generalised Short Duration Method (2003 as referenced in Hydrologia (2024, **Appendix H**)).

Following the finalisation of the Disturbance Envelope, the surface water modelling and management structures were revised (Hydrologia 2022). The surface water assessment and modelling was further refined following alterations to the Project's layout to incorporate changes to WRL design (Hydrologia 2021 and 2022 and 2024, **Appendix H**) with measures provided for a surface water strategy to support the Project. A surface water strategy is required for the Project to understand the surface water hydrological regime within the Disturbance Envelope and to develop a Surface Water Strategy (Section 4 of Hydrologia 2024, **Appendix H**) that defines surface water management, diversion of drainage lines through the proposed mine area and a proposed closure strategy.

Detailed hydraulic modelling was undertaken for the area around the proposed IWL and used to characterise local flow conditions (PMF, peak flow depth, water level and velocity) external to the structure. Existing topography with the proposed IWL landform in place as a boundary in the model for the 1% AEP & PMP design event was modelled. Hydrology and one-dimensional channel hydraulics was modelled using the Mike SHE model (DHI 2019). It was used to characterise existing conditions and proposed diversion drains. A rain-on-grid approach was used to represent overland flow. Channel flow was represented using the one-dimensional model component, Mike Hydro. The Mike SHE model was parameterised and calibrated using the available data; the Australian Rainfall and Runoff (ARR) regional flood frequency estimation tool (ARR 2019; RFFE 2016; Ball et al. 2016) was not available for the site so Mike SHE model was parameterised using the available data and based on experience applying the model in similar environments (Hydrologia 2024).

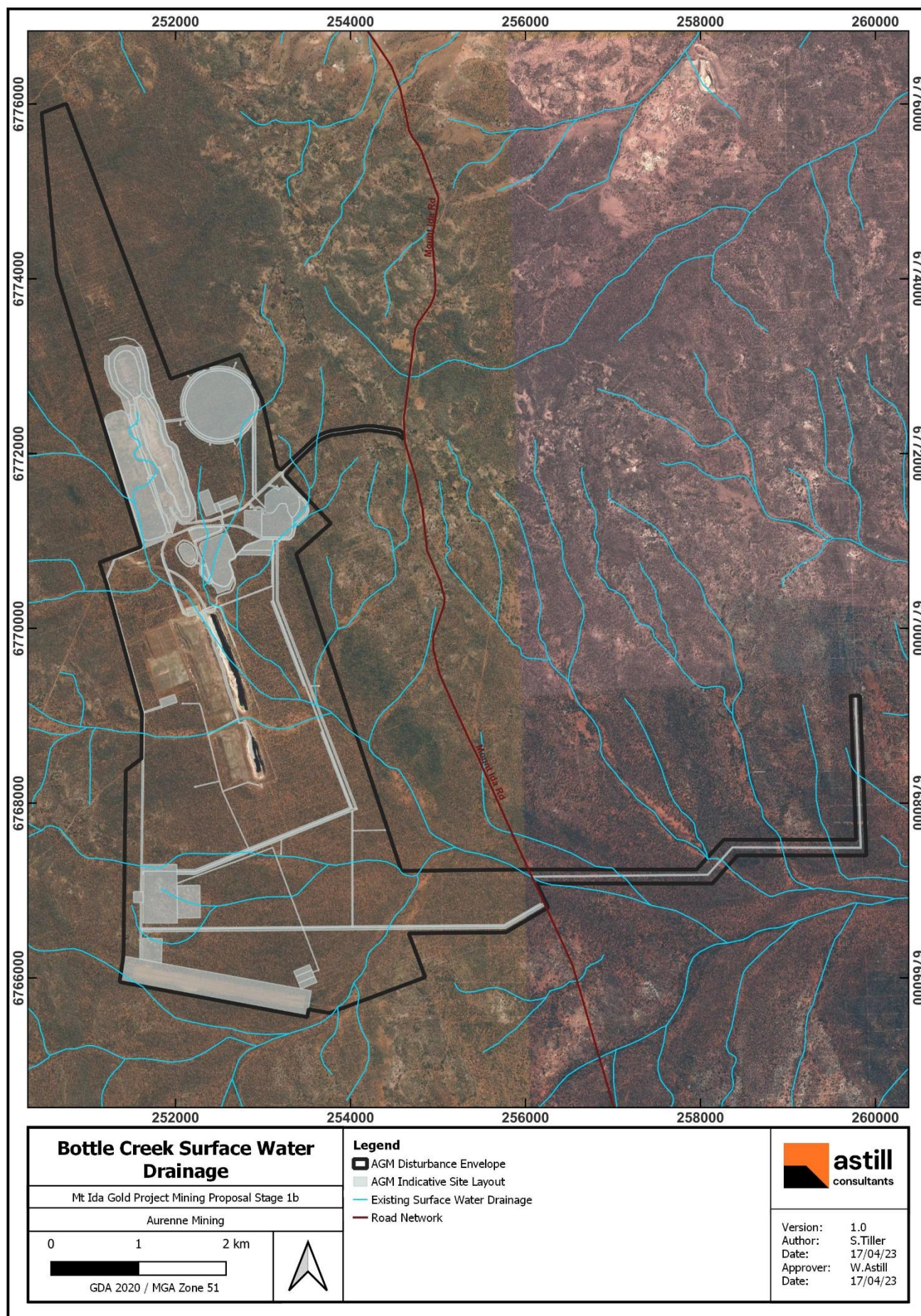


Figure 44: Surface Water Drainage Lines

10.3.3 Hydrogeological Implications for Risk Assessment

Surface Water

The Project location is considered low risk due to its distance from key significant hydrological (surface and groundwater) environmental receptors i.e. Lake Ballard and subterranean calcrete Priority Ecological Communities (**Figure 38**). In addition, the catchment remains highly vegetated, which allows buffering to any localised impacts from clearing and ground disturbance. The site is in the upper catchment of a tributary of Lake Ballard (**Figure 43**). The area has low hills and diffuse ephemeral drainage lines.

Bottle Creek has previously been diverted around the north of the old VB Pit (during NorGold operations in about 1987). An ephemeral drainage line at the northern end of Boags Pit has also been diverted. Site infrastructure, mainly WRLs, the IWL, roads and the Processing Plant area, cut across flow paths, and these will need drainage management (Hydrologia 2024; **Appendix H**).

Figure 44 shows the drainage lines that intersect the Development Envelope. Most are shallow non-incised ephemeral drainage lines with the exception of the (E-W) central drainage line which was deepened into a drain possibly during NorGold operations in the late 1980s. No drainage line holds water or has pools; most are barely discernible on the ground.

Surface water will be managed during the LoM to ensure no erosive impacts to infrastructure and operations. The removal and reinstatement of natural surface water flows will be reviewed prior to mine closure. The Project is not likely to have a significant impact on the local surface catchment, given surface flows will be diverted/redirected and not captured/stored.

Groundwater

Standing groundwater levels vary between 28.9 - 44.3m bgl and appear to be of a semi-confined to confined aquifer and flow regime. Groundwater within the Project vicinity varies between circum-neutral (pH <8 i.e. most bores except Tims Bore at 8.01) and alkaline (pH 8 to 9, i.e. the open pits) with marginal (between 500mg/L and 1,000mg/L TDS i.e. Walling Rock BIF Water Bore) to saline (2,000mg/L and 10,000mg/L TDS, Tim and Boag Bores) and highly saline (10,000mg/L to 35,000mg/L, Emu and Shepherds Bores and the Boags and VB open pits) (Pendragon 2024; **Appendix G1**).

Most groundwater sources, excluding the Walling Rock BIF Bore, have elevated concentrations of sulfate (between 530mg/L and 4,460mg/L SO₄), chloride (between 1,020mg/L and 14,300mg/L Cl), sodium (between 678mg/L and 6,970mg/L) and potassium (between 20mg/L and 246mg/L). Consequently, groundwater may be classified as a Na-Cl type water indicative of a stagnant groundwater regime in which little if any recharge is taking place (Pendragon 2024). Groundwater in the existing bores and open pits are slightly to moderately alkaline and saline to highly saline. The heavy metals Al, Be, Co, Pb and Mo are absent and there are sporadic trace concentrations of Cd, Cr, Cu, Ni and Zn. As, Ba, B and Mn are the most dominant metals in ground and pit waters. This water quality may be considered as indicative of future open pit and groundwater qualities (Pendragon 2021). Groundwater abstraction, potential seepage from the IWL and project activities have the potential to impact on the quality and quality of groundwater in the local catchment. The abstraction, dewatering and potential impacts from infrastructure are regulated by DWER under the RIWI Act and EP Act Part V (Schedule 1; Prescribed Premises). A groundwater licence for dewatering is currently held along with a licence to construct additional bores as the Project develops.

Bore and pit lake water quality sampling is currently undertaken quarterly (Gecko Environmental Services) to inform water quality and future DWER licencing. The frequency of water sampling will increase under future DWER- regulated Prescribed Premise licensing conditions that will include the installation of a site of bores for monitoring around the IWL and the Process Plant (**Appendix G2** Groundwater Monitoring Plan; Pendragon 2024).

10.4 Flora and Vegetation

Desktop Assessment

Desktop reviews of State and Commonwealth databases (Department of Biodiversity, Conservation and Attractions (DBCA) Species and Communities Branch records for flora, fauna and priority and threatened ecological communities (TEC/PECs), Department of Agriculture, Water and the Environment's (DAWE) Protected Matters Search Tool, NatureMap, FloraBase, Environmentally Sensitive Areas (ESAs) and the records of the WA Museum (WAM)) were undertaken to understand the biodiversity of the local and regional area (**Appendix I8**). The results indicate that the Project area is not known as having outstanding biodiversity values across flora, vegetation, and fauna habitats. No species were listed as endemic to the area, although conservation significant fauna utilise the habitats of the local area and there is potential for Priority flora.

Field Surveys

A suite of flora, vegetation, fauna (including short range endemic (SRE) and subterranean fauna) surveys have been undertaken over the past three years to inform mine planning and approvals (Phoenix & Bennelongia 2021) (**Appendices I1-I7**). **Table 51** summarises the surveys undertaken relevant to this stage of the Project and the survey areas are shown in **Figure 45**.

All flora and vegetation surveys methodology have been detailed (as per Environmental Protection Authority 2016) level of assessment; meaning quadrat-based with targeted flora component. Surveys have been undertaken over multiple seasons to maximise potential to capture a representative suite of flora that would occur over the Project area. Additionally, due to the accessibility of the Project area, excellent coverage has been achieved and no proposed disturbance area is lacking assessment.

The Project area has been adequately surveyed for flora, vegetation and fauna, including malleefowl and SRE (Phoenix 2021). As part of Aurene's *Vegetation Clearing Procedure E-PRO-001* and pre-clearing requirement in **Vegetation Clearing Permit Assessment & Authorisation Form E-FRM-001** the clearing area must be walked for malleefowl mounds within one month prior to clearing. In addition, the Environmental Superintendent is responsible for clearing areas demarcation. Surveys for conservation significant flora will be on-going over the life of Project. Further surveys for Priority flora are planned for spring 2021 and clearing of any conservation significant flora will be regulated under NVCP CPS 9383.

A supplementary survey was carried out in September 2022 by Consultant Botanist Brian Morgan (Morgan, 2023). This survey covered an area of proposed access road located in south-east corner of the disturbance envelope. No Threatened Flora or Priority taxa and no other taxa of significance were recorded in the survey area. No additional *Jacksonia lanicarpa* plants were recorded during this study.

Table 51: Biosurveys within the MIG Project area

Year	Survey area & detail	Consultant	IBSA reference
2022	Flora Mt Ida Proposed Camp Access Track and Regional Supplementary Baseline Survey	Brian Morgan	IBSA-2023-416
2021	Flora, vegetation, fauna (including SRE and targeted conservation significant fauna) surveys across wider Project tenements (including camp, access tracks, ancillary infrastructure areas)	Phoenix Environmental Consultants	IBSA-2021-0332
	Targeted flora survey for <i>Jacksonia lanicarpa</i> P1	V. Clarke (Aurenne)	NA; data provided to DBCA Species & Communities Branch; specimen submitted to WA Herbarium
	Subterranean fauna (including troglifauna and stygofauna) surveys across wider Project tenements and utilising regional bore suite	Bennelongia Environmental Consultants	IBSA-2021-0331

As part of governmental regional survey for greenstone areas, the following report is relevant to the general Mt Ida area, although of differing geological features:

Meisner, R & Owen, G, 2010, Flora and vegetation of banded iron formations of the Yilgarn Craton: Mt Ida Greenstone Belt and Mt Hope. In: Conservation Science W. Aust. 7 (3): 583–592.

10.4.1 Vegetation types and Condition

Vegetation mapped for the Project area (**Figure 46**) is typified by mulga woodland with emergent eucalypts (Phoenix 2021) with no TEC/PECs within the Project area.

The Project area is wholly within pastoral leases that have been actively grazed by feral and managed stock for over 100 years. There are no records of Threatened/Priority Ecological Communities and fauna habitats are not restricted or of higher value to the local or regional area. The historical prospecting, mining, and exploration has degraded habitats and brought many access tracks which have increased feral predators within the area.



Figure 45: Biodiversity Survey Areas

NatureMap (2021) and the Protected Matters Search Tool (DAWE 2021) (**Appendix I6**) show that 152 plant taxa are recorded from the local area with no threatened flora, one Priority 1 (*Drosera eremaea*), no Priority 2 taxa, two Priority 3 (*Calotis* sp. Perrinvale Station (R.J. Cranfield 7096), *Calytrix hislopii*), and two Priority 4 (*Hemigenia exilis*, *Lepidosperma lyonsii*). The Project area is largely mulga-eucalypt plains with little relief or areas of extruding geological features. It has a simple flora due to the lack of habitat diversity.

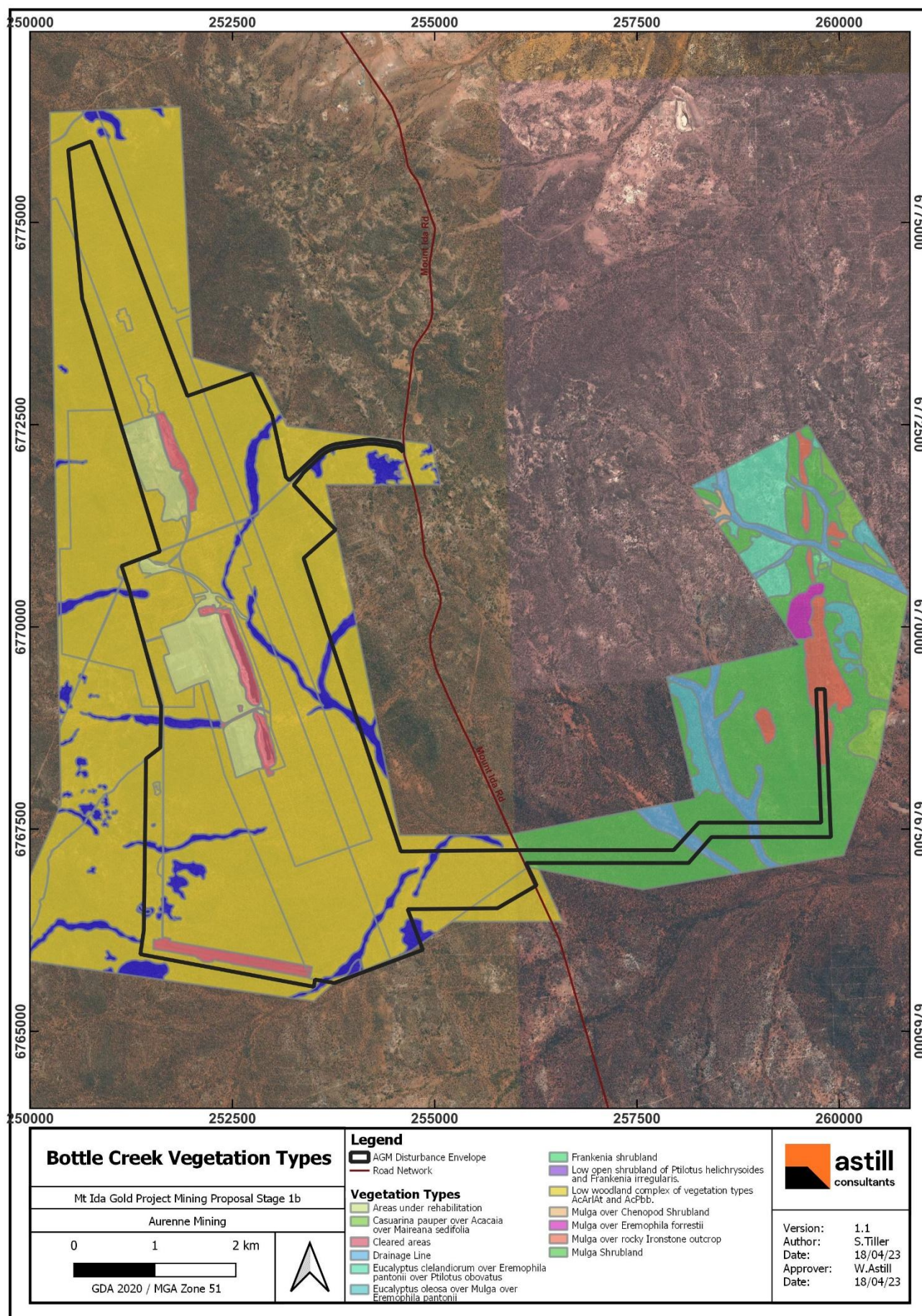


Figure 46: Vegetation Mapping for the Project Area

10.4.2 Conservation Significant Flora, Ecological Communities, and Areas

The PMST results listed one Threatened flora species (*Rincinocarpos brevis*) as potentially occurring in the area. However, this species is restricted to elevated banded ironstone ranges, which are not found in the Project area, nor the proposed Village site.

WA Herbarium records show *Calotis* sp. Perrinvale Station (RJ Cranfield 7096) Priority 3 (P3) flora occurring on E 20/1007, just outside the NW corner of the proposed Accommodation Village site (L 29/145). This taxon has a ~400 km range (**Figure 47**) across the Murchison region and is collected across a number of pastoral leases and within conservation estate (Charles Darwin Reserve) (Western Australian Herbarium (1998–2021)). This species was searched for during recent flora surveys but was not found; however, given it is an herbaceous daisy, it likely occurs after good rain years and additionally may be grazed by native and introduced herbivores. Due to its wide distribution and presence in protected areas, its conservation status will not be affected by the Project. Recent flora survey (Phoenix 2021) did not locate any *Calotis* sp. Perrinvale Station (RJ Cranfield 7096) P3 despite a record (WA Herbarium 1998–2021) existing within the local area.

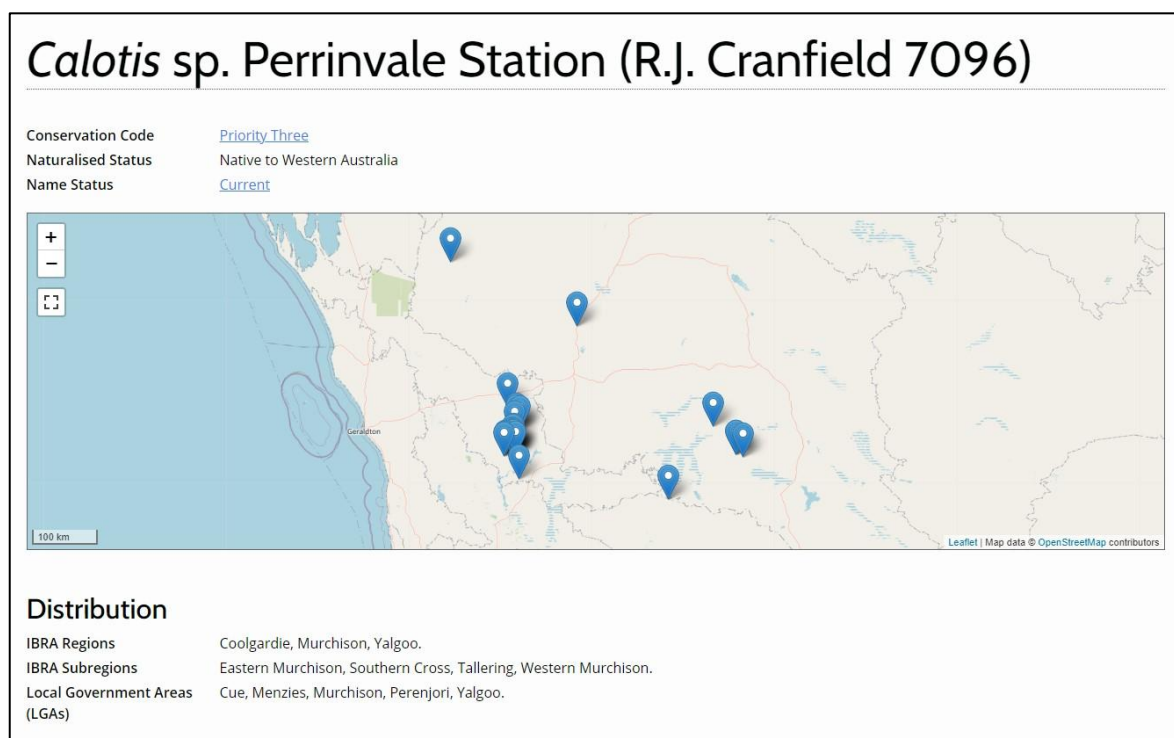


Figure 47: Calotis sp. Perrinvale mapped distribution (FloraBase WA Herbarium 1998–2021)

Recent survey (Phoenix 2021) found a Priority One flora, *Jacksonia lanicarpa* at four separate locations within the Bottle Creek Project area. This species has a wide linear occurrence of over 800 km (**Figure 48**; FloraBase 2021) and the Project area is not a range extension nor an outlier of the population extent. It likely occurs in the local and regional area more extensively and will be continue to be targeted for survey over the wider Project area over the life of the Project. Further targeted survey is ongoing to improve knowledge on numbers and full distribution with information to be provided to DBCA/ WA Herbarium. Given the wide distribution and low numbers recorded any clearing is unlikely to significantly impact the conservation status of this species.

Current mapped locations of *J. lanicarpa* is provided in **Figure 49**, illustrating that the majority of the records are outside of the proposed disturbance areas. Survey is ongoing and clearing of any individuals will be regulated under *EP Act* Part V NCVP CPS 9383/2 (**Appendix P**).

Database search requested from the DBCA's Species & Communities Branch listed the Perinvale/Walling vegetation complexes (Banded Iron Formation (BIF)) priority ecological

Jacksonia lanicarpa Chappill

Reference	Austral.Syst.Bot. 20:544,546, Fig. 42 (2007)	Shrub, to 2 m high. Fl. orange, Nov. Red sand.
Conservation Code	Priority One	Amanda Spooner, Descriptive Catalogue, 14 December 2000
Naturalised Status	Native to Western Australia	
Name Status	Current	

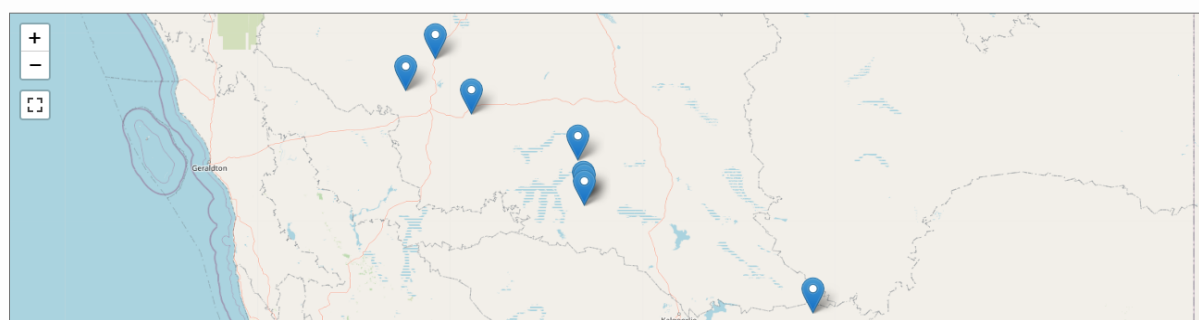


Figure 48: *Jacksonia lanicarpa* mapped distribution (FloraBase, WA Herbarium 1998-2021)

community (PEC), which is 100 m from the closest tenement boundary). The BIF does not extent into the Project tenements and the Project activities and clearing are not likely to impact directly nor indirectly on the values of the BIF.

No conservation reserves are in proximity to the Project area; the Project area sits within pastoral stations stocked with cattle and feral donkeys.

10.4.3 Introduced Flora

The PMST results listed to highly invasive weeds within the area (Wards weed **Carrichtera annua* and Buffel grass **Cenchrus ciliaris*). NatureMap (DBCA 2021) recorded one weed taxa (**Pentameris airoides* subsp. *airoides*) within the local area. However, given the degraded nature and long history and continued use as an active pastoral lease, there is likely to be a wider suite of grassy, herbaceous, and perennial weeds present. These weeds may be preferentially grazed by the cattle and donkey herds. Following the significant rainfall events of early 2021, occurrences of Ruby Dock **Rumex vesicarius* have been noted and are being managed through removal and bagging for disposal to stop seed spread.

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10.5 Fauna and Habitat

A fauna habitat assessment with targeted conservation significant fauna survey including short-range endemic invertebrates (SRE) was undertaken in 2021, which included targeted fauna component and the targeting of short-range endemic fauna (SREs) (Phoenix 2021; **Appendix I1**). The survey methodology was (EPA 2020) basic level with targeted component for conservation significant fauna, in particular Malleefowl and SRE invertebrates with potential to occur, in accordance with the survey requirements for the bioregion, Project nature, extent and duration.

Previous level 1 fauna surveys were conducted in 2019 for Bottle Creek and Tims Find (Terrestrial Ecosystems 2019 a&b) with the reports and data submitted via the IBSA portal. The total area assessed was ~1,200 ha and the area contains the following fauna habitats, which is largely consistent with Phoenix (2021):

- Drainage lines
- Eucalypt mallee woodland
- Open mulga woodland over shrubs/grasses.

10.5.1 Conservation Significant Fauna and Fauna Habitats

Three threatened species of fauna (Malleefowl, Night Parrot, Princess Parrot) and five migratory species of birds (Common sandpiper, Fork-tailed swift, Sharp-tailed sandpiper, Pectoral sandpiper, Streaked shearwater) identified under the EPBC Act potentially occur in the project area or surrounds. The migratory birds are discussed more fully in Phoenix (2021) (**Appendix I1**) but can be summarised as per the desktop assessment, due to proximity to Lake Ballard, which would provide suitable habitat when inundated. The Project area however, does not contain wetland or inundated areas and therefore are not discussed further here. The threatened birds relevant to the Project are summarised following:

Malleefowl

The Malleefowl is found across the southern half of the Australian continent and is the only member of the family Megapodiidae in the South-west Region. In Western Australia, the majority of the population is found south of a line from Shark Bay to the Nullarbor Plain. In the extreme south-west of WA, the species displays a patchy distribution. Malleefowl are typically found in mallee woodlands but also in Eucalyptus woodlands and shrublands (Phoenix 2021).

Evidence of Malleefowl was found both in two surveys for the Project (Terrestrial Ecosystems 2019 and Phoenix 2021) through tracks and old disused mounds; and is known from active mounds and sightings from the BIF ranges to the west of the Project (outside of Project area; Jupiter Mines).

Aurene will continue to survey across its tenements for Malleefowl and has a procedure to ensure that no clearing can proceed without a Malleefowl mounds survey. Clearing for the Project will be regulated by DWER under NVCP CPS 9383, which has fauna management conditions to ensure no impact to active Malleefowl nests.

Night Parrot

The Night Parrot appears to favour areas of dense vegetation comprising old-growth (often > 50 years unburnt) spinifex (*Triodia* spp.) especially hummocks that are ring-forming for roosting and nesting. Such areas may also be associated with dense chenopod shrubs. It is thought that spinifex hummocks that are <40-50 cm in height are not likely to provide adequate shelter for roosting and nesting (DPaW 2017a). Foraging appears to take place in habitats containing various native grasses and herbs in addition to spinifex, and these areas may or may not contain shrubs or low trees (Phoenix 2021).

Favoured sites may vary with the season and local conditions and may not necessarily occur within or adjacent to roosting areas, as they have been observed to fly up to 40 km in a night. *Triodia* species are thought to provide a food resource while flowering and seeding. The succulent genus *Sclerolaena* has also been shown to be a source of food and moisture and other succulent chenopods species are also considered likely to be important. Foraging habitat is likely to be more important if it is adjacent to or within about 10 km of patches of *Triodia* deemed suitable as roosting habitat. Home ranges are up to 3,000 ha (Murphy et al. 2017). Given that the Project area does not contain stands of spinifex (*Triodia* species) it has low potential for the Night Parrot.

Princess Parrot

The Princess Parrot is one of the most elusive Australian parrots. They are only found in the arid inland desert of central Australia with most of their range extending between the Great Victoria Desert and the Great Sandy Desert in WA. Princess Parrots inhabit sandy deserts where they feed on seeds and flowers (Garnett & Crowley 2000). The species is highly irruptive and after important rainfall, can occur in numbers in areas previously unoccupied (Phoenix 2021), although not noted during Project area surveys to date.

Long-tailed dunnart

The long-tailed dunnart was previously listed as threatened species but has been downgraded to priority 4 as it is distributed from the Pilbara and adjacent upper Gascoyne region in the west, to the central Northern Territory and South Australia. It has scattered occurrence in the Goldfields and has been recorded in the local and regional area (adjacent tenements (Jupiter Mining), Nickel West, etc). Moderate numbers of individuals (in excess of 50) have been recorded in the Goldfields region, mostly from stony substrates, particularly fractured to weathered mudstone/siltstone but also breakaways (Biota 2017). The Long-tailed dunnart may utilise the habitats of the Project area.

Figure 50 shows the (Phoenix 2021) conservation significant fauna and fauna habitats of the Project area.

10.5.2 Short Range Endemic and Subterranean Fauna

SRE survey was undertaken in 2021 (Phoenix) accordance with regulatory guidance for SRE and Bronze Azure Butterfly (DEC 2016; DBCA 2020) to understand the baseline biodiversity values of the Project area. Previous desktop information had inferred that the region was not prospective for SREs but the (Phoenix) 2021 results showed that a lack of sampling effort both locally and regionally means that the region is under-sampled and a reasonably diverse assemblage of invertebrates is found. The survey methodology was (EPA 2020) targeted component for SRE invertebrates with potential to occur, in accordance with the survey requirements for the bioregion, Project nature, extent and duration. Aureenne sought specialist zoologists experienced with Arid Bronze Azure Butterfly survey to ensure that the baseline

survey was well resourced and that collections of SRE were confirmed through the WA Museum. New species of millipede, centipede and spider were collected but due to the homogeneity of habitats in the Project area and the wider region, no species is likely to be restricted to the Project area (Phoenix 2021).

While some suitable habitat (smooth barked eucalypts on sandy soils) (Williams et al 2018; 2020) was identified during field surveys (Phoenix 2021), no nests of the ant *Camponotus* sp. nr. *terebrans*, which acts as a host for the Arid Bronze Azure Butterfly (*Ogyris subterrestris* subsp. *petrina*; CR EPBC & BC Acts), were identified in the study area. Dr John Scanlon, who is experienced in surveys both for the butterfly and host and, undertook this field survey component.

10.5.3 Subterranean Fauna

Desktop information reviewed proposed that the Project area was unlikely to contain prospective habitat for subterranean fauna due to the fractured rock and hypersaline subterranean environment. However, as the Project planned groundwater abstraction and surface constructed landforms that may impact on local hydrology, a baseline survey was commissioned by leading subterranean fauna consultancy. The survey was conducted across a wider area than the Project, to capture the full suite of diversity that may be present. The survey was conducted according to regulatory guidance and consisted of desktop assessment, regional review and two field visits to the Project area. (EPA 2021). The results of the 2021 baseline survey (Bennelongia 2021; **Appendix I5**) indicate that conservation significant species and high biodiversity subterranean communities are found regionally in paleodrainage channels or subterranean calcretes, which do not occur within the Project area.

10.5.4 Introduced Fauna

The PMST lists 10 feral animals recorded from the local area: camels, donkeys, dogs, cats, goats, horses, rabbits and foxes. All are likely to occur at varying densities and noting that the Project area is an active pastoral lease running a herd of cattle with a large resident herd of feral donkeys.

10.5.5 Biodiversity values implications for risk assessment

There has been detailed biological surveys conducted 2019 to 2021 over the Project area across multiple seasons and included areas much greater than the proposed Disturbance Envelope to ensure a wider understanding of biodiversity values. No active nor recently active Malleefowl mounds were recorded within the proposed Disturbance Envelope. The biodiversity values of the Project area are well represented in the local and regional area and the Disturbance Envelope does not contain unique or restricted geological features (such as BIF, breakaways, TEC/PEC etc). Therefore, it is considered low risk to impact important biodiversity values, or to be difficult to rehabilitate back to pre-disturbance condition. Clearing for the Project will be regulated under CPS 9383 and targeted conservation significant flora surveys are planned for the wider Project area spring 2021, and over the life of Project.

NVCP CPS 93983 regulates the timing of clearing and conditions relevant to Malleefowl and Priority flora.

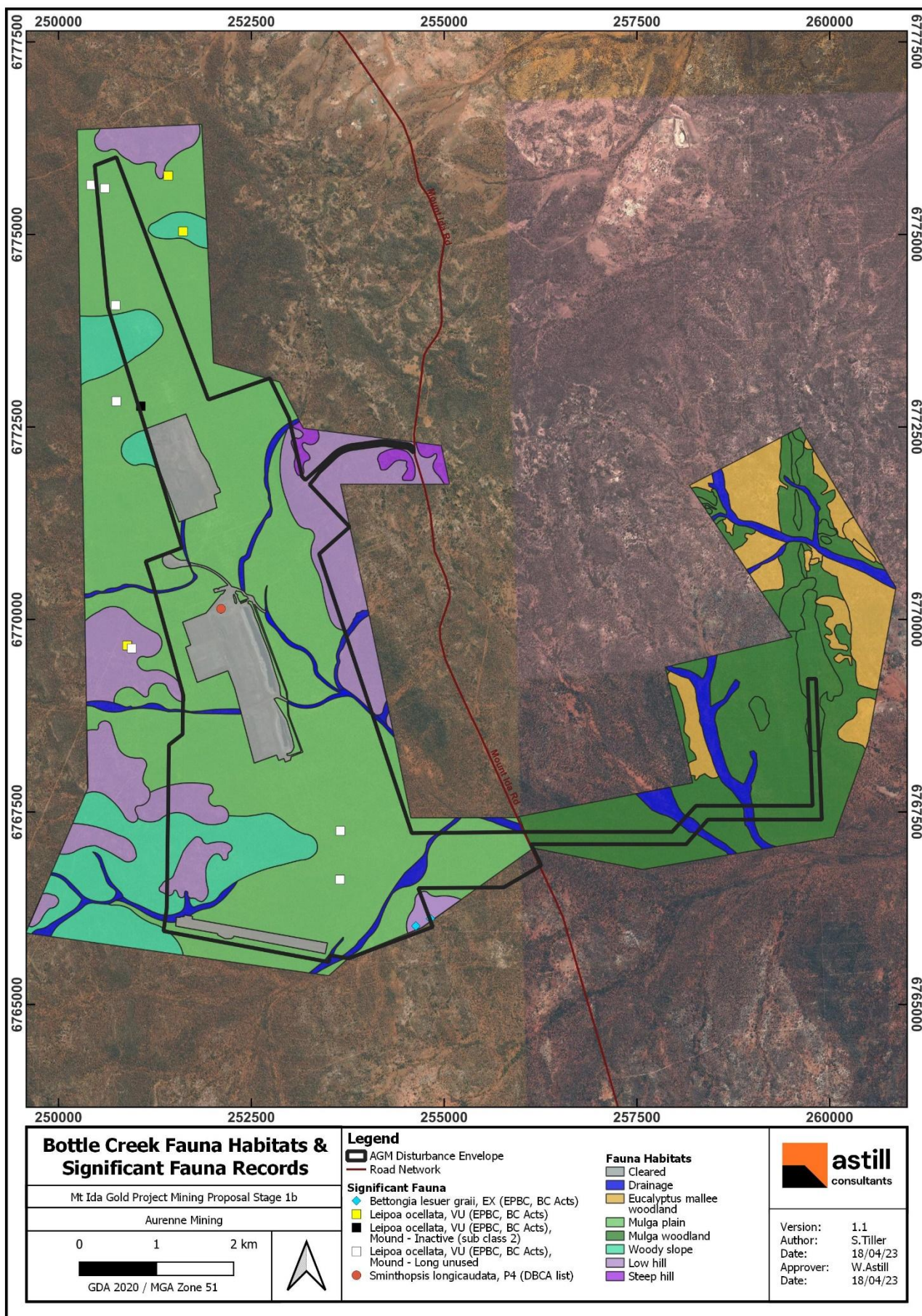


Figure 50: Fauna Habitats and Conservation Significant Fauna Records

10.6 Environmental Threats and Other Factors

This section details the currently known threats associated either directly or indirectly to the proposed Project.

10.6.1 Weeds

The Project area is within Perinvale and Riverina pastoral leases (held by Zenith Australia Group), currently managed for cattle and contains a high feral donkey population. Both these introduced ungulates can contribute to land degradation and weed spread. As most areas are highly grazed, weeds (and any soft herbaceous plants) are preferentially grazed, and high weed loads are not evident within the Project area.

The Project will manage weeds through vehicle and plant hygiene/clean on entry procedures (**E-PRO-007 Vehicle Hygiene Inspection Procedure - Checklist**) and by weed surveillance following significant rainfall events. Weed management procedures (**E-PRO-006 Weed Management Procedure**) are within the site EMP (**E-PLA-002 Environmental Management Plan**); weed management within cleared/disturbed areas is anticipated and will be recorded under regular Environmental Audits (**E-PRO-016 Environmental Audit Procedure; E-REG-001 Environmental Event Management Register**).

10.6.2 Fire

Wildfires can result naturally from lightning strike, or anthropogenically from deliberately or accidentally lit from vehicles and equipment. The Project does not allow campfires and maintains equipment and fire extinguishers to contain accidental ignition. Wildfires from storms may be controlled by the pastoralist but may be left to run out naturally.

The Accommodation Village design includes fire management infrastructure (building design, extinguishers, etc) and through clear earth fire breaks around facilities consistent with the *Bush Fire Act 1954* and Shire of Menzies requirements. A Bushfire Procedure is in development.

10.6.3 Feral Animals

Feral animals have been recorded and anecdotally noted within the Project tenements, which co-occur within an active pastoral lease. Cattle and donkeys graze within the pastoral area; signage will be erected to notify road users. Feral cats and dogs are likely present but as they are more cryptic in their habitats they are less frequently seen.

The Project will manage water points and waste disposal so that no net increase in feral animals results from operations. Staff and contractors will be advised that the feeding or encouragement of feral animals is not permitted.

Exclusion fencing will be installed around facilities such as the WWTP spray field, waste facility, and liaison with the pastoral company (Zenith Australia Group) is ongoing in terms of feral and managed stock).

10.6.4 Dust

Historic clearing for gold mining, exploration, and active grazing coupled with long periods without rainfall means that the local area, and region, is usually dry and therefore has higher potential for dust generation. The dominant mulga woodland vegetation type acts as a natural suppression to strong winds and buffers against dust mobilisation.

Dust generated by clearing and ground preparation will be controlled using water carts. Saline groundwater will be used to suppress dust as required. During periods of high winds, clearing activities and topsoil handling will be restricted if dust cannot be adequately controlled.

10.6.5 Noise

The ambient noise levels are low and consistent with a remote location in the extensive land use zone. Noise levels consistent with construction and Village operations are expected to be comparable to mines locally and regionally with limited sensitive receptors. The closest receptors are the Walling Rock homestead (one occupant; ~30 km SW) and Lake Ballard, which is over 20 km away and unlikely to be affected.

The Project was considered in regard to compliance with the noise regulations under the Mines Safety and Inspection Act 1994, Mines Safety and Inspection Regulations 1995 and the Environmental Protection Act (Noise) Regulations 1997. No noise modelling assessment was conducted due to the lack of sensitive receptors.

10.6.6 Hydrocarbon & Chemical Management

Chemicals and hydrocarbons are stored appropriately within bunds that are designed to minimise the risk of contamination to the surrounding environment by containing any spilled products. Diesel will be stored within double lined, self-bunded fuel tanks. In addition to storage bunding, portable pallet bunds are also utilised. Aurenne is developing a Hydrocarbon and Hazardous Substances Management Procedure.

Only certified suppliers will be engaged to transport dangerous goods and periodic dangerous goods audits across site are proposed. Bulk explosives will be transported to site and stored in a licenced magazine, according to the *Dangerous Goods Safety Act 2004*.

Spill response equipment will be available on each maintenance/service vehicle. In the event of a hydrocarbon spill, the product will be contained by earthen bunds. The product will then be collected and recycled if practicable or disposed of via waste hydrocarbon collection. Any contaminated soil will be removed and taken to the bioremediation pad for treatment.

10.6.7 Loss of Containment

The IWL and WRLs are engineered and designed by specialists (CMW 2021; MineComp 2022 respectively) to ensure all relevant design criteria are met to minimise the risk of tailings seepage, structural issues, spills or other unexpected discharge to the environment. Tailings pipelines will be located within service corridors, in V-drains and equipped with automatic shut-off valves and connected to live monitoring at the Process Plant. Pipelines and storage facilities are inspected daily when operational. IWL embankments are monitored through VWP and are reviewed by the current Engineer of Record on a monthly basis. Groundwater bores are monitored to ensure groundwater levels and quality is not being negatively impacted. A dam break assessment was undertaken to ensure tailings will divert away from the operational pits during a potential dam break event.

10.6.8 Implications for risk assessment

The threat of impacts to the local/regional environment occurring are certain given the environmental context and planned activities during clearing, construction, and operation. However, these are activities and risks that can have proactive management and thereby reduce the potential impact and have measures and mitigation in place, that should they occur can be managed to a low-risk scenario.

11 ENVIRONMENTAL RISK MANAGEMENT

11.1 Methodology

A risk assessment was undertaken for the Project to identify risk, risk pathways and likely impacts that may arise from planned or operational mining activities. Aureenne has established a risk assessment utilising the ‘as low as reasonably practical’ (ALARP) principle. This allows for proactive risk management strategies to be developed during planning and operation.

A standard risk matrix (AS/NZS ISO 31000:2009; and DMIRS 2020) was utilised to evaluate the likelihood and consequence of potential risks:

- Likelihood - the likelihood of an impact on the surrounding environment or other receptors (**Table 52**)
- Consequence - the scale or magnitude of the potential impact (ie. severity/extent) if it were to occur (**Table 53**).

The baseline survey data and reports were reviewed to ensure that the implications for risk management were well understood and managed where required.

Table 52: Risk likelihood definitions

Level	Likelihood	Frequency	Description
a	Almost Certain	Occurs more than once per year	The event is common or frequent occurrence or an ongoing impact
b	Likely	Typically occurs once or twice per year	The event is expected to occur under some conditions or has occurred more than once
c	Possible	Typically occurs in 1-3 years	The event will probably occur, or has occurred under some conditions
d	Unlikely	Typically occurs in 3-10 years	Known to have occurred but not often
e	Rare	Typically occurs in 10 – 100 years	Very unlikely/may occur in exceptional circumstances

Table 53: Defined consequence of a given risk

Level	Likelihood	Description
1	Insignificant	Confined to the immediate area, rapid clean up, no environmental damage
2	Minor	Confined to an isolated area, rapid clean up using internal resources, minimal environmental damage
3	Moderate	Impact confined to the mine, clean up may require external assistance, moderate environmental damage
4	Major	Major environmental impact, extends beyond mine, considerable clean up using external resources
5	Catastrophic	Severe environmental impact, extensive clean up and recovery period, requires ongoing Aureenne and external resources

Table 54: Risk assessment consequence & likelihood outcome matrix

Risk Matrix		Consequence				
		Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Likelihood	Almost Certain (a) 5	Moderate (15)	High (19)	Critical (22)	Critical (24)	Critical (25)
	Likely (b) 4	Moderate (10)	Moderate (14)	High (18)	Critical (21)	Critical (23)
	Possible (c) 3	Low (6)	Moderate (9)	Moderate (13)	High (17)	High (20)
	Unlikely (d) 2	Low (3)	Low (5)	Moderate (8)	Moderate (12)	High (10)
	Rare (e) 1	Low (1)	Low (2)	Low (4)	Moderate (7)	Moderate (11)

Outcome:

- Critical risk: immediate action required
- High risk: senior management attention needed
- Moderate risk: management responsibility must be specified
- Low risk; manage by routine procedures

11.1.1 Risk Treatment

The risk assessment conducted for the preliminary Project activities and infrastructure, documents measures applied to each risk, documenting the raw and residual risks. The residual risk is then evaluated to ensure it is meeting the ALARP principle and is consistent with identified environmental objectives.

Risk treatment options consider relevant Australian Standards, Guidance Notes, Codes of Practice, and other established industry best practice to assess and determine appropriate outcomes. The following hierarchy is used for treating residual risk with each method adaptable to the type of risk being controlled. Examples are used to further explain:

- 1. Elimination** where practicable, the risk is eliminated completely. For example, where a mine design impacts an active Mallee Fowl mound, the mine design may be changed to completely avoid the area, therefore eliminating the risk of detrimental impact to the breeding population.
- 2. Substitution** the original activity, substance or equipment may be substituted for a different activity, substance or equipment that lowers the risk. For example, excess mine dewater being discharged into a salt lake may adversely affect the lake biota and is instead diverted to a lined evaporation pond, reducing the risk to the salt lake biota without eliminating the dewatering activity.
- 3. Isolation** the risk is isolated. For example, the use of barriers, guards, enclosures, or protective gates to isolate the risk of cattle or other native animals being able to access evaporation ponds, wash down bays, or other sources of water that could have detrimental impact to the animal if it were to consume the contents, or become entrapped.
- 4. Engineering controls** the risk may be isolated through the use of engineering controls in order to reduce the risk. For example, dribble bars on watercarts may overspray roads leading to a detrimental effect on fringing vegetation and require re-engineering to ensure spray pattern is maintained to within the v-drains either side of the roads.
- 5. Administrative controls** include training, implementation of policies, procedures, and introduction of behavioural expectations to reduce risk. For example, the installation of

signage and information posters on Malleefowl may reduce instances of road strike in the area due to employees being aware of their presence and remaining more vigilant; and reporting their presence to the Environment Superintendent.

11.2 Environmental Risk Assessment

The risk assessment was completed to consider those activities conducted as part of the Project and the relevant controls and management practices that are utilised in order to minimise the associated environmental risks. The risk assessment identified that the aspects with the higher potential for impact at the Project are related to:

1. Potential impacts to surface and groundwater quality or quantity
2. Improper storage and handling of dispersive/erosive material leading to erosion and sedimentation of land and local waterways
3. Inappropriate handling of hydrocarbons resulting in spills causing contamination to soil and surface/groundwater
4. Saline water spills resulting in impacts to vegetation health and soil contamination
5. Potential impacts to biodiversity values should clearing and access control not managed effectively.

Aurenne has an Environmental Management System (EMS) **E-PLA-001 Environmental Management System Manual** and EMP (**E-PLA-002 Environmental Management Plan**) that addresses the management requirements and procedures necessary to effectively manage the environmental impact of its operations, following application of Aurenne's EMS Procedures.

The Project-specific risks and consequences are summarised in **Table 55** with the Risk Assessment is provided at **Table 56**. Risks assessment and regulated by other agencies are detailed in **Table 57**.

Stage 3 , the change In surface water management was identified at the early stages of planning and has been addressed with remodelling of PMF and appropriate control methods developed.

Stage 2 involves a new expansion to Emu Pit – Cascade mining void, expansion of the Emu waste dump design to final angle for rehabilitation and a new waste dump to receive waste rock from the Cascade void. The Cascade waste dump will be at the final footprint at the final batter angle for closure.

No new environmental risks have been identified with the inclusion of Cascade Pit and Cascade waste dump. No PAF is expected to be mined for Cascade. As a contingency, an encapsulation cell will be included in the final level.

One new environmental risk has been identified from the Stage 2 proposed activities:

- Change in surface water management. The expanded waste dumps and pit require new drainage systems to prevent impacts from flooding. The risk category remains unchanged.

Stage 1b involves an expansion to Emu Open Pit, development of Southwark Open Pit, amendment to Emu waste dump design and minor changes to the TSF. Other proposed mine activities include pipelines, powerlines, access roads, borefields, topsoil stockpiles, laydown and a telecommunications tower.

Two new environmental risks have been identified from the Stage 1b proposed activities:

- Presence of PAF material from the Southwark Open Pit presents the risk of acid mine drainage (see Risks #16 and #18 in **Table 56**).
- Construction of bore fields presents the risk of fauna entrapment (see Risk #5 in **Table 56**).

All other risks have been previously assessed and adequate controls are already in place. The following points provide some justification:

- Clearing is regulated under The *Environmental Protection Act 1986* CPS 9383/3. This permit contains strict conditions for clearing with regards to Priority flora and fauna. It is not expected that any additional Priority flora species are required to be cleared when implementing Stage 1b.
- Changes to the IWL have been assessed by the geotechnical engineer and the facility will be constructed and operated in accordance with the Construction Plan, Operations Manual and relevant DWER approvals.
- No new risks are expected from the proposed Stage 1b Other Mine Activities (roads, pipelines, topsoil stockpiles etc.) and the current controls are considered sufficient.

Table 55: Project Consequence Definitions

Environmental Factor	Aspect	Insignificant	Minor	Moderate	Major	Extreme
Biodiversity	Vegetation /Flora / Fauna / Fauna Habitat	- Small area of vegetation loss with negligible impact on habitat or species - Loss of a Priority-listed individual plant/animal	- Alteration or disturbance to <10% of a habitat or ecosystem resulting in a recoverable impact within 2 years - Loss of multiple Priority-listed flora /fauna species	- Alteration or disturbance to 10-40% of a habitat or ecosystem resulting in a recoverable impact within 2-5 years - Loss of <50% known local population Priority-listed flora /fauna species - Loss of a Malleefowl	- Alteration or disturbance to 40-70% of a habitat or ecosystem resulting in a recoverable impact within 5-15 years - Loss of >50% known local population of Priority-listed flora / fauna species - Loss of an active Malleefowl mound	- Alteration or disturbance to >70% of a habitat or ecosystem resulting in a recoverable impact >15 years - Loss of conservation significant or listed species locally or regionally; extinction of a species
	Introduced plants (weeds)	Manageable, localised weed infestation that does not result in competition with native species	Manageable, localised weed infestation that results in minor competition with native species	Localised weed infestation that results in competition with native species requiring considerable management/control measures	Regional weed infestation that results in competition with native species requiring extensive management/ control measures & impacts pastoral activities	Uncontrollable regional weed infestation that results in competition with native species & impacts pastoral activities
	Pest animals (feral cats/dogs)	Manageable increase in pest species numbers, but does not impact population viability or abundance of native fauna	Manageable increase in pest species numbers, resulting in localised impacts to the population viability or abundance of native species	- Increase in pest numbers, resulting in widespread impacts to the population viability or abundance of native species - May impact pastoral activities	- Pest species introduced and populations expand into the regional area resulting in temporary exclusion of native species that can be controlled by external resources. - Impacts pastoral activities	- Pest species introduced and populations expand into the regional area resulting in permanent exclusion of native species unable to be controlled by external resources - Significant impacts to pastoral activities resulting in economic detriment
Water resources	Surface Water	- Negligible change to surface water quality within the project area that does not change its ability to be used by livestock and fauna. - Short term, minimal changes to local water volumes that do not affect beneficial uses, including livestock and fauna	- Low level change to surface water quality within the project area and minimal change to downstream watercourses that does not affect its use by livestock and fauna - Medium term, minimal changes to local water volumes that do not affect beneficial uses, including livestock and fauna	- Moderate (mid-level) change to surface water quality within the Project area & low level change to downstream watercourses that affects its use by livestock and fauna in the short term - Short term minimal changes to regional water volumes that affect beneficial uses, including livestock & fauna	- High level decline in surface water quality in the project area and mid-level change to downstream watercourses that prevents medium to long term use by livestock and fauna - Medium-term low-level changes to regional water volumes that affect beneficial uses, including livestock & fauna	- Mid-level decline in surface water quality on a regional scale that prevents long term use by livestock and fauna - Project causes permanent, high-level loss of surface water resources that affects livelihoods and/or survival of communities
	Ground water	- Minimal change to groundwater quality in the project area that does not change its ability to be used by beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna - Minimal changes to groundwater levels/availability in the project area that do not affect beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna	- Short term, minimal, localised decline in groundwater quality that affects beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna - Local, minimal changes to groundwater levels/availability that do not affect beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna	- Medium term, low level, localised decline in groundwater quality that affects beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna - Local, low level changes to groundwater levels/availability that affect beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna in the short to medium-term	- Short to medium term, low level regional decline in water quality that prevents beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna - Regional, low level changes to groundwater levels/availability that affect beneficial uses including livestock, fauna, groundwater dependent ecosystems & subterranean fauna in the medium term	- Long term, mid-level regional decline in water quality that prevents beneficial uses, including livestock, fauna, groundwater dependent ecosystems & subterranean fauna - Regional, mid-level changes to groundwater levels/availability that affect beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna in the long term
Landforms & soils	Compatible final landforms	- Post mining landforms are consistent with their surroundings - Post mining landforms are stable	- Post mining landforms are generally consistent with their surroundings with minor variations in elevation, profile and vegetation - Post mining landforms are stable but may experience minor erosion, such as rilling	- Post mining landforms are generally consistent with their surroundings but show distinguishable variation in elevation, profile and vegetation - Post mining landforms are generally stable, but may experience moderate erosion, such as limited gullying	- Post mining landforms are inconsistent with their surroundings with notable differences in elevation, profile and vegetation - Post mining landforms are unstable, with significant erosion, such as tunnelling and gullying, and subsidence	- Post mining landforms are inconsistent with their surroundings, represented by significant differences in elevation, profile and vegetation - Post mining landforms fail (e.g. IWL embankment failure), with extensive ongoing management
Rehabilitation & Mine Closure	Land Degradation	- Clean-up by site personnel, rectified immediately - Confined to immediate area around source	- Clean-up by site personnel, remediation within 1 year - Confined to operational area	- Clean-up by site personnel, remediation within 1-3 years - Minor impact outside disturbance envelope or minor impact to soil	- Clean-up requiring external specialist, remediation within 3-10 years - Impact has migrated outside the	- Clean-up requiring external specialist. Remediation >10 years, or permanent residual impact - Impact outside the tenement boundary

Environmental Factor	Aspect	Insignificant	Minor	Moderate	Major	Extreme
				stockpiles	disturbance envelope or contamination of soil stockpiles	
	PMLU	Site is safe, stable and non-polluting. Post mining land use is not adversely affected	- Site is safe, all major landforms are stable, and any stability or pollution issues are contained and require no residual management - Post mining land use is not adversely affected	- Site is safe, and any stability or pollution issues require minor, ongoing maintenance by end land-user - Post mining land use cannot proceed without some management	- Site cannot be considered safe, stable or non-polluting without long-term management or intervention - Post mining land use cannot proceed without ongoing management	- Site is unsafe, unstable and/or causing pollution or contamination that will cause an ongoing residual affect - Post mining land use cannot be achieved
Stakeholders/ Social	Heritage (European or Aboriginal)	No loss or disturbance of physical or cultural heritage within local area	Loss or disturbance of non-significant physical or cultural heritage within local area	Loss or disturbance of significant European or Aboriginal physical or cultural heritage in local area in agreement with the respective parties (TOs or Shire of Menzies) and following regulatory approval to impact	Loss or disturbance of significant physical or cultural heritage that requires mediation	Loss or disturbance of significant physical or cultural heritage not in agreement with Traditional Owners
	Key Stakeholders	Stakeholders not responding to engagement on PMLU	Stakeholders not engaged in PMLU process	Stakeholders do not agree on PMLU	Stakeholders express dissatisfaction with post mining landforms, roads, aerodrome, etc	Stakeholders will not accept post-closure landforms or facilities
NA	Env. Compliance	Minor technical/legal compliance issue unlikely to attract a regulatory response	- Technical/legal compliance issue may attract a low-level administrative response from the regulator - Incident requires reporting in routine reports (e.g. monthly)	- Breach of regulation with possible prosecution and penalties - Continuing occurrences of minor breaches - Incident requires immediate (within 48 hours) notification	- Major breach of regulation resulting in investigation by regulator - Prosecution, penalties or other action likely	- Serious breach of regulation resulting in investigation by regulator - Operation suspended, licenses revoked

Table 56: Environmental Risk Assessment

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
Biodiversity	Vegetation/ fauna habitat	1	Unauthorised clearing/ ground disturbing activities resulting in: - impacts to vegetation which comprises general fauna habitat - unauthorized impacts to Malleefowl mounds	Loss of native vegetation and reduction in availability of habitat for local flora and fauna species Loss of Malleefowl breeding habitat	Clearing Construction Operation	Possible	Insignificant	L	Site Induction & Site Induction Presentation to clearly inform staff, contractors & visitors of vegetation clearing permit process & requirements, Malleefowl presence in area - Environmental baseline studies data added to Aurenne Corporate dataset & used in GIS to inform project planning and proposed clearing assessments - Adherence to MIG internal Environmental Permit process, which includes internal Vegetation Clearing Permit Procedure E-PRO-001 - Clearing areas demarcated pre & post clearing, recorded spatially, documented on the site plan according to Vegetation Clearing Permit Procedure E-PRO-001 - No clearing without Vegetation Clearing Request Form E-FRM-001 and the authorisation: Vegetation Clearing Permit Assessment & Authorisation Form E-FRM-001 - Annual reconciliation and reporting of clearing areas against approved disturbance areas in MP and MIG internal Permit process (E-PRO-001) Malleefowl Management Plan E-PLA-005 adherence for general requirements and pre-clearing surveys for mounds; reporting requirements to DBCA - Any incidence of unauthorised/unapproved clearing is recorded (Environmental Event Management Register E-REG-001) & reported (internally and externally to regulating authority, where required) and areas of vegetation cleared are rehabilitated immediately - Disturbance is limited to that approved in this MP and within the approved disturbance envelope - Site compliance inspections; monthly E-PRO-016 Environmental Audit Procedure with E-FRM-004 Environmental Audit Record Form - Annual clearing audit confirmed through annual Remote Sensing assessment (Astron Env. Consultants) - Restricted access for contractors and employees - All Mining Act (approved Mining Proposal/MCP) and EP Act (Works Approval, NVCP) approvals are acquired prior to any land disturbance.	Planning Construction Operation	Possible	Insignificant	L
		2	Increased dust due to vegetation clearing and increased activity	Smothering of native vegetation leading to death of vegetation or a decline in vegetation health and condition	Construction	Possible	Insignificant	L	- Use of water carts for active dust suppression as required during clearing & ground disturbance - Speed limits will be enforced on unsealed roads through signage and education of all personnel Site Induction & Site Induction Presentation (doc refs: Z-IND-001 & 003) - Progressive rehabilitation - Land disturbance will be kept to the minimum necessary for development of the project (per best practice & tenement conditions) - Vehicle traffic will be confined to defined roads and tracks	Construction Operation Closure	Possible	Insignificant	L
		3	WWTP spray field nutrient loading	- Reduced vegetation health - Potential soil residue affecting future closure	Operation	Possible	Insignificant	L	- Baseline surveys informed Project planning and environmental siting to ensure spray field is appropriately sized and located away from sensitive receptors - WWTP to be constructed and operated as per DWER Works Approval (W6574-2021-1) & subsequent license requirements (when received) - Sprayfield and WWTP conforms & operates according to Department of Health approval	Operation	Possible	Insignificant	L
	Flora	4	Accidental taking of Priority flora during clearing, driving off tracks (noting that no Priority flora is found in proposed activity areas but is included as a precautionary approach)	Loss of conservation significant flora individuals or populations	Construction	Possible	Minor	M	- Baseline surveys informed Project planning and environmental siting to ensure avoidance of majority of Priority flora - Induction and education of staff & contractors regarding clearing requirements Site Induction & Site Induction Presentation (doc refs: Z-IND-001 & 003)) - Adherence to MIG internal Environmental Permit process, which includes internal Vegetation Clearing Permit Procedure E-PRO-001, & clearing areas demarcated prior to clearing; audit following clearing; E-FRM-002 Vegetation Clearing Request Form & approval through E-FRM-001 Vegetation Clearing Permit Assessment & Authorisation Form - Vehicles to remain on designated tracks and parking areas only - Adherence to CPS 9383/1 conditions that ensure no significant impacts to the local populations of Jacksonia lanicarpa through limiting impact on clearing of plants	Construction Operation Closure	Possible	Low	L
	Fauna	5	Vehicle interactions with fauna Fauna accessing Process Water	Injury or death to local fauna species, including Malleefowl	Construction Operation	Possible	Moderate	M	Site induction includes Mallee Fowl information and contractors are provided with information in regard to potential Mallee Fowl sightings, mounds and recording Site Induction & Site Induction Presentation (doc refs: Z-IND-001 & 003) O-PLA-004 Traffic Management Plan in place with posted speed limits; speed limits will be enforced on unsealed roads through signage and education of all personnel	Construction Operation	Possible	Moderate	M ₁

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
			Ponds/IWL/monitoring bores						- All fauna strikes are recorded (E-REG-001 Environmental Event Management Register) and reported to the Environmental Superintendent, recorded, investigated and used to determine management actions - All incidences involving fauna species of conservation significance are reported to DBCA - Fauna Management Plan E-PLA-003, Malleefowl Management Plan (including report forms) E-PLA-005 includes responsibilities for fauna & conservation significant fauna - Daily inspections of the IWL will include recording any fauna entrapment, injuries or death (E-FRM-006 Environmental Incident Form) and reported to Env. Depart. that will retain data (E-REG-001 Environmental Event Management Register) and review for adaptive management purposes should bird attraction and deaths be at an elevated level (compared to other IWL/TSFs in the region) - All monitoring bores will be capped to prevent fauna ingress. - Any native fauna species injured or killed as a result of collision will be recorded as an incident in E-REG-001 Environmental Event Management Register, reported to DBCA where required, and reported in the AER - Adherence to NVCP CPS 9383/1 conditions that limit clearing to non-breeding seasons - Environmental Department to review E-REG-001 Environmental Event Management Register weekly to review bird deaths recorded in Ponds & enact adaptive management (i.e. bird deterrents) should bird entrapment or deaths exceed 2 per week & is included in E-PRO-016 Environmental Audit Procedure				
	Introduced flora (weeds)	6	Introduction of new weeds or proliferation of existing weeds	Decline in habitat quality and native vegetation Compromised topsoil stockpiles: reduced seed bank, soil viability and suitable growth medium required to establish vegetation	Construction Operation Closure Operation Closure	Possible	Insignificant	L	- Earthmoving equipment to be inspected, cleaned and weed free prior to arrival on site (inspection checklist (E-PRO-007 Vehicle Hygiene Inspection Procedure) signed) - Ensure that no weed-affected soil, mulch, fill or other material is brought into the area to be cleared - Restrict the movement of machines and other vehicles to the limits of the areas to be cleared - If weeds are identified, weed spraying/eradication campaigns will be completed during operations and 5 years post-closure - Environmental Audit for weed occurrence & weed control instigated where new occurrences or abundance increases E-PRO-006 Weed Management Procedure; E-PRO-016 Environmental Audit Procedure - Rehabilitation areas seeded with local native species; inspection for weed proliferation - Monitoring of rehabilitated areas annually and at/post closure	Construction Operation Closure	Possible	Insignificant	L
	Introduced fauna (ferals)	7	Increased feral animal presence	Overgrazing or feral predation on native fauna		Possible	Minor	M	- Putrescible waste is managed appropriately according to E-PRO-005 Waste & Landfill Management Procedure with fencing, gates kept closed, and wastes regularly covered - No feeding of fauna - Increased sightings of feral animals will trigger liaison with Pastoralist to discuss management - Camp pest animals (mice, cats) will be managed appropriately by camp manager/contractor		Possible	Insignificant	L
Water Resources	Surface & ground water	8	Spillage, leakage from used or stored hydrocarbons or chemicals	Contamination of surface & groundwater resources through mobilization of sediment, waste materials, potential pollutants etc	Construction Operation Care & maintenance Closure Post-closure	Possible	Minor	M	- All hydrocarbon and chemical storages will be designed and constructed in accordance with Australian Standards AS1940 and AS1692 - All hydrocarbons and chemicals are stored in bunded areas or containers - Spill kits are fully stocked, located in strategic locations and personnel are training in their use - Adherence to Spill Procedure Spill Management Procedure E-PRO-012 (all spills are contained, controlled and cleaned up immediately) (Environmental Spill Incident Form E-FRM-003) and record made in Environmental Event Management Register ((E-REG-001) - Monthly environmental audit inspections are completed (Environmental Audit Record Form E-FRM-004 & E-PRO-016 Environmental Audit Procedure - Pre-start checks are completed on all vehicles - Equipment is regularly serviced and maintained - Low volumes of hydrocarbons stored on site - Hydrocarbons stored away from drainage areas - Hydrocarbon contaminated soil identified during closure to be excavated and remediated or disposed offsite - Assessment and remediation of potentially contaminated areas as part of mine decommissioning - E-PRO-008 Surface Water Management Procedure - Monitoring in accordance with Groundwater Bore Monitoring Plan	Construction Operation Care & maintenance	Possible	Moderate	M ₂
		9	PMP/PMF event										

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
									- 10Surface water management structures are constructed to ultimate (PMF event) design as per Hydrologia Water Management Strategy for Operational phase from the onset to mitigate for PMP/PMF events				
		10	Seepage, mounding, contamination from constructed landforms	Change to hydrological regimes or contamination of surface or groundwater as a result of Project		Possible	Moderate	M	- IWL will be managed and operated in general accordance with the IWL Operations Manual - Independent audits performed annually until Groundwater Operating Strategy is developed & approved by DWER - Records within E-REG-001 Environmental Event Management Register for non-compliance or incidents - Annual remote sensing & analysis of Vegetation Health in Bottle Creek Project area (Astron Env 2021-) monitoring in tandem with Groundwater Bore Monitoring Plan	Construction Operation Closure	Possible	Moderate	M ₂
		11	Changes to catchment surface water regime	Water starvation &/or ponding as a result of constructed water management features		Possible	Moderate	M	- Baseline hydrological assessment & modelling undertaken to understand catchment dynamics - Baseline vegetation health assessment (Astron 2021) to understand vegetation health with assessment to be conducted annually through to closure - Surface water management structures designed for PMP - Surface Water Management Structures constructed according to locations & design in Hydrologia 2024 - Surface Water Management Assessment to be undertaken to review all structures and re-run modelling prior to full site closure, to inform MCP; MCP to be updated and approved accordingly	Construction Operation Closure	Possible	Moderate	M ₂
	Ground water	12	Water use is excess of allocation	Local impacts to groundwater dependent vegetation	Construction Operation	Possible	Minor	M	- Water use within DWER licensing parameters (as per DWER license conditions GWL204119(1) & CAW 26D license 204120(1)) - Water bore meters in use and recorded (monitoring) as per GWL204119(1) as administered by DWER with annual reporting to DWER (Water online) - No GDEs mapped within Project area - Groundwater Operating Strategy will be developed once borefield is developed. DWER will regulate groundwater use. In addition, Groundwater Monitoring Plan will ensure appropriate groundwater use, monitoring & reporting consistent with licensing requirements	Construction Operation	Possible	Minor	M ₂
Landforms, Land & Soil	Soils	13	- Spillage, leakage and/or seepage from used or stored hydrocarbons or chemicals - Poor hydrocarbon & DG management during operations - Contamination from hydrocarbon or other operation chemical not remediated adequately during LoM	Localised soil, land contamination; contaminated site	Construction Operation Care and maintenance Closure Post-closure	Possible	Minor	M	- All hydrocarbon and chemical storages will be designed and constructed in accordance with Australian Standards AS1940 and AS1692 - All hydrocarbons and chemicals are stored in bunded areas or containers - Spill kits are fully stocked, located in strategic locations and personnel are training in their use - Adherence to E-PRO-0012 Spill Management Procedure (all spills are contained, controlled and cleaned up immediately); all spills reported E-FRM-003 Environmental Spill Incident Form & corporately recorded E-REG-001Environmental Event Management Register - Daily work area inspections - Storage & handling in accordance with E-PRO-004 Hazardous Substances & Dangerous Goods Management Procedure - E-PRO-016 Environmental Audit Procedure are completed & recorded according to E-FRM-004 Environmental Audit Record Form - Pre-start checks are completed on all vehicles - Equipment is regularly serviced and maintained - Low volumes of hydrocarbons stored on site - Hydrocarbons stored away from drainage areas - Hydrocarbon contaminated soil identified during closure to be excavated and remediated or disposed offsite - Assessment and remediation of potentially contaminated areas as part of mine decommissioning - Reporting to DWER if a significant (as per E-PRO-0012 Spill Management Procedure) spill occurs	Construction Operation Care & maintenance	Possible	Insignificant	L
		14	Loss of topsoil as a result of wind/water erosion, removal by machinery or weed invasion or damage to structure of topsoil	Reduction in topsoil quality and quantity available for rehabilitation works, and subsequently a reduction in revegetation/ rehabilitation success	Construction Operation Closure	Possible	Minor	M	- Topsoil will be stripped to a depth of 200 mm where possible and stored to a height of 2 m according to E-PRO-009 Topsoil Management Procedure - Dedicated topsoil storage areas as per approved MPMCP - Water cart dust suppression during clearing, earthworks, construction & operations & during closure if required	Construction Operation Closure	Possible	Insignificant	L

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
			during stripping or storage						- Dust suppression according to E-PRO-017 Dust Management Procedure - Progressive rehabilitation of temporarily cleared and/or no longer required areas				
	Landforms	15	Fugitive dust	- Decline in vegetation health due to smothering - Stakeholder dissatisfaction		Possible	Minor	M	- Water cart dust suppression during clearing, earthworks, construction & operations & during closure if required - Dust suppression according to E-PRO-017 Dust Management Procedure - Record of potential tailings dust noted during E-PRO-017 IWL Monitoring Procedure with tailings beaches could be irrigated (i.e. with sprinklers or similar) or tailings deposition managed such that beach areas do not dry back to such that dust generation occurs - IWL will be managed and operated in general accordance with the IWL Operations Manual - Reporting according to E-REG-001 Environmental Event Management Register for nuisance dust & audit records or complaints	Clearing Construction Operation Closure	Possible	Insignificant	L
		16	- Unstable, weathering, loss of containment, or leaching of IWL, including burial of process pond liners - PAF material not sufficiently encapsulated causes acid mine drainage	- Site contamination - Surface or groundwater contamination		Possible	Moderate	M	- IWL designed according to best practice - Pond liners deposited according to Rural landfill Regulations & Prescribed Premise Works Approval/licence (at time of closure) - Monitoring of IWL according to CMW 2022 - Groundwater monitoring according to Groundwater Monitoring Plan - DSI Audit at Closure to detect potential contamination - IWL ground preparation, construction, commissioning, operation, monitoring, & Closure according to DWER Works Approval (W6640-2022-1) & licencing (once WA progresses to operation) - All PAF material will be appropriately encapsulated in the WRL. Compacted NAF material of a nominal 2.5 to 4 m thickness will cover the encapsulation cell. Sufficient volume of NAF material is available to ensure total encapsulation.	Construction Operation Closure	Unlikely	Moderate	M ₈
		17	Impacts of permanent infrastructure (WRLs, IWL, Surface Water Management Structures) on catchment	- Water starvation, ponding, reduction - Increased erosion, scouring, sedimentation		Possible	Moderate	M	- Design and location of all permanent infrastructure located and constructed according to relevant specialist reports as listed in approved MPMCP (Reg ID 500063) - Audit & Monitoring of all built structures during construction, commissioning, operation & closure - DWER reporting according to Works Approvals	Construction Operation Closure	Possible	Moderate	M ₃
Rehabilitation & Mine Closure	AMD	18	- IWL & WRLs leaching to land and groundwater - Potential to interact with sulphides	- Contamination of soils or groundwater - Ecological impacts to vegetation, local catchment - Deemed contaminated site - Inability to reach relinquishment post closure	Operation Closure Post-closure	Possible	Moderate	M	- All PAF material will be appropriately encapsulated in the WRL. Compacted NAF material of a nominal 2.5 to 4 m thickness will cover the encapsulation cell. Sufficient volume of NAF material is available to ensure total encapsulation. - IWL designed according to industry best practice - IWL constructed according to design - IWL construction, operation, and monitoring under DWER Works Approval (W6640/2021/1) & licencing (when licenced) with on-going reporting to DWER on IWL & monitoring (LoM) - WRLs designed, constructed, and rehabilitated according to approved MPMCP (Reg ID 1015557) - Up to 5 years post-closure monitoring of landforms and groundwater according to approved MPMCP (Reg ID 500063) - Groundwater Monitoring Plan to monitor potential changes in groundwater quality or quality	Construction Operation Closure	Unlikely	Moderate	M ₈
	Rehabilitation Mine closure	19	Rehabilitation failure due to: - Poor regrowth media, reduced seed bank, grazing, droughts - Inappropriate landform design Inability to achieve self-sustaining, stable & non-polluting landforms to sustain the PMLU	Rehabilitation failure resulting in inability to meet closure criteria Post-mining land use cannot be sustained	Operation Closure Post-closure	Possible	Moderate	M	- Pre-closure planning in accordance with approved MCP - Topsoil handling according to Topsoil Management Procedure E-PRO-009 to maximise viability of resource - Scheduling to maximise direct placement of growth medium where possible - Preparation & planning for rehabilitation according to MPMCP (Reg ID 500063) - Rehabilitation trials for soil amelioration during progressive or final landforms according to MPMCP (Reg ID 500063) - Research data gaps according to those identified in MCP Reg ID 500063 (MCP Table 2) during LoM, which includes Store & Release Cover as proposed for the IWL rehabilitation at Closure - Seeding with local provenance species - Scheduling of rehabilitation activities - Implement monitoring programs, as per approved MCP (for a minimum of 5 years) after rehabilitation to track progress and implement contingency measures to remediate shortfalls - Specialist external consultants will be engaged for seed collection, rehabilitation services and Remote Sensing/EFA monitoring	Operation Closure Post-closure	Possible	Moderate	M ₄

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
									- Continued Stakeholder liaison in regard to PMLU for LoM according to E-PRO-015 Stakeholder Liaison Strategy Procedure				
		20	Disruption of surface flows in the event of a PMF event, causing ponding of water resulting in deterioration and/or death of vegetation	Erosion or ponding of water resulting in reduction in vegetation health	Closure Post-closure	Possible	Moderate	M	- Design; layout has incorporated natural ephemeral drainage lines in arrangement (Hydrologia 2022) - Design; all surface water assessment and management structures proposed for Project according to Operational & Closure Surface Water Management Strategy (Hydrologia 2024) - Ensure rehabilitated land surfaces are contoured consistent with the surrounding undisturbed landscape and that any natural, ephemeral drainage lines are connected and not impeded at closure - Deep ripping for revegetation to be ripped along contours to promote a natural surface drainage catchment - Post-closure assessment of retention of drainage management structures - Post-closure monitoring of diversion drains - PMF modelling and surface water management will be reviewed over LoM - Remote sensing and EFA monitoring by specialist consultant consistent with approved MCP	Operations Closure Post-closure	Possible	Insignificant	L
	Financial	21	Under-estimation of closure costs	Shortfall in closure financial provisioning	Closure Post-closure	Possible	Minor	M	- MCP costs reviewed bi-annually and revised for each MCP submission - CFO presents to Board annually on updated closure planning costs	Operation Closure Post-closure	Possible	Minor	L
	Access to post-closure landforms	22	Human or animal access to post-closure landforms (pits, pit lakes, waste landforms etc)	Access that may result in injury or adverse health impact	Post-closure	Possible	Minor	M	- Sign posting of restricted access due to site rehabilitation/danger - Ensure all abandonment bunds are constructed as per guidelines and located outside of the PZOI - Action approved MCP accordingly - Audit for signs of ingress during 5 years post-closure; address egress breaches	Closure Post-closure	Unlikely	Insignificant	L
Social/ Stakeholders	Rehabilitation Mine closure	23	- Incomplete closure (failure to remove buildings, Village, & associated infrastructure) that may impact the surrounding environment - Stakeholder complaints to company or Minister	- Incomplete removal of buildings & infrastructure will detrimental impacted closure, rehabilitation and may entrap fauna or pose other risk to environment - Stakeholders dissatisfied with operational impacts or closure completion	Closure Post-closure	Possible	Minor	M	- Mine closure planning and process follows approved MCP (MIG-E-DOC-005; Reg ID 500063) - All building and associated infrastructure to be removed from site, or buried where appropriate and consistent with approvals unless otherwise agreed to with stakeholders (and as detailed in approved MCP) - Legal agreements with interested parties (Red Dirt Minerals/Ora Banda Mining & Zenith Australia Group) in relation to the upgraded airstrip (Aerodrome) & N-S Access Track - Continued Stakeholder liaison in regard to PMLU for LoM according to E-PRO-015 Stakeholder Liaison Strategy Procedure - Agreements recorded & actioned through E-REG-003MIG Project Stakeholder Register	Closure Post-closure	Unlikely	Insignificant	L

11.3 Residual Risk Mitigation, Management & Environmental Outcomes

Table 56 identified risks that remain rated as ‘medium’ or above that require environmental outcomes. These are numerically annotated and include:

1. **Fauna; Malleefowl.** Inherent risk remains as Project activities, particularly driving has potential to injure Malleefowl that utilise Project area for foraging and potentially breeding although no active mounds have been located. Numerous treatments are applied to reduced potential risk to Malleefowl.

2. **Water resources; Surface & Groundwater.** Inherent risk remains for negative changes to groundwater and potentially surface water following peak events. Regular monitoring before & after operations begin will establish baseline and then post-impact (operations) from which data trends can be assessed. The Groundwater Monitoring Plan (**Appendix G2**), outlining sampling and trend analysis will be instrumental in determining potential impacts from the Project as the desired outcome is no negative hydrological impacts that result in vegetation decline. Vegetation conditions trends will also be assessed through remote sensing and data analysis on an annual basis both pre-disturbance and during operations.

3. **Landforms.** The size and nature of the proposed IWL necessitates appropriate ground preparation, construction, operating, monitoring and closure to ensure that it does not contribute contamination to the surrounding environment. These risks will be assessed as during the DWER Works Approval submission and the infrastructure will be Closed according to the approved MCP (Reg ID 500063; and its future versions). Regular monitoring via VWP and groundwater along with the Operating Manual will ensure reduced risk of operational issues. The risk of PAF material needs to be considered during landform construction to ensure it is appropriately encapsulated and cannot result in acid mine drainage. Closure activities are outlined in CMW 2021 and the MCP. Other constructed landforms that will become permanent such as the WRLs and Surface Water Management Structures are also detailed in the MCP.

4. **Rehabilitation & mine closure;** there remains inherent risk in closure that even with best planning, aberrant climate can impact rehabilitation and revegetation efforts. The outcome to achieve rehabilitated landforms that are safe, enduring, compatible, and functional in the landscape context but this requires favourable rainfall to establish both the landform and the vegetation. The risk of acid mine drainage is also present if PAF material encapsulation is not sufficient. In addition, a financial risk is associated with closure projections as costs can escalate depending on a range of domestic and global factors. Annual reviews of cost considerations are undertaken for the Project to ameliorate this risk; financial consideration includes worst case scenario for closure timeframes to include contingency for unfavourable climatic factors.

Section 10 Environmental Outcomes, Performance Criteria and Monitoring, provides the outcomes, how measured (monitoring), and against criteria to ensure these activities to ensure the Project meets its objectives and that risks to the receiving environment are understood and managed accordingly.

11.4 Environmental Risks Assessed by Other Agencies

Table 57: Environmental risks regulated by other agencies

DMIRS Environmental Factor	Component	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Regulating authority & instrument (Received approval provides in cited Appendices)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
Biodiversity	Flora, Vegetation, Fauna habitat	Unauthorised clearing resulting in loss of Priority flora &/or Malleefowl nests	Loss of biodiversity values; loss of Malleefowl habitat &/or active nests; unauthorised impacts to priority flora	Clearing Construction Operation	Possible	Moderate	M	Regulator: DMIRS (under delegated authority from DWER) Instrument: NVCP CPS 9383 provides for clearing: Up to 1000 ha over tenements: Exploration Licences 29/790, 29/921, 29/970, 29/971, 29/973, 29/993, 29/1007, 29/1008, 29/1014, 29/1016; General Purpose Leases 29/29, 29/30; Mining Leases 29/150, 29/151, 29/421; Miscellaneous Licences 29/137, 29/139, 29/145, 29/153, 29/154 All clearing will be undertaken under the NVCP conditions of this instrument, which regulates clearing for the Project and includes conditions relating to biodiversity values relevant to the Project Aurene has procedures in place to ensure these conditions are adhered to.	Construction Operation	Unlikely	Moderate	M 1
Water	Surface & groundwater	IWL/TSF - Seepage - Contamination from pipeline leaks - Fugitive dust Processing Plant & Leaching - Process water pond overtopping - Process water ponds leaking - Chemical spills Putrescible Waste Facility - Seepage to groundwater	There is potential for the proposed infrastructure for tailings, processing, waste facility to contaminate soils, surface & groundwater through spills, leaks, leaching through soils to groundwater & decline in surrounding vegetation health that may support foraging habitat for Malleefowl &/or habitat for Priority flora	Operation Closure	Possible	Moderate	M	Regulator: DWER Instrument : Works Approval (W6640_2022_1) (under DWER assessment) will provide for assessment & authorisation to construct Project infrastructure in accordance with Prescribed Premises activity thresholds as per EP Act Schedule 1: - Cat 5 Processing or beneficiation of metallic or non-metallic ore - Cat 7 Vat leaching - Cat 64 Class II or III putrescible landfill Regulator DWER Instrument: CAW & GWL provides for the construction of groundwater bores within Project tenements; and provides for dewatering, dust suppression, & camp purposes up to 250,000 kL per annum	Operation Closure	Possible	Moderate	M 2
Land & Soil	Soils, landforms, land degradation	Clearing - Dust - erosion IWL/WRLs - Potential for erosive actions that mobilize contaminants outside of Disturbance Envelope - Loss of containment Putrescible Waste Facility - Contamination of soils WWTP Sprayfield eutrophication of soils Processing Plant spills, pond leaching, dust Burial of Process Water Pond liners at mine closure	- Erosion of soil from strong winds or significant rainfall event following clearing affecting surrounding vegetation - Site contamination & significant site remediation from dam break - Soil contamination from waste deposited to Landfill facility; & burial of pond liners at Closure - Decline if vegetation health or weed proliferation due to high nutrient loads from WWTP sprayfield	Clearing Construction Operation Closure	Unlikely	Moderate	M	Regulator: DMIRS (under delegation) Instrument: CPS 9383 provides for clearing up to 1000 ha over tenements: Exploration Licences 29/790, 29/921, 29/970, 29/971, 29/973, 29/993, 29/1007, 29/1008, 29/1014, 29/1016; General Purpose Leases 29/29, 29/30; Mining Leases 29/150, 29/151, 29/421; Miscellaneous Licences 29/137, 29/139, 29/145, 29/153, 29/154 All clearing will be undertaken under the NVCP conditions of this instrument, which has considered the soil and landform values and risk associated with erosion, dust and land degradation resulting from clearing. Aurene has procedures in place to ensure these conditions are adhered to. Includes Condition 4, which states that: The Permit Holder shall not clear native vegetation unless the purpose for which the clearing is authorised is enacted within three months of the authorised clearing being undertaken Regulator: DWER Instrument: Works Approval (W6640_2022_1) (under DWER assessment) will provide for assessment & authorisation to construct putrescible Waste Facility on M 29/150 Burial of Process Water Pond liners will be under future DWER Works Approval or Licence relevant at time of Closure (in 7-10 years' time) Regulator: Dept. of Health through Shire of Menzies (Irrigation Sprayfield) Instrument: Approval # 249.21 provides for the discharge of wastewater from the WWTP according to the design submitted to DWER/Dept of Health/Shire of Menzies Regulator: DWER Instrument: Works Approval (W6574_2021_1) for the construction & commissioning (prior to licencing) of the WWTP & Irrigation Sprayfield	Clearing Construction Operation	Possible	Minor	M 2 & 3

DMIRS Environmental Factor	Component	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Regulating authority & instrument (Received approval provides in cited Appendices)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
Rehabilitation & Mine Closure	PMLU	PM landforms contaminate soils or groundwater PM landforms interrupt or create surface water starvation or inappropriate regimes	Decline in vegetation health due soil, surface or groundwater contamination, erosion	Closure	Possible	Moderate	M	Regulator: DMIRS Instrument: Reg ID 500063 MCP provides for the closure and rehabilitation of the Project such that no liability is left for the State to provide for the safe and enduring closure of the site Regulator: DWER Instrument: Contaminated Sites Register (should identified contamination occur of a reportable nature/volume)	Closure	Possible	Minor	M 4
Social/ Stakeholder/ Other	Closure	Airspace; noise; stakeholder & legal compliance	Potential stakeholder & legal issues if Aerodrome is not maintained (Operations) or closed (Closure) to a satisfactory standard agreeable to both parties	Operation & Closure	Possible	Moderate	M	Regulator: Civil Aviation Authority Instrument: Under the Part 135 Legislation, it is left to Aircraft Operator Company, the Pilot in Command of the aircraft and indirectly their insurers to decide where they can and cannot regularly operate based on pre-identification of hazards and treatment of risks. The Aircraft Operator Company requires technical inspection survey data and details of the facility before commencement of operations. Aurenne has received preliminary advice on the requirements to achieve CASA certification and will be working towards developing this infrastructure according to this Reg ID 500063 submission to develop the Aerodrome. The Aerodrome will not be operational until it meets the requirements of the Aircraft Operator Company; Aurenne has identified a short list of potential service providers. Aurenne, following approval of this Reg ID 101557 MP , will develop the Aerodrome to CASA standard, suitable for registration but the service provided/operator will take on responsibility for registration. In addition, Aurenne has legal agreements & consent relating to the upgrade of the existing Perinvale Airstrip to Aerodrome standard. Aurenne must continue to facilitate access to the upgraded apron and ensure the apron/runway is maintained & the closure standard will be the subject of future negotiations & legal agreement with both parties.	Closure	Unlikely	Minor	L

12 ENVIRONMENTAL OUTCOMES, PERFORMANCE CRITERIA AND REPORTING

Consistent with the Statutory Guidelines for Mining Proposals (DMIRS 2020), environmental outcomes have been defined for the Project for risks with a risk rating of moderate and above.

The environmental risks associated are not risks that cannot be managed with standard procedures and can be monitored and reviewed to ensure no negative impact to the environment is occurring.

Monitoring requirements were determined for the Project so that the performance of the Project can be measured against the baseline data and limits. Any breach of or an incident which has caused, or has the potential to cause significant environmental harm, will be reported to DMIRS in accordance with specified timeframes.

The DMIRS environmental factors, relevant to MIG Project are summarised in **Table 58**.

Details of the defined environmental outcomes, closure criteria and proposed monitoring for the Project are provided in **Table 59**.

Table 58: DMIRS environmental factors relevant to the Project

Environmental factor	DMIRS objective
Rehabilitation and Mine Closure	Mining activities are rehabilitated and closed in a manner to make them physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/non-contaminating, and capable of sustaining an agreed post-mining land use, and without unacceptable liability to the State
Land and Soils	To maintain the quality of land and soils so that environmental values are protected
Biodiversity	To maintain representation, diversity, viability and ecological function at the species, population, and community level
Water Resources	To maintain the hydrological regimes, quality and quantity of groundwater and surface water to the extent that existing and potential uses, including ecosystem maintenance, are protected

Risk of PAF materials outlined in this Proposal is encompassed in the following existing Environmental Outcomes:

- (16) Waste materials are handled and stored appropriately and do not result in site contamination
- (20) Waste rock dumps are constructed to design to ensure encapsulation of all dispersive and unstable waste rock within waste rock landforms.

No new Environmental Outcomes have been defined for Stage 3; however, new performance criteria and monitoring has been included for the above Environmental Outcomes (see Table 59).

12.1 Environmental Monitoring

Aurenne is committed to the managing and monitoring the potential for its activities to impact on the local environment. A suite of baseline biological surveys were undertaken from 2019-2021 to understand the key biodiversity values; and potential impacts informed through studies relating to soils, hydrology, geology and waste characterisation.

Aurenne's approach to monitoring includes 1) broad-view remote sensing across Project tenements; and 2) detailed view (more frequency/intensity) for key Project infrastructure and environmental assets according to EMS procedures.

12.1.1 Monitoring Approach

Bottle Creek Tenements

Aurenne has acquired contemporary high resolution satellite imagery (WorldView imagery; 2021) to provide baseline data for vegetation condition and to support Project planning and mine development. It is envisaged that repeat captures of WorldView imagery in future years will form the basis of a vegetation monitoring program. Vegetation health within the Project area (Bottle Creek) will be calculated using the Modified Soil Vegetation Index (MSAVI) annually. This index is well suited to detecting and analysing vegetation within semi-arid and arid zones. Following acquisition, the imagery will be processed, which includes orthorectification, reprojection and georeferencing and the production of pan-sharpened orthoimagery as red, green, blue (RGB) natural colour ECW in x1 and x5 compression formats. The orthoimagery will be colour-balanced and mosaiced. Following a repeat capture of the WorldView imagery (annually/November), (Astron) will undertake a remote sensing analysis of change in vegetation condition. Change in the MSAVI would be represented in a map between time periods. This map would show areas of gain and loss in vegetation condition. Additionally, MSAVI statistics could be produced for potential impact and reference areas, vegetation type or any other subdivision Aurenne requires. On-ground data collection where significant negative and/or positive deviations are noted will assist in confirming change validation.

Detected changes in remotely sensed processed imagery will be reviewed in conjunction with finer scale monitoring, such as groundwater monitoring bore suite data and regular site audit data.

Mining and Disturbance Envelope

Environmental feature-specific monitoring to detect trends over time is proposed for the IWL, groundwater bores, clearing areas, Malleefowl, compliance, etc (EMS plans, procedures, etc). **Table 59** outlines the environmental monitoring requirements. These requirements are monitored and recorded to corporate databases and audited internally by Aurenne; and are generally reported to external regulator according to the instrument under which the activity was approved

Table 59: Environmental outcomes, criteria, and monitoring

Element	Component	Risk pathways	Desired environmental outcome	Performance criteria	Monitoring (Note: Appendix G contains Procedures referred to below)	Link to ERA Table 37&38
Legal compliance	Permits, licenses, commitments	- Failure to keep Compliance Register E-REG-005 up to date - Failure to keep appropriate records and reporting	1. Maintain compliance with all legal and other requirements during the closure planning and implementation process	- No statutory non-compliances recorded annually Compliance Register E-REG-005 is current - Non-compliance issues are reported by the Environmental Superintendent to the regulating authority within the statutory timeframe	- Aurenne Mining Compliance Register E-REG-005 quarterly review (internal) 3rd party legal compliance audit (as required)	
DMIRS factors						
Biodiversity	Vegetation, fauna habitat	Unauthorised clearing or ground disturbing activities resulting in impacts surrounding vegetation and habitat	2. No impact to vegetation beyond disturbance envelope	- Zero excursions outside of the approved disturbance area as per E-FRM-001 Vegetation Clearing Permit Assessment & Authorisation Form signed form 100% adherence to E-PRO-001 Vegetation Clearing Procedure according to annual audit - Zero reportable incidences (both internally and externally (DMIRS) of unlawful clearing - E-REG-001 Environmental Event Management Register is current by the end of each month 100% compliance with NVCP CPS 9383/1	E-PRO-001 Vegetation Clearing Procedure is followed E-FRM-001 Vegetation Clearing Request Form is completed & submitted E-FRM-001 Vegetation Clearing Permit Assessment & Authorisation Form is authorised prior to activity, including: - Demarcation audit prior to clearing - Audit of cleared areas following clearing - Annual Native Vegetation Clearing Permit Reports according to the records maintained in E-REG-002 Clearing Permit Tracking Register to DMIRS - Annual remote sensing for vegetation change (Astron) - Rehabilitation/ Compliance Audit (Annual – results reported in AER) - Incident reporting and investigation of any unauthorised clearing reported & recorded E-REG-005 Environmental Event Management Register	1
	Flora	- Unauthorised clearing - Lack of bio-surveys	3. Bio-surveys are currently (within 5 years of currency according to regulatory expectations) 4. No unauthorised clearing of Priority flora	100% adherence to MIG E-PRO-001 Vegetation Clearing Procedure according to annual audit - Zero reportable incidences (both internally and externally (DMIRS) of unlawful clearing - Zero loss of Priority flora except authorised under CPS 9383	E-PRO-001 Vegetation Clearing Procedure is followed E-FRM-001 Vegetation Clearing Request Form is completed & submitted E-FRM-001 Vegetation Clearing Permit Assessment & Authorisation Form is authorised prior to activity, including: - Demarcation audit prior to clearing - Audit of cleared areas following clearing - Annual Native Vegetation Clearing Permit Reports (CPS 9383/1) to DMIRS according to the records maintained in E-REG-002 Clearing Permit Tracking Register - Rehabilitation/ Compliance Audit (Annual – results reported in AER) - Incident reporting and investigation of any unauthorised clearing reported & recorded E-REG-005 Environmental Event Management Register	1
	Fauna	- Unauthorised clearing - Lack of bio-surveys - Roadkill of Malleefowl	5. No loss of active or recently active Malleefowl mounds 6. No Malleefowl roadkill	No reportable incidents annually involving: - Impacts to recently active/active (as defined in E-PLA-005 Malleefowl Management Plan) Malleefowl mounds - Roadkill to malleefowl 100% of native fauna roadkill reported within 1 week of record - MIG GIS spatial data records updated with new Malleefowl records within 5 business days 100% compliance with NVCP CPS9383/1	E-REG-005 Environmental Event Management Register E-FRM-001 Vegetation Clearing Permit Assessment & Authorisation Form which includes pre-clearance surveys for Malleefowl mounds E-PLA-005 Malleefowl Management Plan includes DBCA report forms E-PRO-001 Vegetation Clearing Procedure - Project EMP lists all Project environmental monitoring components/schedule (in prep.) - Corporate GIS spatial data records all Malleefowl surveys and records; all clearing areas E-REG-002 Clearing Permit Tracking Register is maintained - Annual report to DMIRS for NVCP CPS 9383	1
Water Resources	Surface water	- Spills & mobilisation of contaminants as a result of operations - Inappropriate surface water management resulting in localised flooding or areas of water starvation - Increased sedimentation in Bottle Creek as a result of ground disturbance	7. No net change to surface water catchment as a result of Project 8. No sedimentation to Bottle Creek downstream catchment as a result of project 9. No unabated erosion as a result of Project	- No recorded sedimentation in Bottle Creek downstream of Project area (M 29/150) recorded during Environmental Audits (as per EMP & E-PRO-008 Surface Water Management Procedure) - Zero reportable (DWER) hydrocarbons or hypersaline water spills - No vegetation decline reported (Astron) related to decline in surface water quality or quantity 100% of Topsoil stockpiles are managed according to E-PRO-009 Topsoil Management Procedure to mitigate for dust and erosive activities - Water management structures constructed in accordance with their approved design specifications (Hydrologia 2024) - Regular Env. Audits conducted to identify/correct poor surface management issues	E-PRO-008 Surface Water Management Procedure E-PRO-012 Spill Management Procedure E-PRO-009 Topsoil Management Procedure E-FRM-003 Environmental Spill Incident Form reports spills E-REG-001 Environmental Event Management System records spills - Spills recorded (spatially & report form) and reported (to DWER if significant volume) - Annual remote sensing & vegetation health assessment (Astron) will note decline in vegetation health that will trigger root cause investigations E-PLA-002 EMP requires quarterly Environmental Audits; 2022 will have monthly Audits during clearing, construction, and early operations E-PRO-016 Environmental Audit Procedure E-FRM-004 Environmental Audit Record Form	2

Element	Component	Risk pathways	Desired environmental outcome	Performance criteria	Monitoring (Note: Appendix G contains Procedures referred to below)	Link to ERA Table 37&38
				- Maintenance (removal of sedimentation/ obstructions in surface water management structures following Env. Audit reports - Structures are constructed with competent material and additional rock armouring where required to prevent erosion - Surface water drainage to downstream environments is retained, diverted, or reinstated where possible to be consistent with local & regional drainage function. - No significant recorded vegetation degradation due to water starvation or inundation caused by mining operations or closure state		
	Ground water	- Drawdown of groundwater negatively impacts surrounding vegetation health/condition - Impacts to groundwater from IWL seepage (groundwater level and quality) - Loss of pastoral bores due to negative hydrological change (i.e. Decline ion quantity or quality) that reduces stock watering points due to Project	10. No groundwater quantity decline as a result of water extraction 11. No groundwater quality decline as a result of mining and mineral processing & related waste landforms (IWL/WRLs) 12. No recorded decline to vegetation health as a result of groundwater drawdown or seepage from IWL	100% compliance with (DWER) groundwater license GWL204119(1) - No significant (> 2 SD from baseline) water quality decline recorded from groundwater bore suite monitoring - Zero (DWER) reportable water licence breaches - No reported decline in surrounding vegetation health from baseline condition capture (as determined in annual Vegetation Health Assessment; Astron 2021-) attributable to Project (i.e. excluding decline associated with annual climatic conditions/rainfall) 100% compliance with (DWER) groundwater license GWL204119(1) 100% compliance annually with Groundwater monitoring Plan	- Bore monitoring in accordance with DWER GWL204119(1) license requirements (Appendix H1) & annual reporting (Water Online) - Groundwater Monitoring Plan (Pendragon 2024) - Remote sensing annual capture (Worldview) and assessment (Astron Environmental) to monitor vegetation health changes Compliance Register E-REG-005 E-PLA-002 EMP requires quarterly Environmental Audits E-PRO-016 Environmental Audit Procedure E-FRM-004 Environmental Audit Record Form	2
	Soils	Improper storage or handling of topsoil handling result in loss of resource, sedimentation in surface water drainage lines & dust on surrounding vegetation	13. No loss of topsoil to the surrounding environment 14. No discernible loss in vegetation condition surrounding operations	100% of Topsoil stockpiles managed according to E-PRO-009 Topsoil Management Procedure - No significant localized erosion noted during Environmental Quarterly Audits (as per EMP) - No WONS or Declared Pest Plants on Topsoil Stockpiles recorded during Env. Audits	- Quarterly audits (as per E-PLA-002 Environmental Management Plan) does not record erosive (wind, water) impacts, weed proliferation, etc to Topsoil Stockpiles E-REG-001 Environmental Event Management System records any Topsoil Storage or handling non-compliances	3
Land & Soils	Land	Poor storage, handling or processing of mined ore and waste materials resulting in mobilization of contaminants and potential for acid mine drainage	15. Mining will not result in appreciable land degradation, contamination, or pollution of the land 16. Waste materials are handled & stored appropriately & do not result in site contamination 17. All potential mine waste containing PAF material is identified and managed during operations and encapsulated in cells to prevent air and water interaction.	- Compliance with monitoring schedule & testing parameters as detailed in Groundwater Monitoring Plan - Groundwater bore monitoring shows no significant increases (>2 SD from baseline) in contaminants during mining & closure - No reported decline in surrounding vegetation health (as determined in annual Vegetation Health Assessment) attributable to Project (i.e. excluding decline associated with annual climatic conditions/rainfall) - Landforms designed & constructed according to design specifications (IWL, WRLs (MineComp) & ROM as per MP Reg ID 500063 Ongoing monitoring of landforms during construction and rehabilitation to ensure PAF is risk mitigated. Ongoing waste characterisation program to identify and manage PAF material as mining progresses.	Groundwater Monitoring Plan (Pendragon 2024) - Construction, operation & monitoring of IWL & Process Plant in accordance with DWER Works Approval (& subsequent licence) W6640/2022/1 - Bore monitoring in accordance with DWER GWL204119(1) license requirements & annual reporting (Water Online) E-PRO-008 Surface Water Management Procedure - Remote sensing annual capture (Worldview) and assessment (Astron Environmental) to monitor vegetation health changes M-PRO-009 Sulphide Assessment Procedure undertaken during open pit mining at each bench to assess/confirm that no sulphides are present Compliance Register E-REG-005 E-PLA-002 EMP requires quarterly Environmental Audits E-PRO-016 Environmental Audit Procedure E-FRM-004 Environmental Audit Record Form E-PRO-017 IWL Monitoring Procedure (in prep) E-PRO-012 Environmental Spill Management Procedure	3
Rehabilitati on & mine closure	PMLU	- Poor weed management practices lead to the proliferation of weeds around operations & rehabilitation areas - Landforms not compatible with closure objectives (stable, safe, non-polluting, non-contaminating, etc)	18. No BAM Act Declared Pest Plants within the Project operational & closure area 19. Landforms meet DMIRS closure objective 20. Land access & closure PMLU commitments with pastoralist met	100% of disturbed areas are inspected during Environmental Quarterly Audits (as per EMP) to identify if weed species are present & require management; results of weed audit recorded & reported in E-REG-001 Environmental Event Management System - No increase or introduction of new weed species across the Disturbance Envelope from baseline	E-REG-001 Environmental Event Management System records EFA rehabilitation monitoring as per MCP records weeds species/densities/occurrences E-PRO-016 Environmental Audit Procedure - Annual Vegetation Health Monitoring (Astron) - As built surveys to ensure WRL construction is in accordance with design - Rehabilitation/ Compliance Audit (Annual – results reported in AER) - EP Act Schedule 1 activities are constructed & operated according to DWER Works Approval W6640/2022/1	4

<i>Element</i>	<i>Component</i>	<i>Risk pathways</i>	<i>Desired environmental outcome</i>	<i>Performance criteria</i>	<i>Monitoring (Note: Appendix G contains Procedures referred to below)</i>	<i>Link to ERA Table 37&38</i>
		- Mobilisation of deleterious materials to land and/or water - Lack of revegetation success in closure	21. Waste rock dumps are constructed to design to ensure encapsulation of all dispersive & unstable waste rock within waste rock landforms 22. Mine relinquishment having achieved successful mine closure	levels. Weed records are maintained through GIS Spatial data resulting from annual weed audit - Weed performance criteria at closure in accordance with approved MCP 100% of WRLs meet design criteria (Reg ID 500063) and are physically safe to humans and animals, geotechnically stable, geochemically non-polluting/non-contaminating & capable of sustaining an agreed post-mining land use, without unacceptable liability to the State - All PAF material is encapsulated in the WRL 100% of annual MCP (Reg ID 500063) commitments are reviewed & actioned (when appropriate) annually	M-PRO-009 Sulphide Assessment Procedure undertaken during open pit mining at each bench to assess/confirm that no sulphides are present	
Social	Stakeholders	Site is not rehabilitated as per community / stakeholder expectations	23. PMLU is compatible with stakeholder expectations	100% compliance with E-PRO-015 Project Stakeholder Liaison Strategy Procedure & records are maintained by end of each month E-REG MIG Project Stakeholder Register records no complaints	E-PRO-015 Project Stakeholder Liaison Strategy Procedure E-REG MIG Project Stakeholder Register	

13 ENVIRONMENTAL MANAGEMENT SYSTEM

Aurenne Mining has developed a robust Environmental Management System (EMS) to align with the structure of ISO14001, which is a set of processes and practices that enable the organisation to reduce its environmental impacts and increase its operating efficiency (**Appendix K**). The EMS will ensure the intent of Aurenne's E-POL-001 Environmental Policy is enacted.

The EMS utilises a risk management process and approach that enabled Aurenne to identify, prioritise and manage environmental risks that may be applicable to exploration, mining, and mineral processing activities relevant to its operational sites. This process requires regular review and updating the EMS as the Project develops through milestone stages (exploration, construction, operation, closure). Currently the EMS Manual (extracts of key plans, policy & procedures provided in **Appendix K**) describes the following various components:

- Environmental Policy
- Planning:
 - o Environmental Aspects and Impacts
 - o Legal and Other Requirements
 - o Objectives, Targets and Programs
- Implementation and Operation:
 - o Roles and Responsibilities
 - o Training
 - o Communication
 - o Documentation
- Checking:
 - o Monitoring and Measurement
 - o Evaluation and Compliance
 - o Nonconformity, Corrective and Preventative Actions
 - o Audits
- Management Review.

The Mt Ida Gold Project EMP has been recently developed and its purpose is to be the overarching document that describes the purpose and application of the operational and corporate plans and procedures forming the EMS.

The EMP applies to all elements of operation, maintenance, and closure of each MIG site. Whilst all contractors and consultants are encouraged to establish and maintain their own EMS, compliance with the minimum standards articulated in MIG's EMS are required.

The document outlines the management of environmental, community and compliance risks and applies to all existing and future activities. Specifically, the document applies to the following activities:

- Exploration, mining, and mineral processing activities
- Procurement, transport, warehousing, use and disposal of goods
- Onsite commissioning and maintenance of equipment and services
- Decommissioning, rehabilitation, remediation, and closure of assets

- Community liaison and stakeholder engagement
- Communication of environmental management requirements to employees, contractors, service providers, suppliers, and key stakeholders.

Aurenne is committed to continuous improvement of environmental performance.

The **Z-REG-001 Document Control Database** records the following environmental management plans and systems (**Table 60**).

Table 60: Aurenne Mining EMS Plans

Title	Document reference
Environmental Management System Manual	E-PLA-001
Environmental Management Plan	E-PLA-002
Fauna Management Plan	E-PLA-003
Flora & Vegetation Management Plan	E-PLA-004
Malleefowl Management Plan	E-PLA-005
Environmental Management Standards	E-PLA-006

The Z-REG-001 Document Control Database records the following procedures (**Table 61**).

Table 61: Aurenne Mining EMS Procedures

Title	Document reference
Vegetation Clearing Procedure	E-PRO-001
Bushfire Management Procedure	E-PRO-002
Dust management Procedure	E-PRO-003
Env Hazardous Substances and Dangerous Goods Management Procedure	E-PRO-004
Waste & Landfill Management Procedure	E-PRO-005
Weed Management Procedure	E-PRO-006
Vehicle Hygiene Inspection Procedure - Checklist	E-PRO-007
Surface Water Management Procedure	E-PRO-008
Topsoil Management Procedure	E-PRO-009
Clearing Process Flow Diagram	E-PRO-010
Feral Cat Trapping Procedure	E-PRO-011
Environmental Spill Procedure	E-PRO-012
Washdown (Vehicle, Plant, Equipment) Procedure	E-PRO-013
Groundwater & Bore Monitoring Procedure	E-PRO-014
Stakeholder Liaison Strategy Procedure	E-PRO-015
Environmental Audit Procedure	E-PRO-016

The EMP encompasses the following management plans and/or procedures, some of which are still under development given Aurenne's recent acquisition of the MIG Project.

The Z-REG-001 Document Control Database records the following EMS forms (**Table 62**).

Table 62: EMS forms

Title	Document reference
Vegetation Clearing Permit Assessment & Authorisation Form	E-FRM-001
Vegetation Clearing Request Form	E-FRM-002
Environmental Spill Incident Form	E-FRM-003
Environmental Audit Record Form	E-FRM-004

The **Z-REG-001 Document Control Database** records the following EMS Registers (**Table 63**).

Table 63: EMS registers

Title	Document reference
Environmental Event Management Register	E-REG-001
Clearing Permit Tracking Register	E-REG-002
Stakeholder Consultation Register	E-REG-003
Environmental Compliance Legal Obligations Register	E-REG-005
Environmental Risk Register	E-REG-007
Qualified Snake Handler Register	E-REG-008
Environment Equipment Register	E-REG-009

13.1 Training/inductions/awareness

All staff and contractors will be inducted to site, which includes an environmental awareness component (**Site Induction Presentation PP Z-IND-003 & Site Induction Procedure Z-IND-001**) to ensure compliance with regulations, policies and corrective action procedures. Additional information may be communicated during pre-starts or toolbox talks.

The Registered Manager will be responsible for ensuring all activities associated with the early work program are undertaken in full compliance with statutory regulations and are consistent with the Aurenne Mining's **Environment & Community Policy E-POL-001 (Appendix K)**.

Environmental management responsibilities for all employees and contractors are clearly articulated during site induction.

13.2 Environmental Incident Reporting

Aurenne's EMS and overarching EMP) includes procedures and forms for incident recording and reporting and related procedures.

All environmental incidents will be reported (**E-FRM-005 Environmental Incident Form**), investigated and entered into the site event reporting database (**E-REG-001 Environmental Event Management Register**). Spills are treated according to **E-PRO-012 Spill Management Procedure** and reported according to **E-FRM-003 Environmental Spill Incident Form**.

All environmental incidents which require external notification will be reported to the Registered Manager (or delegate) as soon as practicable. The Registered Manager will liaise with the Site Environmental Advisor/Environmental Superintendent to coordinate the external reporting to the relevant regulatory body.

Any complaints received onsite will be documented and reported to the Registered Manager. Complaints are to be recorded into the **MIG Stakeholder Register E-REG-001**.

14 MINE CLOSURE PLAN

The Mine Closure Plan (MCP) is provided as a stand-alone document due to file size. The (DMIRS 2020) closure planning guidelines stipulate that post mining land uses should be:

- Relevant to the environment in which the mine operates
- Achievable in the context of post mining land capability
- Acceptable to the key stakeholders
- Ecologically sustainable in the context of the local and regional environment.

The MCP guides the closure of short-term activities i.e. the development of VB North & Emu WRLs, and includes the development of Closure objectives and broad methodologies for long term activities such as the Processing Plant, IWL, Village and supporting infrastructure.

The closure and rehabilitation of the WRLs will provide important learnings for future rehabilitation efforts.

The Mine Closure Plan has been updated to include the proposed disturbance and additional tenements as detailed in this Mining Proposal.

14.1 Post Mining Land Use

The Project area sits within active pastoral leases; Perrinvale & Riverina station that is owned by Zenith Australia Group. Aurenne has been liaising regularly with Zenith in regard to synergistic activities of both parties. The current understanding is that the Project will be rehabilitated back to pre-disturbance land use that includes pastoralism and potential for carbon farming

As the Perrinvale airstrip and N-S Access Track have co-occurring leases for right of access, and both may be used by the pastoralist and Red Dirt Minerals (formerly Ora Banda Mining/Mt Ida Gold Pty Ltd); therefore it is unlikely that they will be removed or decommissioned at closure. Ongoing communication between all parties will determine the post mining land use of these facilities.

15 CHANGES TO APPROVED MP

Reg ID 98744 was for **interim works** (village, construction camp, limited support services.

Reg ID 101557 was for **Stage 1 mining and processing** (plant, IWL, 2 open pits, and aerodrome

Reg ID 117952 was for **Stage 1a mining and additional infrastructure** (Southwark pit, Emu Pit and additional non processing infrastructure such as roads and communications).

Reg ID **Stage 1b Mining Proposal** is a revision of the Stage 1 Mining Proposal (Reg ID 117952). Proposed works an amendment to the Emu waste dump design, inclusion of Emu Cascade pit expansion. Other proposed mine activities include additional topsoil stockpiles, The Mine Closure Plan has been updated to include the proposed disturbance and additional tenements.

Reg ID 122042 **Stage 2 was to expand the Emu Waste Rock Landform and a new pit Cascade**. Included were additional topsoil stockpiles and surface water management structures.

Reg ID 500063 **Stage 3 mining and additional infrastructure** is to include Expansions to VB North ,VB , Boags and a new pit - Single Fin with the addition of two new waste dumps.

15.1 DMIRS Request for Information (RFI)

In the development of MIGP Stage 1 MPMCP, DMIRS requested information (RFI) in February 2021 relating to items in the Stage 1 MPMCP and a separate RFI from relating to geotechnical, structural safety and surface water management queries. To address the issues raised the WRLs were redesigned; the surface water modelling and structures were re-assessed to answer PMF queries and general content was updated according to the items raised. A second RFI (RFI 2) was requested in March 2022 to clarify some points in more detail. RFI 1 & 2 responses are provided in **Appendix L**; the MP and MCP were updated accordingly.

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Aurenne Mining

Mt Ida Gold Project

MINE CLOSURE PLAN

Bottle Creek

Project code: EGS S0000817 Bottle Creek

Tenements: M 29/150, M 29/151, G 29/29, G 29/30, G 29/31, G29/32, L 29/137, L 29/145, L 29/153, L 29/154, L 29/157, L 29/159, L 29/161, L 29/168, L 29/169

January 2025

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DOCUMENT CONTROL

REV.	DATE	DESCRIPTION	AUTHOR	APPROVED
A	2-11-2021	Interim MCP – Reg ID 98744	V Clarke	P Storey
0	26-11-2021	Final (inc. peer review) Reg ID 101557	V Clarke, D Fotakis	P Storey
1	28-2-2022	Revised final incorporating RFI1	V Clarke, D Fotakis	P Storey
2	4-4-2022	Revised final incorporating RFI2	V Clarke, D Fotakis	P Storey
3	20-04-23	Revised Mine Closure Plan	Modified by Astill Consultants	C Sinclair
4	07-12-23	Revised Mine Closure Plan	C Sinclair	P.Storey
5	24-01-25	Revised Mine Closure Plan	C Sinclair	P.Storey

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MINE CLOSURE PLAN CHECKLIST

	Mine Closure Plan checklist	Y/ N/ NA	Page No.	Changes from prev. version (Y/N)	Summary
1	Has the Checklist been endorsed by a senior representative within the tenement holder/operating company?	Y	x	Y	Updated checklist
Public Availability					
2	Are you aware that all approved MCPs will be made publicly available?	Y			
3	Is there any information in this MCP that should not be publicly available?	N			
4	If "Yes" to Q3, has confidential information been submitted in a separate document/section?	NA			
Cover Page, Table of Contents					
5	Does the MCP cover page include: • Project title • Company name • Contact details (including telephone numbers and email addresses) • Document ID and version number • Date of submission (needs to match the date of this checklist)	Y	Cover	Y	
Scope and Purpose					
6	State why the MCP is submitted (e.g. as part of a mining proposal, a reviewed MCP or to fulfil other legal requirements)				As part of Mining Proposal submission
Project Overview					
7	Does the project summary include: • Land ownership details (include any land management agency responsible for the land / reserve and the purpose for which the land / reserve [including surrounding land] is being managed) • Location of the project • Comprehensive site plan(s) • Background information on the history and status of the project	Y	10	N	
Legal Obligations and Commitments					
8	Does the MCP include a consolidated summary or register of closure obligations and commitments?	Y	Appendix B1 & B2	Y	Register updated
Stakeholder Engagement					
9	Have all stakeholders involved in closure been identified?	Y	37	N	
10	Does the MCP include a summary or register of historic stakeholder engagement with details on who has been consulted and the outcomes?	Y	Appendix B4	N	
11	Does the MCP include a stakeholder consultation strategy to be implemented in the future?	Y	40	N	
Post-mining land use(s) and Closure outcomes					

	Mine Closure Plan checklist	Y/ N/ NA	Page No.	Changes from prev. version (Y/N)	Summary
12	Does the MCP include agreed post-mining land use(s), closure outcomes and conceptual landform design diagram?	Y	66	N	
13	Does the MCP identify all potential (or pre-existing) environmental legacies, which may restrict the post mining land use (including contaminated sites)?	Y	66	N	
14	Has any soil or groundwater contamination that occurred, or is suspected to have occurred, during the operation of the mine, been reported to DWER as required under the <i>Contaminated Sites Act 2003</i> ?	NA			
Development of Completion Criteria					
15	Does the MCP include an appropriate set of specific completion criteria and closure performance indicators?	Y	78	N	
Collection and Analysis of Closure Data					
16	Does the MCP include baseline data (including pre-mining studies and environmental data)?	Y	42	Y	Changes to waste rock characterisation
17	Has materials characterisation been carried out consistent with applicable standards and guidelines (e.g. GARD Guide)?	Y	46, 52	Y	Changes to waste rock characterisation
18	Does the MCP identify applicable closure learnings from benchmarking against other comparable mine sites?	Y	64	N	
19	Does the MCP identify all key issues impacting mine closure outcomes and outcomes (including potential contamination impacts)?	Y	78	N	
20	Does the MCP include information relevant to mine closure for each domain or feature?	Y	85	N	
Identification and Management of Closure Issues					
21	Does the MCP include a gap analysis/risk assessment to determine if further information is required in relation to closure of each domain or feature?	Y	34	Y	Updates to the risk assessment
22	Does the MCP include the process, methodology, and has the rationale been provided to justify identification and management of the issues?	Y	86	Y	Updates to the risk assessment
Closure Implementation					
23	Does the MCP include a summary of closure implementation strategies and activities for the proposed operations or for the whole site?	Y	86	N	
24	Does the MCP include a closure work program for each domain or feature?	Y	86	N	
25	Does the MCP contain site layout plans to clearly show each type of disturbance as defined in Schedule 1 of the MRF Regulations?	Y	18	Y	Update to site layout to include additional disturbances
26	Does the MCP contain a schedule of research and trial activities?	Y	33	N	

	Mine Closure Plan checklist	Y/ N/ NA	Page No.	Changes from prev. version (Y/N)	Summary
27	Does the MCP contain a schedule of progressive rehabilitation activities?	Y	64	N	
28	Does the MCP include details of how unexpected closure and care and maintenance will be handled?	Y	83	N	
29	Does the MCP contain a schedule of decommissioning activities?	Y	107	N	
30	Does the MCP contain a schedule of closure performance monitoring and maintenance activities?	Y	105	N	
Closure Monitoring and Maintenance					
31	Does the MCP contain a framework, including methodology, quality control and remedial strategy for closure performance monitoring including post-closure monitoring and maintenance?	Y	105	N	
Financial Provisioning for Closure					
32	Does the MCP include costing methodology, assumptions and financial provision to resource closure implementation and monitoring?	Y	109	N	
33	Does the MCP include a process for regular review of the financial provision?	Y	109	N	
Management of Information and Data					
34	Does the MCP contain a description of management strategies including systems and processes for the retention of mine records?	Y	112	N	

CORPORATE ENDORSEMENT

I hereby certify that to the best of my knowledge, the information within this Mine Closure Plan and checklist is true and correct and addresses all the requirements of the Guidelines for the Preparation of a Mine Closure Plan approved by the Director General of the Department of Mines, Industry, Mines, Resources and Safety.

Name: Peter Storey	Signed: 
Role: Chief Operating Officer Aureenne Mining	Date: 24 January 2024

CONTACT DETAILS

PROPONENT DETAILS		
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1 PROJECT SUMMARY

Aurenne Mining is developing the Mt Ida Gold (MIG) Project (the Project) planned to be a 1.2-1.4 Mtpa gold mining operation using conventional carbon-in-leach technology. The MIG Project is a suite of tenements centred around Bottle Creek, Mt Ida, and Quinns project areas. The Project is in the Eastern Goldfields, 80 km west of Menzies, and 230 km north-northwest of Kalgoorlie with little existing infrastructure.

This Mine Closure Plan (MCP) is for the **Bottle Creek** Project and includes the development of two prospects and construction of the infrastructure that will process and refine the mined ore into gold bullion.

The Project consists of two open pit mines (**VB North & Emu**), run-of-mine (ROM) pad, processing plant (with process, raw and oily water ponds), waste rock landforms (WRL), integrated waste landform that includes tailings storage (IWL), topsoil and ore stockpiles, power plant (portable generators), aerodrome, haul road, internal roads, buildings and other supporting infrastructure.

The mining of VB North and Emu open pits with associated WRLs is anticipated to be 12 months within a mine life of 7-10 years (for Processing Plant, IWL, Village, Aerodrome and supporting infrastructure); and the date for completion of mine closure works is currently proposed for 2032.

1.1 Location

The Project is situated in the northern part of Eastern Goldfields terrain of the Yilgarn Craton, 230 km north-northwest of Kalgoorlie, on Riverina and Perrinvale pastoral leases. It is within the Shire of Menzies, ~75 km northwest of the Menzies township (**Figure 1**).

Access to the area is via the sealed Kalgoorlie – Leonora Highway to Menzies, and then along the well-maintained, unsealed Menzies – Sandstone Road to 45 Mile Outcamp, and finally the Mt Ida Road just north of the Copperfield mining centre.

1.2 Land Tenure

Aurenne Mining is a registered trading name of Aurenne Group Holdings Pty Ltd. The Aurenne Group of Companies hold Aurenne Mt Ida Pty Ltd (formerly Aurenne Alt Resources Pty Ltd) (ACN 168 928 416), which holds Aurenne MIT Pty Ltd (formerly MGK Resources Pty Ltd) (ACN 611 002 709).

The Project is located within Perrinvale and Riverina Pastoral Stations (**Figure 1**). There is no conservation estate within or adjacent to the Project. Tenure is wholly within Shire of Menzies.

1.3 Environmental Group Site Details

Details for the Bottle Creek Environmental Group Site are provided in **Table 1** below.

Table 1: Environmental Group Site Details

ENVIRONMENTAL GROUP SITE DETAILS				
EGS Code and Name	S0000817 – Bottle Creek Group			
Description of Operation	Open pit mining operation. Operations comprise mine voids, waste rock landforms, process plant, tailings storage facilities, haul and access roads and other supporting infrastructure.			
Phase of Mining	Construction and operation			
Commodity Mined	Gold			
Commencement Date	2021			
Est. Completion Date	2031			
TENEMENT DETAILS				
Tenement	Tenement Holder	Area (ha)	Grant Date	Expiry Date
L 29/137	Aurenne MIT Pty Ltd	99.79	23/02/2021	23/02/2042
L 29/139	Aurenne MIT Pty Ltd	88.22	28/11/2019	27/11/2040
L 29/145	Aurenne MIT Pty Ltd	32.22	17/05/2021	17/05/2042
L 29/153	Aurenne MIT Pty Ltd	17.12	28/10/2021	28/10/2042
L 29/154	Aurenne MIT Pty Ltd	48.07	28/10/2021	28/10/2042
L 29/157	Aurenne MIT Pty Ltd	333.67	18/01/2022	17/01/2043
L 29/159	Aurenne MIT Pty Ltd	39.13	18/01/2022	17/01/2043
L 29/161	Aurenne MIT Pty Ltd	57.83	20/05/2022	19/05/2043
L 29/168	Aurenne MIT Pty Ltd	13.39	30/08/2022	29/08/2043
L 29/169	Aurenne MIT Pty Ltd	436.73	30/08/2022	29/08/2043
G 29/29	Aurenne MIT Pty Ltd	132.56	14/10/2042	14/10/2042
G 29/30	Aurenne MIT Pty Ltd	70.26	14/10/2042	14/10/2042
G 29/31	Aurenne MIT Pty Ltd	215.11	20/01/2022	19/01/2043
G 29/32	Aurenne MIT Pty Ltd	233.00	20/01/2022	19/01/2043
M 29/150	Aurenne Mt Ida Pty Ltd	571.30	24/06/1991	23/06/2033
M 29/151	Aurenne Mt Ida Pty Ltd	456.65	24/06/1991	23/06/2033

MT IDA GOLD PROJECT MINE CLOSURE PLAN – BOTTLE CREEK

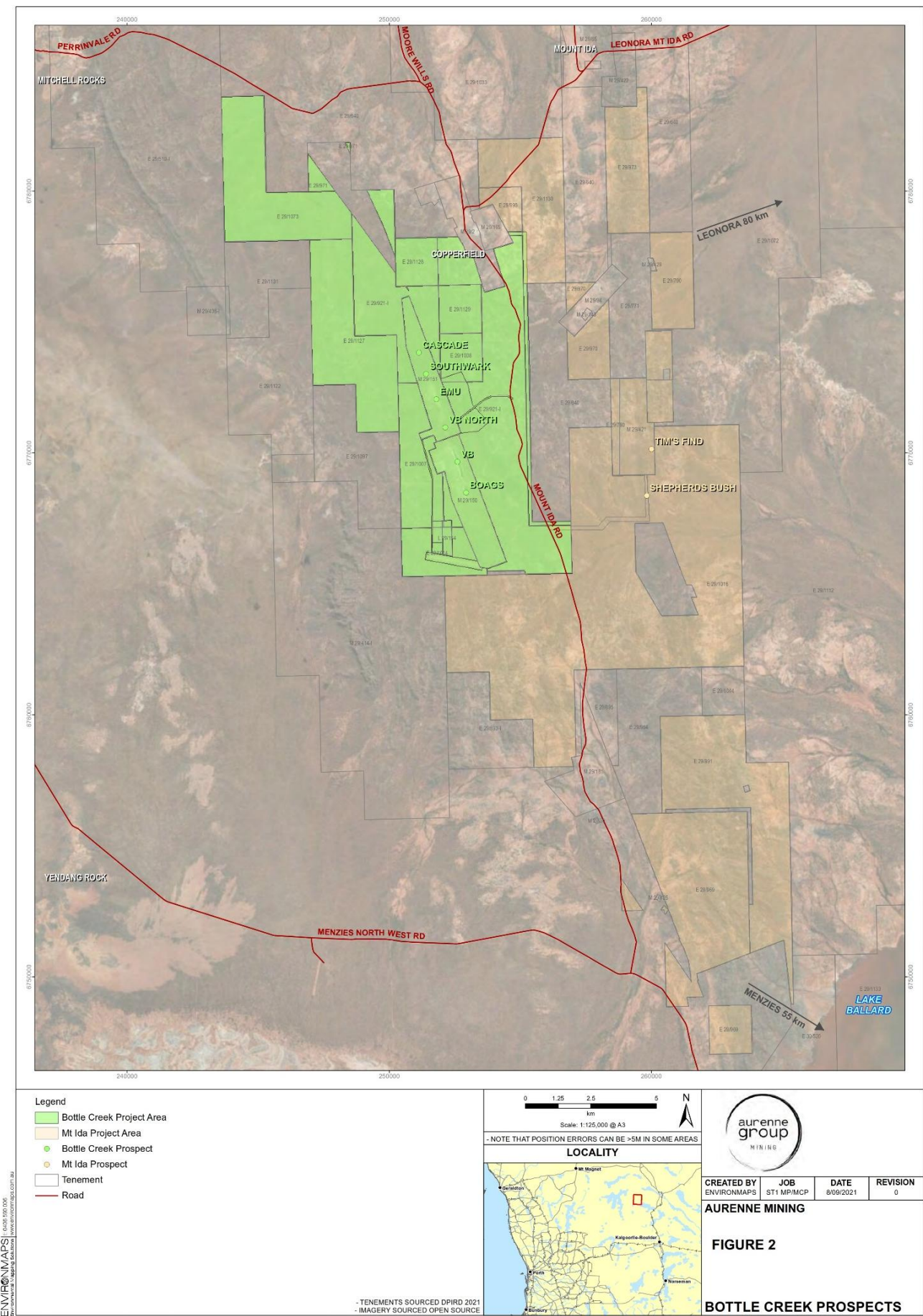


Figure 1: Mt Ida Gold Project Location

1.4 Bottle Creek History

Bottle Creek was discovered in 1983 and mined by Norgold Ltd between 1988 and 1989 but was prematurely shutdown due to a pit wall failure, mill issues, and a declining gold price in 1990. The Project produced 93,000 oz Au from two open pits (VB and Boags) in 18 months of operation. Remaining are two long narrow water filled pits and rehabilitated landforms. These workings were relinquished by Norgold/Rio Tinto in 2001.

Alt Resources consolidated the Bottle Creek, Mt Ida and Quinns tenements. In mid-2020 Aurenne acquired Alt Resources and has since consolidated tenements from Alt Resources, MGK Resources and other local tenements to develop a viable mining operation of mining and processing; Aurenne Mining's **Mt Ida Gold Project**.

The following workings were **relinquished** by Norgold/Rio Tinto in 2001:

- Two mining voids with pit lakes (Boags 7.47 ha, VB 14.43 ha)
- Rehabilitated waste dumps (Boags 17.12 ha, VB 44.32 ha, Waste dump 5.77 ha)
- Rehabilitated TSF (30.86 ha)
- Perinvale airstrip (27.23 ha)
- Access roads and tracks (15.06 ha)
- Laydown area (1.71 ha)

Previously disturbed areas include those that remain from Norgold operations, some of which have been successfully rehabilitated are now going to be disturbed due to the discovery of additional lodes next to VB and Boags pits.

Historical land forms which will be disturbed are shown in **Figure 2**.



Figure 2: Historic and Relinquished Disturbance at Bottle Creek

1.5 Planned Life of Mine

As a new exploration and mining entity, Aurenne Mining is planning the MIG Project LoM over the next 7-10 years, which may be subject to change depending on the gold price and agreements with other local gold mining entities to receive their ore.

The MIG Project is being planned in stages therefore this MCP is intended to develop over the 10-year LoM as each Stage is approved.

Short-term closure (estimated 12 months) is planned for the VB North and Emu open pits and associated WRLs at Bottle Creek. The closure and rehabilitation of these pits and WRLs will be used as a baseline for review and learnings for future closure and rehabilitation activities as the Project develops over the next 7-10 years.

Long-term closure (estimated 7-10 years) is planned for the Processing Plant, IWL/TSF, Village, Aerodrome and other supporting infrastructure.

Current planning for MIGP mine stages includes:

- **Stage 1** Bottle Creek – Emu and VB North
- **Stage 1c** Bottle Creek – Southwark extension
- **Stage 2** Bottle Creek – Cascade
- **Stage 3** Bottle Creek – Single Fin VB and Boags
- **Stage 4** Mt Ida project areas – Tims Find, Shepherds Bush
- **Stage 5** Quinns project area – Boudie Rat, Forest Belle
- **Stage 6** – TBC following extensive regional exploration.

Table 2 is a high-level outline of Project timeframes.

Table 2: Indicative key milestone dates

Year	Activity
2021	• Submission of Interim (Early Works) MP/MCP Reg ID 98744 • Expansion of temporary camp, maintenance of airstrip, access tracks and preparation for Village following approval of Interim MP/MCP • Grant of pending tenure • Submission of Stage 1 MP/MCP (with mining/processing components) • Commence clearing & (potentially) earthworks for commencement of construction following approval of Interim (Early Works) MP/MCP Reg ID 98744
2022	• Bulk earthworks following approval of Stage 1 MPMCP Reg ID 101557 • Stage 1 Works Approval • Construction & commissioning of key infrastructure • Mining Commences • Submission of MPMCP Stage 1b (expansion of Bottle Creek mining)
2023	• Process Plant Commissioned and Processing commences • Submission of MP/MCP Stage 2 (expansion of Bottle Creek mining)
2025	• Submission of MP/MCP Stage 3 (expansion of Bottle Creek mining)

Year	Activity
LoM	• Closure investigations • Revegetation trials • MP/MCP revisions/submissions • Continued stakeholder liaison • Continued exploration & mine planning
2027	Commence detail mine closure planning
2032	• Ore reserves depleted; stakeholder liaison; closure commences • Annual monitoring and reporting to understand and document trajectory of closure criteria attainment • Annual maintenance works (safety/environment)
>2042	Relinquishment following successful rehabilitation and monitoring/reporting

1.6 Mining Operations & Closure Design

At closure, buildings and large infrastructure (Processing Plant components, etc) will be decommissioned and removed; potentially sold and removed off-site. Services infrastructure will also be decommissioned, removed and disposed of. Small infrastructure such as bores, the upgraded Aerodrome, and some access roads have been discussed with stakeholders with potential to be handed over to the pastoralist at closure. Liaison will continue as the mine develops, to reach agreement in respect to these early discussions.

Error! Reference source not found. shows the Disturbance Envelope and General Arrangement of the site.

Following the domain model (DMIRS 2020a) of designating post-mining areas to similar management areas based on compatible/similar decommissioning, rehabilitation and closure requirements, the Project Closure Domains are:

1. Open pits
2. IWL (incl. tailings storage facility)
3. WRLs, ROM pad, and stockpiles
4. Processing infrastructure
5. Laydown, workshops, washdown, & accessory infrastructure
6. Water management structures (ponds and dams)
7. Transport services (haul roads, roads and airstrip/aerodrome)
8. Offices, Accommodation Village
9. Topsoil Stockpiles
10. Exploration.

Closure Domains are shown in **Figure 3**. Closure activities for each domain are outlined in **Section 8.5**

1.6.1 Disturbance Areas

Estimated disturbance areas for each domain are provided in **Table 3** below.

Table 3: Approximate Domain Disturbance Areas

Domain	Estimated Total Area (ha) per Domain
1. Open Pits	288
2. Integrated Waste Landforms (IWL)	49
3. WRLs, ROM Pad and Stockpiles	705
4. Processing Infrastructure	11
5. Laydown, Workshops, Washdown & Accessory Infrastructure	43
6. Water Management Structures	12
7. Transport Services	122
8. Offices, Accommodation Village	36
9. Topsoil stockpile	140
TOTAL DISTURBANCE AREA	1405

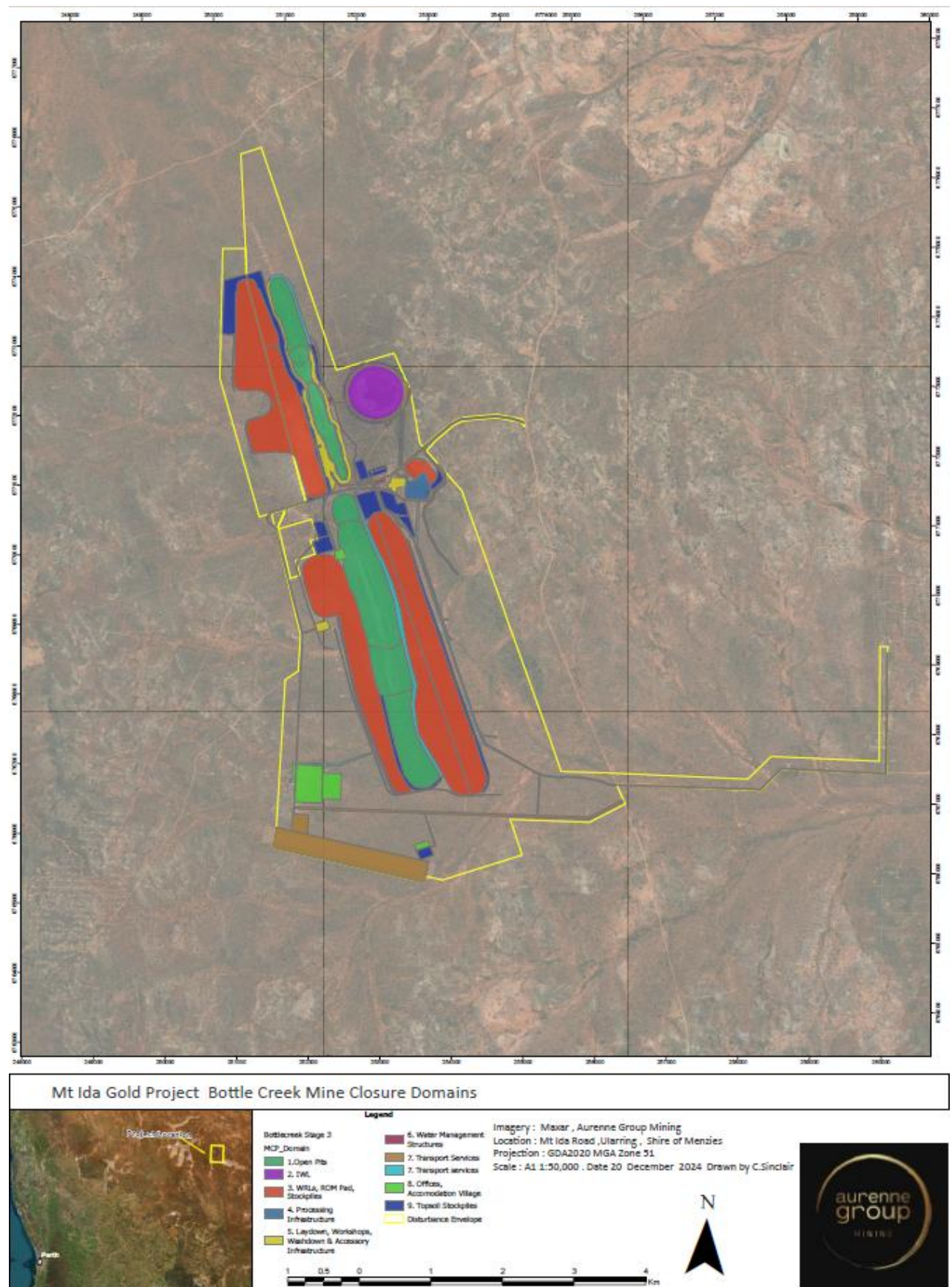


Figure 3: Closure Domains

1.6.2 Mining Voids

Two mining voids with a depth >5 m below groundwater level (Emu and VB North) will be created:

- 1) **Emu Open Pit** ~27 ha disturbance to depth of ~86 m; with 10,000,000 t of material movement generating 8,200,000 BCM of NAF waste.
- 2) **VB North Open Pit** ~14 ha disturbance to a depth of ~75 m with 1,325,103.19 BCM of total material movement generating 1,165,101.22 BCM of NAF waste.
- 3) **Cascade Open Pit** – 33ha disturbance to a depth of ~123 m
- 4) **VB Open Pit** ~ 80 ha disturbance to a depth of ~160 m with 22,953,448.74 total material movement generating 19,950,774.42 of NAF waste
- 5) **Boags Open** ~ 38 ha disturbance to a depth of ~175 m with 6,028,856.72 total material movement generating 8,161,130.74 of NAF waste
- 6) **Single Fin Open Pit** ~ 57 ha disturbance to a depth of ~130 m with 11,164,703.85 total material movement generating 11,664,448.93 OF NAF waste

Closure details are provided in **Section 8.5**, Domain 1.

Associated topsoil stockpiles are located across the Project. Topsoil Stockpiles are managed in accordance with **E-PRO-009 Topsoil Management Procedure**.

1.6.2.1 Potential ZOI & Abandonment Bund Design

A geotechnical assessment was undertaken to determine the design of the pit slopes for short and medium-term stability.

The Potential Zone of Influence (PZOI) was established from the base of the resulting pit design using the guideline for pit abandonment published by the Department of Industry and Resources (DoIR) (1997). Abandonment bunds have been designed as per the (DoIR 2019) guidelines.

All final abandonment bunds and WRLs will be placed outside this position in accordance with guidelines.

1.6.3 Waste Rock Landforms

Waste rock landform (WRL) design is based on generally accepted design criteria and recently published guidelines (DMIRS 2021) to create a stable non-eroding structure and constructed according to the designs presented in approved Mining Proposals. Two new WRLs will be created Bottle Creek West and Bottle Creek East. The historic Norgold waste dumps were be incorporated into the new Bottle Creek Wes waste rock landform,

- 1) **Emu WRL**
- 2) **VB North WRL**
- 3) **Bottle Creek West WRL**
- 4) **Bottle Creek East WRL**

1.6.3.1 WRL Closure

As fresh rock is currently not being mined, AMD is not an anticipated issued associated with the WRLs.

P O'Bryan & Assoc (2024; **Appendix J**) assessed rock mass quality of the Bottle Creek proposed pits (and therefore the associated waste materials for WRL construction). Rock mass qualities were assessed from the geotechnically logged boreholes and rock units/zones were classified using the empirical Geomechanics Classification System which is based on calculating a Rock Mass Rating 3 (RMR), a summation of ratings based on: intact rock strength; rock quality designation (RQD); defect spacing; defect conditions and weathering grade. Assessed RMR values derived from geotechnically logged cores for Bottle Creek along the shear (6 holes) with the average of the median RMR values for the oxide material at Bottle Creek is ~ 19, indicated very poor-quality rock, excluding borehole SWKGT001, which is improved by a thicker interval of lower saprolite than the other boreholes in the deposit area. Transitional material (weathered rock) ranges from 26 to 65, with an average median value of ~ 50, or fair quality rock.

Mining currently consists of transitional and oxide material only, with transitional material (weathered rock) of sufficient volumes in both pits to construct stable WRLs and have sufficient material for rehabilitation capping of final landforms.

Further summary review based on the WRL, is provided in **Appendix J** (P O 'Bryan & Assoc 2024); the technical advice states that WRL slope stability analyses confirm the stability of slopes formed in weathered Bottle Creek materials at the final profile proposed with appropriate FOS and a rating as highly stable.

Closure Design

- Final overall slope angle – 14 degrees max
- Max. reprofile lift height – 10 m
- Min. back sloping berm width – 15 m
- Berm backslope angle – 5 degrees
- Capping – 1m NAF rock armour on low stability waste types on both batters and flat surfaces

WRD top design

- Concave shape (5 degree backslope for 20 m from crest) with 1 m crest bund
- Cell bunds of 0.75m height to create 1-2 ha cells on top surface.
- The WRLs at Closure will be capped with competent for PAF material to ensure maximising rainfall infiltration and retention and minimise erosion to maximise revegetation success.

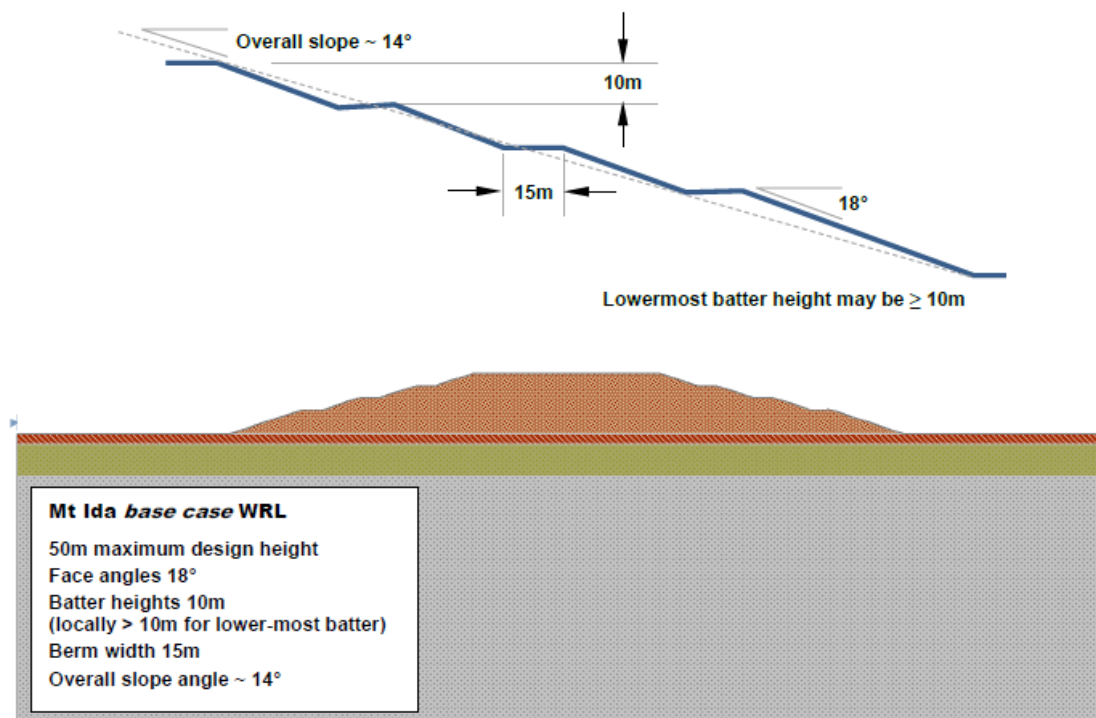


Figure 4: Closure Design (Peter O Brian 2024)

1.6.3.2 PAF Management

In general, oxide materials classify predominantly as non-acid forming (NAF); transitional materials classify as NAF or uncertain (UC); and fresh materials classify predominantly as potentially acid-forming (PAF), albeit some fresh materials with large ANC capacities classify as NAF.

- **Emu** No fresh materials will be mined from Emu and VB North Open Pits therefore risk of acid forming material from these pits is considered low.
- **Southwark** - Approximately 75,000 BCM of fresh waste material will be excavated from the Southwark Open Pit. This makes up just 2.5% of the total waste material to be mined; therefore, even if all material is PAF a sufficient volume of competent NAF waste is available to ensure any PAF encapsulation.
- **Cascade** - No fresh materials will be mined from the Emu Cascade Extension therefore risk of acid forming material from these pits is considered low.
- **VB North** There is sufficient volume of NAF to ensure encapsulation if some fresh is mined
- **VB** There is sufficient volume of NAF to ensure encapsulation if fresh is mined.
- **Boags** There is sufficient volume of NAF to ensure encapsulation if some fresh is mined
- **Single Fin** There is sufficient volume of NAF to ensure encapsulation if some fresh is mined

Ongoing assessment during grade control drilling will include the collection, characterisation, assessment and management of actual waste rock to confirm the expected geochemical properties of these materials. This may employ a sampling approach starting from set Total Sulphur and pH triggers and extending through to laboratory testing as required.

Internal PAF Cells will be constructed in central core of the WRL. These cells will be sized between 600 m and 800 m long and wide and up to 10 m thick and shall have a base, sides and a cover of compacted NAF materials of a nominal 2.5 m thickness for the base and cover and a nominal 4 m thickness for the sides. An indicative layout of PAF cells (Pendragon 2024) is provided in **Figure 5**.

It is planned to have only one PAF cell open at any one time, with the area of any one cell open, minimised during the cyclone/wet season.

Sufficient volume of competent NAF material (oxide and transitional) is present to construct a stable WRL and have sufficient material for rehabilitation capping of final landforms.

Due cognisance must be taken of the long-term behavior of the existing WRLs and TSF; they remain stable and there are no indications of acid and/or metalliferous drainage.

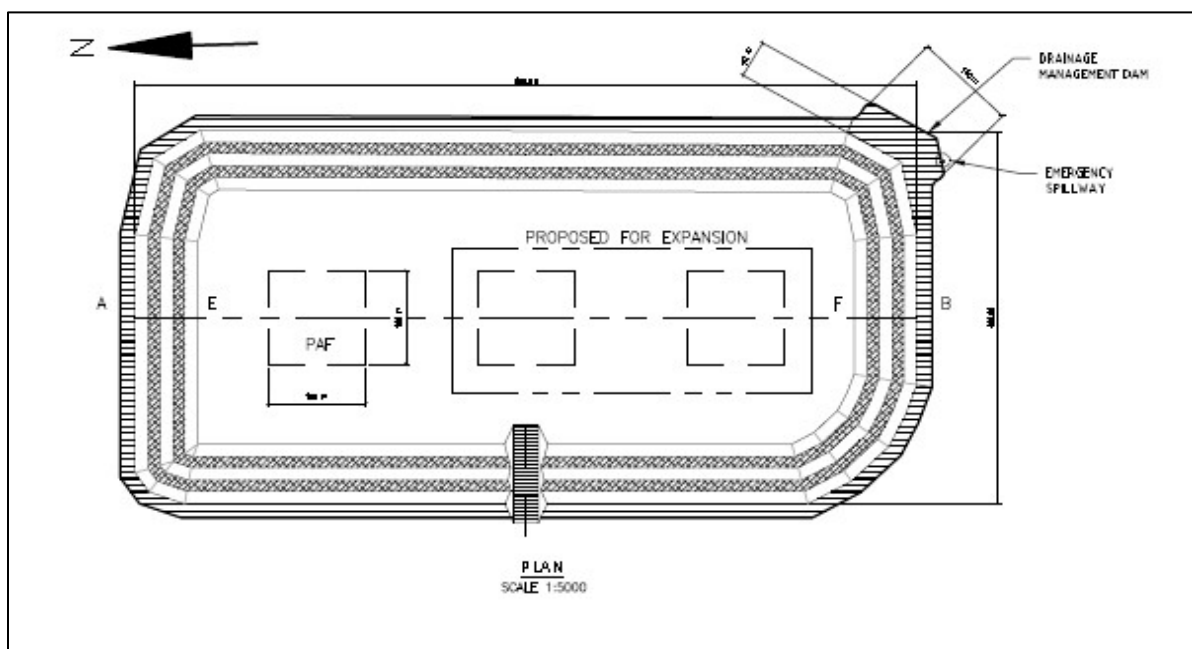


Figure 5: Indicative WRL Layout of PAF Cells

1.6.4 Run-of-Mine Pad

The primary Run-of-Mine (ROM) pad for the processing plant will be located adjacent to the Processing Plant.

At mine closure there will be only a small amount of elevated material left on the ROM in the immediate vicinity of the crusher hopper. The majority of the ROM area will have been formed up using Low Grade Ore which is processed at the end of the processing schedule so it will not be a large, elevated area.

1.6.5 Integrated Waste Landform / Tailings Storage Facility

The Project will construct and develop an integrated waste landform (IWL) that will encompass the tailings storage facility (TSF) with waste rock as per Reg ID 101557 MP. The IWL design report (CMW GeoSciences 2021; **Appendix F**) is based on the Australian National Committee

on Large Dams Incorporated (ANCOLD) Guidelines (2019) *Guidelines on Tailings Dams –Planning, Design, Construction, Operation and Closure* and consistent with TSF Code of Practice Department of Mines and Petroleum (DMP) (2013). The IWL is part of a submitted Works Approval application to DWER (W6640/2022/1) and therefore will meet the design, construction and operational requirements of EP Act Schedule 1 Prescribed Premises works approval and licencing requirements including monitoring.

The IWL is a robust structure and the factors of safety (stability analyses within CMW (2021; Appendix F) indicate adequate factors of safety for the drained, undrained and pseudo-static conditions when compared with the recommended minimum factors of safety in ANCOLD (2019)) are above the required minimum for this structure type. Stability is significantly influenced by the position of the phreatic surface within the deposited tailings and confining embankment.

The IWL has been designed to provide temporary water storage following extreme storm events. If water does extend to the embankment, which is considered very unlikely, it is anticipated this will be a temporary occurrence given continuous water removal from the IWL. On closure and decommissioning, the facility will remain as a permanent feature of the landscape and drain to an increasingly stable mass. The closure objectives for the IWL are to leave the facility in a safe, stable, erosion resistant and non-polluting state.

Tailings characteristics were studied for the Project (G Campbell & Assoc 2021; **Appendix G**) and summarised for the MP; it was found that pose no environmental demands for TSF design, operation, and decommissioning / rehabilitation. The resulting filled-IWL will comprise saline-NAF-tailings as commonly produced at goldmines throughout the WA Goldfields (G Campbell & Assoc 2021).

A suite of downstream groundwater monitoring bores will be installed to capture baseline and comparative groundwater level and quality data. This will be a requirement of the operating licence, as required under a Prescribed Premises activity in the DWER Works Approval/licence (in assessment W6640/2022/1). The bores will inform if the IWL is contributing to mounding, seepage or significant changes to groundwater quality. The bores will be sampled (frequency and parameters) according to the Works Approval / licence conditions. The monitoring data will be reported to DWER as per WA/Licensing conditions. Groundwater monitoring will continue for the five years post-closure to ensure that groundwater quality and quantity is not being adversely affected by the IWL. The proposed groundwater monitor bore suite (Pendragon 2023; **Appendix H**) is shown in **Figure 5**.

1.6.5.1 IWL Decommissioning & Closure

The closure objectives for the IWL are to leave the facility in a safe, stable, erosion resistant and non-polluting state. The downstream tailings slopes of the IWL perimeter embankments will be rehabilitated as part of the waste dump rehabilitation. The maximum slope angle will be 18° (according to CMW (2021) design (**Appendix F**)), with no intermediate benches. Once tailings deposition has been completed within the IWL and the top surface of the tailings has gained adequate bearing capacity, it will be capped with a layer of mine waste (0.5 m nominal thickness) to minimise dust generation from dried tailings and provide support for topsoil / growth medium for revegetation.

The IWL concept requires the integration of the planning, construction, and closure of the IWL with waste dump construction. The IWL concept provides an optimum solution to rehabilitation

of an IWL by encompassing the IWL within a waste dump. Mine waste for rehabilitation of the top-surface will be sourced from nearby waste dumps.

Upon completion of tailings placement within the facility, the surface will undergo a rehabilitation program. The rehabilitation program will include the identification of appropriate capping material and local flora species to revegetate the surface of the facility.

At final closure, the decant structure will be decommissioned and the decant area 'sealed'. This will involve:

- Removing excess filter rock in the rock-ring to the surrounding tailings level
- Covering the rock layer surrounding the decant structure with geofabric to prevent movement of fine material through rock voids
- Backfilling the annulus of the rock ring with tailings to the adjacent tailings level
- Capping the IWL decant areas with nominal 0.5 m thick clayey mine waste (to be validated with field trials or otherwise).

Upon decommissioning of the facility, the rehabilitated surface will follow the grade of the finished tailings surface and therefore have the capacity to store a considerable volume of stormwater. Internal bunding may be constructed to distribute stored rainfall and maximise at-source infiltration. Revegetation following covering with benign waste-rock and topsoil will likely be required to prevent 'tailings-dusting', and to establish vegetation as part of rehabilitation using salt-tolerant plant species endemic to the Project area. The IWL rehabilitation will be consistent with comparable landforms in the Goldfields.

The IWL will be constructed to design (CMW GeoSciences 2021; Appendix F). The IWL is proposed to have a closure store & release cover and CMW (2021) details preliminary Closure design; however a detailed Closure design will be commission from a SME prior to Closure. The actual cover design for IWL closure will incorporate industry learnings and published investigations into best practice (see for example Jamson et al 2019) for closure cover to ensure rehabilitation is optimised.



Figure 6: Monitoring Bores

1.6.6 Processing Plant

The Bottle Creek Processing Plant includes a Primary Jaw Crusher, Crushed Ore Stockpile, SAG Mill on G 29/30. At closure the processing infrastructure will be decommissioned and removed from site. The footings and services will be demolished and placed in deep burial according to licensing for waste materials.

A contaminated site environmental risk assessment will be undertaken to assess the potential for contamination.

1.6.7 Dams – Saline or Process Liquor

The Process Plant includes a Raw Water, Process Water, and Oily Water Ponds/Dams. At the cessation of mining, the oily pond is likely to still contain water; the Raw water pond will be discharged into the Process water pond (via spillway). The evaporative action used to dispose of some of the water will concentrate the solutes present in the water to some extent. This water is unlikely to be used in closure activities and will need to be disposed of along with all Pond liners.

Any remaining water at closure will be allowed to stand to allow sediments to drop out of the water column. If water remains, it will then be suctioned pumped and disposed into the IWL. The bottom layer will be allowed to dry collected and disposed of to a centre cell in the IWL.

Once the water and residue have been removed, the Pond liner will be cut, folded and collected for disposal in a central cell within the IWL for deep burial. A Prescribed Premises (DWER administered_ EP Act Part V licence or Works Approval is required for disposing of waste other than tailings to the IWL. Disposal of the pond liners will be in accordance with licence conditions, which according to *Environmental Protection (Rural Landfill) Regulations 2002* and comply with DWER licensing conditions will include: burial within inert waste material; minimum separation distance from ground level (and therefore groundwater); minimum separation distance from the edge of the IWL; and a minimum burial depth from the top of the final IWL landform is complied with. If disposal to the IWL is not approved under a Part V licence, a service provider for waste disposal will be sourced for off-site disposal.

The Pond embankment walls will be pushed into and spread across the pond. The associated subsoil stockpiles will then be spread across the evaporation pond to mimic the surrounding landscape and ensure that the landform is free draining as much as possible. The surface and targeted areas of the batters that do not have blocky rock armouring will then be covered with topsoil and contour ripped to create a stable landform with pockets that will allow for revegetation.

The closure tasks, schedule and responsibilities for the Water Services Domain are detailed in the Closure Task Register for Water Services (Domain 6; Section 8.5.1).

1.6.8 Other Mine Activities & Support Infrastructure

The majority of the infrastructure is located centrally around the Processing Plant. Some infrastructure may be retained post-closure to provide services for the rehabilitation team while other facilities may remain in place through stakeholder agreements, e.g. the pastoralist. As the Project moves closer towards closure, a decommissioning strategy will be developed to designate which offices, storage and workshops will be required to be retained to undertake the closure works program.

1.6.8.1 Haulage & Transport Corridors

Any co-located services will be removed and bunding graded back compatible with surrounding terrain; roads will be ripped and graded into the surrounding landscape except in the instance where the pastoralist has requested a road or access track remain.

1.6.8.2 Accommodation Village & Construction Camp

The temporary Construction Camp (M 29/150) will be decommissioned in ~2023; the area will become an extension of the existing mining areas associated with VB and Boags pits as they are mined in future mining stages.

The Bottle Creek Accommodation Village consists of portable blocks capable of accommodating approximately 200 people, a wet and dry mess, ablution facilities and WWTP/RO plant, recreational facilities (including swimming pool, gym, oval and sports courts), water storage tanks and reticulated power and water.

All accommodation units and associated infrastructure will be sold/removed from site at closure with footings and services decommissioned and demolished and disposed to deep burial according to Prescribed Premises waste facility restrictions or removed off site where required. The natural land surface has been retained in the majority, with only the carpark requiring earthworks at closure. Village topsoil has been retained within the Topsoil Facility on M 29/150 and will be reinstated to this area which contains different LMU and soil types to the rest of the Project area.

1.6.8.3 Aerodrome Buildings & Refuelling Facilities, Fencing

The upgrade of the Perinvale airstrip to Aerodrome standard is under agreement and access consent with the pastoralist (Zenith Australia Group). There is also another tenement held over the airstrip (Red Dirt Minerals (formerly Ora Banda Mining (Mt Ida Gold Pty Ltd)) and therefore PMLU will have to be agreed as the Project nears closure.

Current consensus is that the pastoral company (Zenith Australia Group) will resume ownership of the upgraded asset (apron and air control devices), and the co-lease holder will retain access as required but neither will retain the associated terminus building. Continued stakeholder liaison, according to **E-PRO-015 Stakeholder Liaison Strategy Procedure**, will be undertaken over LoM to ensure satisfactory closure and relinquishment of Aerodrome back to the care and control of the pastoralist.

1.6.8.4 Water Management Structures

A surface water hydrological study and modelling (Hydrologia 2024; **Appendix I**) informed the placement of surface water management structures to ensure surface water flows during average and peak events do not erode constructed landforms nor enter pits. The structures allow surface water movement to be directed and contained such that no erosive action of constructed landform or pits results, and sediments are captured and retained in situ so they don't flow into the local natural catchment. Surface water will be managed at the site during the operational and closure stages to address potential environmental and flood risks identified during the baseline hydrology assessment phase by:

- Minimising the risk of shadowing erosion and impacts on the downstream environment in the 10% AEP and smaller rainfall events
- Minimise discharge of contaminated or saline stormwater to the environment
- Managing flood risk for the pits in the 1% AEP event.

Construction and Closure of Water Management Structures

Post-clearing and bulk earthworks the Construction phase will commence along with the development of the Water Management Structures. Competent material extracted from VB North and Emu open pits will be used to armour the base of constructed landforms and for the construction of the Water Management levees, diversions and crossings. The Water Management Services will be constructed to ultimate design (PMF) as per Hydrologia (2024) (**Appendix I**).

Some of the structures and management is planned for operational phase and some will be retained in perpetuity to continue to ensure hydrological functioning of the local and regional catchment. Elements of the Project site that will be addressed for closure includes residual open pits, WRLs IWL, and rehabilitated site landform. The residual infrastructure at closure are shown in **Figure 7**.

After closure, the site will be rehabilitated to a stable landform with minimal impact on the surrounding environment. Key flood protection assets (levees and drains) will be constructed to allow a functional drainage system to operate in perpetuity. This involves setting levee crest levels higher than the predicted probable maximum flood (PMF) level and ensuring drainage lines return to natural flow paths downstream of the mine.

In summary, at closure the following surface water strategy is:

Pits

Residual pit voids will remain after closure and will be isolated with levees and abandonment bund. Groundwater intercepted by the pit will be minimal due to the depth of groundwater and mining depths, so the only inflows will be direct rainfall and runoff from any small contributing catchments. This ponding will be lost to evaporation over time due to the high evaporation rates experienced in the Project area.

The catchment surrounding the pit inside the safety bunds and perimeter levees will be kept as close to the pit as possible to minimise this catchment area. The bund and final landform around the pits will be constructed to minimise ponding against the bund, either internally or externally, and to allow free drainage of stormwater collected inside the bund into the pit lake. Consideration will be given to ensuring that entry points for stormwater to the pit do not scour and breach the safety bund (audits and maintenance during operations and closure conducted according to EMS procedures).

Waste Rock Landforms

The final WRLs will be stabilised to prevent scour. Stormwater generated on the WRL will be retained through design for capture on the backwards sloping berms.

Stormwater generated on top of the structure will be retained and dissipated to evaporation in situ. This is a simpler solution to allowing drainage off the structure but reduces the local catchment area. Ponding or accumulation of stormwater on the top will be avoided by levelling of the landform. Evaporation and infiltration will be encouraged with vegetation and an absorbent soil profile.

Stormwater generated on the external slopes of the WRLs will be managed with the additional of competent rock to control flow and minimise scour. The 14 degree slopes will minimise erosion using a combination of landform shape, vegetation and ground protection (such as rock or timber/mulch). Concentration of stormwater flow on the slopes will be avoided. Low

ground surface grade, high infiltration or vegetated areas on the downstream edge of slopes might be useful for containing any eroded material and filtering stormwater exiting the slope area to the environment. Stormwater from the slopes can be released to the environment as long as the quality of the water is similar to the surrounding environment and the outfalls are erosionally stable.

The General Site

On closure, general site infrastructure and roads will be removed, the topsoil stockpiles will be used in site rehabilitation and the landform returned to natural contours and revegetated.

Stormwater flows across the site can be managed as shallow overland flow with drainage similar to the natural landform (Hydrologia 2023; **Appendix I**). Concentrating flows will be avoided. Disturbed areas will be revegetated progressively and following Decommissioning, as quickly as possible.

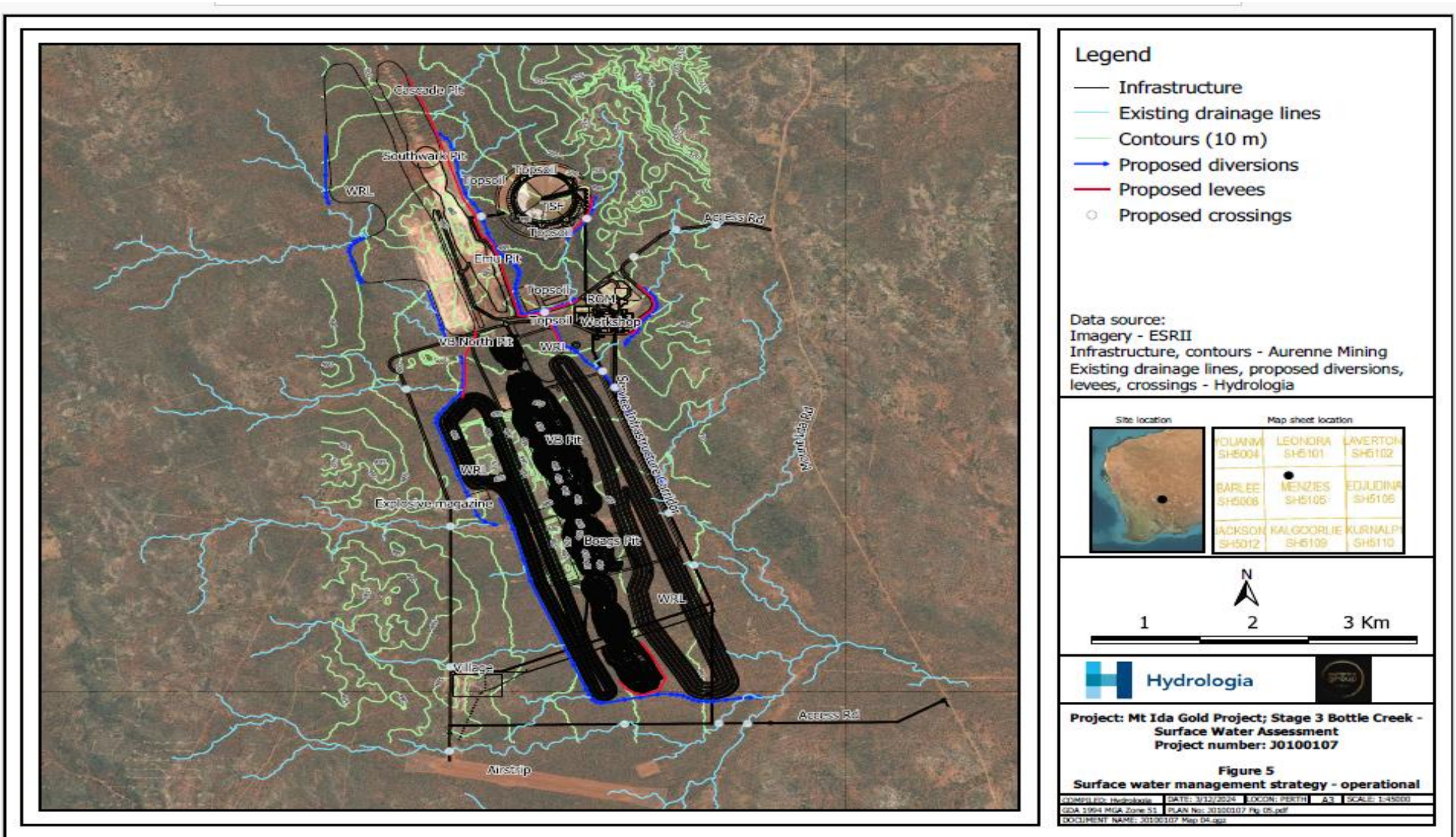


Figure 8: Surface Water Management Strategy

2 IDENTIFICATION OF CLOSURE LEGAL OBLIGATIONS AND COMMITMENTS

2.1 Regulatory Context

The Department of Mines, Industry Regulation and Safety (DMIRS) is the lead regulator and decision-making authority for mining projects in WA under the *Mining Act 1978*. DMIRS regulates the industry to ensure closure conditions are applied and commitments made are implemented during the life of a mining project. These commitments and approval conditions are incorporated into the tenement conditions to ensure compliance.

Mining projects that may have a significant effect on the environment are referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986* (EP Act). No part of the Project has ever been referred to the EPA and therefore no approvals have been granted pursuant to Part IV of the EP Act. Similarly, as no matter of national environmental significance are significantly impacted by the Project, no referral under the *Environment Protection and Biodiversity Conservation Act 1999* has occurred.

2.1.1 Water licencing

Groundwater abstraction requires a Groundwater Licence (GWL) as issued by the Department of Water and Environmental Regulation (DWER) under the *Rights in Water and Irrigation Act 1914* (RIWI Act). Groundwater abstraction for 250,000 kL pa for dewatering, dust suppression and mining purposes for the Project is covered by GWL204119(1). An additional licence to construct or alter a well CAW204120(1) is in place for additional bores during Project development.

To ensure that groundwater flows, and quality are not adversely affected during both operation and post-closure long-term up until closure, water will be managed according to the GWL for as long as it is applicable. These Licences for the most part won't be applicable at closure except for meeting the monitoring schedule of the inactive storage pits and bores. The licences have also been identified as being integral to managing water up until the point of closure and to a lesser degree post-closure and have therefore been considered as part of the closure obligations.

2.1.2 Works Approvals & Prescribed Activities

Works Approvals and environmental (prescribed premise) licences pursuant to Part V of EP Act are also issued by DWER. A Works Approval under the Part V of the EP Act was lodged 7 July 2021 for wastewater treatment plant, and irrigation sprayfield (W6574-2021-1).

A Works Approval is under assessment for the processing and waste storage (IWL) related prescribed activities (categories 5 Processing, 7 Vat leaching, 64 Class II or III putrescible landfill site) under W6640-2022-1. It will provide conditions for the construction, commissioning and operation (prior to licencing) for the processing Plant, IWL, and putrescible landfill on M 29/150.

2.1.3 Native Vegetation Clearing

A native vegetation clearing permit (NVCP) CPS 9383 (MP **Appendix P**) will facilitate clearing over the life of Project. It contains conditions for flora and fauna management and compliance and reporting conditions to DMIRS.

Baseline surveys for flora, vegetation and fauna (including subterranean and SREs, and fauna habitats have occurred from 2019-2021 and further work has been commissioned in 2021. No conservation significant species or communities will be significantly impacted by the proposed Project activities or clearing.

2.2 Legal Obligations Register

All legal obligations relevant to rehabilitation and closure of the Project are identified and presented in **Appendix B** and are tracked and are updated in Aurenne's **Environmental Compliance Register E-REG-005**. These include mining tenement conditions, commitments within approved MP/MCP and other regulatory instruments.

Aurenne's Compliance Register includes all legally binding conditions and commitments and/or legal obligations applicable under relevant State and Federal legislation that is related to closure. It includes additional regulatory instruments conditions and MP/MCP commitments. Additionally, closure decommissioning and rehabilitation of Project will be conducted in accordance with the general provisions of the following key legislation, policy documents and related guidelines including:

- Mining Act 1978
 - Mines Safety and Inspection Act 1994
 - Mines Safety and Inspection Regulations 1995
 - Contaminated Sites Act 2003
- Statutory Guidelines for Preparing Mine Closure Plans (DMIRS, Guidelines for Preparing Mine Closure Plans 2020)
- Mine Closure Plan Guidance - How to prepare in accordance with Part 1 of the Statutory Guidelines for Mine Closure Plans (Department of Mines 2020)
 - Principles of the Strategic Framework for Mine Closure (ANZMEC/MCA 2000)
- Mine Closure Handbook (DIIS, Mine Closure, Leading Practice Sustainable Development Program for the Mining Industry 2016)
 - Safety Bund Walls around Abandoned Open Pit Mines (DoIR 1997).

The obligations for closure from the conditions in the mining tenements (Appendix B) can be summarised as:

- Exploration holes and costeans are to be capped, filled in and otherwise rehabilitated
 - Topsoil is to be removed, stored appropriately and reused
- All waste, rubbish and abandoned equipment and buildings are to be disposed of in an appropriate manner
 - Roads are to be removed and rehabilitated
 - Compliance with Mining Proposals/Mine Closure Plans.

Notices of Intent and Mining Proposals for mining and Low Impact Mining Operations were submitted prior to Aurenne commencing any operations and contain commitments which previous tenement holders, have made regarding closure. These commitments are listed in **Appendix B2**. In some cases, operations and closure activities on the Project domains were carried out several years ago and rehabilitation was completed to the guidelines/standards of the day. When rehabilitation at these sites was completed to these standards it is considered they were completed to an acceptable standard.

2.3 Legal Access Agreements/ Consent

The MIG Project tenements are within Perrinvale and Riverina pastoral leases both of which are owned by Zenith Australia Group. The Project will include an upgrade of the Perrinvale

airstrip. Ultimately the airstrip will be upgraded to aerodrome standard, which may be CASA certified but will depend on the operators requirements for service provision.

Letters of consent from both interested parties (Red Dirt Minerals/Zenith) have been obtained; **Appendix B3** contains copies of the Access Consent/Agreements with both parties.

Aurenne, as part of its **E-PRO-015 Stakeholder Liaison Strategy Procedure** meets and liaises with stakeholders regularly to provide Project updates and to discuss synergistic activities, and in future as the mine moves toward closure, PMLU and the requested retention of improved facilities.

2.4 Mining Rehabilitation Fund

The *Mining Rehabilitation Fund Act 2012* requires tenement holders to report current areas of exploration and mining disturbance every year to the State MRF, administered by DMIRS. Disturbances on which rehabilitation works have been completed, and completion criteria have been met, attract a much lower contribution rate, providing an incentive for early or progressive rehabilitation and once verified by DMIRS, such areas require no further contribution. DMIRS reserves the right to request bonds for sites considered a high risk, for instance due to a poor history of compliance, or inadequate progress on mine closure.

Aurenne will report to the MRF for disturbances and progressive rehabilitation related to the Project as it develops.

2.5 Data Gaps and Identified Further Investigations

Knowledge gaps for closure planning and implementation identified primarily related to the Project moving from exploration to early mining phase. The majority of the site has been previously mined/disturbed with proven rehabilitation of the mine site such that it is one of the few mine sites with successful relinquishment back to the State. The receiving environment does not hold elevated biodiversity values (such as threatened flora, listed ecological communities, Aboriginal heritage sites, or wetland/riparian areas). Therefore, with contemporary mine closure practices it is anticipated that successful closure can be achieved.

However, given this is a new mine site, to ensure closure risks are fully identified the Project has been reviewed and will continue to be informed by progressive rehabilitation and monitoring. **Table 4** identifies future investigations that will occur during the life of mine to inform post-closure landforms and will be content for future MP/MCPs

Table 4: Data/Resource Gaps and Further Investigations

Data or resource gap	Required investigation	Timing
Post mining land-use (PMLU)	Continued stakeholder liaison on PMLU	LoM & prior to closure
Reconciliation of rehabilitation resources available for rehabilitation after clearing	Soil and waste characterisations for whole of Project (Landloch; Pendragon Environmental 2021) will require revision as Project is refined and in subsequent submissions of the MP/MCP	Prior to each mining stage (LoM)
	Stockpiling and demarcation of competent rock to facilitate structural integrity & closure landform capping will be managed during LoM to ensure competent material are stockpiled for rehabilitation & closure. Annual survey & inventory is required to understand rehabilitation material availability	Stage 1
	Rehabilitation materials inventory & reconciliation survey/audits will be required once the MPMCP is approved and clearing & materials stripping can commence. Landloch (2021; Appendix C) has indicated potential stripping depths but actual volumes will require survey pick-up and data compilation to understand the future rehabilitation resource & to address issues that may arise from shortfall or excess	Stage 1 Pre-construction
Topsoil dispersion/sodicity amelioration trials	Landloch (2021; Appendix C) recommended the application of lime to improve topsoil rehabilitation capability. Due to the early stage of Project (i.e. moving from exploration to mining commencement), topsoil will not be utilised for rehabilitation in the short term and therefore liming has been delayed. Trials will the inclusion of lime will be undertaken compared to rehabilitation without lime to determine if results show improvement in rehabilitation/ revegetation outcomes WRLs for VB North & Emu will be the first Closed & Rehabilitated landform for the Project. Soil & mulch amelioration trials are proposed. Trial methodology will be developed during Q1-Q4 2022 & presented in next MPMCP revision	Prior to Stage 1 Closure of WRLs (VB North & Emu)
Surface Water Management	Surface Water Management structures will be reviewed during each future stage of mine planning as additional pits and resources are planned for mining. PMF/PMP modelling and water management structures will be review by SMEs according to mine stages and in advance of Closure to review efficacy and lifespan of structures	Prior to each MPMCP revision; min. 2 years prior to Closure
Borefield for Process water not yet identified/ developed	Further water drilling/exploration is required to identify a source of process and potable water for LoM	Q2-4 2022
Groundwater Monitoring Bores	A suite of bores for monitoring will need to be installed around the IWL and Processing Plant, particularly down catchment to monitor any potential seepage and monitoring groundwater quality once the IWL is constructed & operational. This will also be a DWER Part V licencing requirement (refer Figure 4 for planned monitoring bore locations). Pendragon (2022; Appendix H) has developed a <i>Groundwater Monitoring Plan</i> (GMP) that identifies a suite of pre-disturbance groundwater bore monitoring locations; this GMP has also been submitted to DWER as a commitment for the Works Approval (W6640/2022/1).	Q2 2022 (bores) Q4 2022 (GWOS)

Data or resource gap	Required investigation	Timing
	Bores are planned to be installed Q2 2022 prior to ground disturbance to serve as a baseline data comparison. GMP will be utilised for groundwater data collection during Baseline, Operational & Closure project stages. Data will be submitted to DWER annual as per licensing requirements The GMP will also be submitted to DWER as part of the future Groundwater Operating Strategy (GWOS) that will be required to support groundwater abstraction licencing in future (1-2 year timeframe)	
IWL closure store & release cover	Presently the IWL will is not yet constructed & not due for Closure in 7-10 years is proposed to have at time of Closure a closure store & release cover. IWL will be constructed to design (CMW GeoSciences 2021; Appendix F and preliminary Closure design is provided but will be the subject of a SME review prior to Closure. The actual cover design for IWL closure will incorporate industry learnings and published investigations into best practice (see for example Jamson et al 2019) for closure cover to ensure rehabilitation is optimised	LoM & prior to Closure
Waste characterisation & encapsulation	As the Project develops further and additional pits are developed, further waste characterisation assessments will be required to ensure sufficient management of PAF is planned during waste handling	Towards end of Stage 1 mining Q4 2022
Develop an appropriate seed mix using native local provenance seeds	Review of existing (rehabilitated) landforms and baseline survey reports (Phoenix, NVS, GLS) for suitable species Quadrat based survey (Phoenix 2021) has provided quantitative data and species that will inform seed mixes and act as site analogues for species density, diversity, and weed comparisons for revegetation	LoM & prior to VB North & EMU Closure of WRLs (12 months (Q1 2026))
Selection of EFA monitoring & analogue sites	More detailed planning into rehabilitation monitoring site selection & comparative analogue sites will need to be undertaken to initiate a field-based monitoring program to be developed in parallel with remote sensing vegetation health assessment for ground-truthing & data validation The proposed waste landforms (WRLs & IWL) will be elevated landforms & therefore not similar in elevation nor ecological landscape position (broad mulga flats) that typify the pre-disturbance Project area. Therefore, suitable analogue sites will need to be investigated from the wider local area; such as breakaways and elevated sites that would be more comparative in terms of ecological landscape position/function and plants & species spatial distribution & densities.	
Pit wall design parameters have been recommended (P O'Bryan & Associates (2021) in a study due to previous pit wall slips during NorGold operations	Ongoing operational assessments to refine and optimise pit walls have been recommended and will be reviewed over Project stages	LoM & at Project mining stages; prior to next MP submission

Data or resource gap	Required investigation	Timing
Determine if the surface water management structures in place are to be removed or modified to form permanent features or if natural drainage lines can be reinstated post-closure	Surface water modelling in relation to landform stability (Hydrologia 2024) has indicated those surface water management features to be constructed that will be temporary over LoM or become permanent to continue surface water management following closure to ensure environmental water requirements continue. Surface Water Management structures will be reviewed annually over the LoM as the Project develops & additional information from Audits will inform & fine-tune structure design & construction. As part of Closure planning (>10 years) a Closure surface water hydrological review will be initiated to ensure at Closure the local catchment around the mine meets the environmental water requirements of the local environment & contributes to the regional catchment appropriately	Within 2 years prior to Closure
Groundwater change associated with Project	The Mt Ida Gold Project is a new mining & processing venture within a previously disturbed area (NorGold 1980s mine site) and potential changes to groundwater associated with a borefield development, new open pits, an IWL and future sourcing of potable water. The installation of a suite of new groundwater bores will inform potential changes to groundwater quality & quantities and will be regulated by DWER. Groundwater Monitoring Plan (Pendragon 2022) is provided in Appendix H	Baseline LoM Closure
Final landform design review	The Project is in an early phase moving towards mining; as mine planning progresses (including underground mining), an external review of final landform design to achieve closure objectives will be evaluated	During LoM

3 STAKEHOLDER ENGAGEMENT

The principal stakeholders identified for the Project are the Shire of Menzies and the pastoral lease holders within which the Project is located (Perrinvale and Riverina Stations; both leases held by Zenith Australia Group).

Aurenne Mining made initial contact with identified stakeholders to introduce the business and the Project in Q1 2021. Following this, face-to-face meetings have taken place with both parties. Aurenne is committed to open and collaborative engagement according to the **Project Stakeholder Liaison Strategy Procedure E-PR-015 (Appendix A2 Corporate EMS)** with all stakeholders and maintain a **Project Stakeholder Register E-REG-003** (extract to current date provided in **Appendix B4**) to track all interactions. Data sharing between Aurenne and Zenith has allowed information on bores and synergies for the development of the airstrip to aerodrome standard; use of pastoral bores and access to water.

There is no Native Title that exists over the Project area but Aurenne (formerly ALT Resources) has previously engaged with Traditional Owners from the Leonora area who have connection to country in which the Project sits.

One desktop assessment (O'Connor 2019) and two on-country surveys have occurred (Rayner 2019, 2021). No sites have been recorded within the Project area.

Aurenne has letters of consent from both parties (Zenith Australia Group; & Ora Banda Mining has recently been acquired by Red Dirt Minerals) regarding consent/agreement over the Perrinvale airstrip and agreement that Aurenne will upgrade the airstrip to aerodrome standard (**Appendix B3**).

3.1 Stakeholders

Key identified stakeholders are summarised in **Table 5**. Identified stakeholder are listed in the **Project Stakeholder Liaison Strategy Procedure E-PR-015** and the ongoing liaison records and communications are within the **MIG Project Stakeholder Register E-REG-003 (Appendix B4)**.

Table 5: Key identified stakeholders

Sector	Department	Identified interest
State government Agencies	DMIRS Mine Safety Inspectorate	• Administers (Mining Act) and Regulations • Tenement conditions • Native Vegetation Clearing Permit (NVCP) • Mining proposals/MCPs • Programmes of Work (PoW) • Mining Rehabilitation Fund (MRF) • Rehabilitation standards • Safety in resource sector
	DWER	• Administers EP Act • Provision of licences to take and abstract water • Groundwater quality and quantity • Administers Part V (EP Act), Industry Regulation and Licensing, Contaminated Sites Act 2003
	DPLH	• Indigenous and native title requirements • Heritage, cultural, ethnographic and archaeological sites
	Department of Fire &	Emergency services Fire safety training and fire breaks

Sector	Department	Identified interest
	Emergency Services (DFES)	
	DoH	Environmental health (WWTP, potable water); building and planning compliance
	DBCA	- Administers Biodiversity Conservation Act 2016 and regulations - Conservation listed flora, fauna, plant communities, licencing
	Pastoral Lands Board (PLB)	Activities on pastoral leases (Riverina, Perrinvale)
Local Government authorities	Shire of Menzies	- Building & planning permissions - Local roads - Employment opportunities for community
Other	Pastoral lease owners	- Zenith Australia Group own both Perrinvale & Riverina - Airstrip, bores, access & mine closure - Liaison with neighbouring pastoral lease holder (K. Mader)
	Mining & exploration individuals & companies	Delta Lithium (Mt Ida Gold) are neighbours and co-lease tenements relating to the airstrip - Liaison with local mining companies regarding the Project

3.2 Principles of Stakeholder Engagement

Aurenne's stakeholder engagement process and strategy (**Project Stakeholder Liaison Strategy Procedure E-PR-015; Appendix A2**) follows the five principles from the Australian and New Zealand Minerals and Energy Council and the Minerals Council of Australia, Strategic Framework for Mine Closure (ANZMEC/MCA, 2000):

Principle 1: Identification of stakeholders and interested parties

Key stakeholders that have been identified for the Project include:

- Internal
 - Company Directors
 - Superintendent Geologist (current)/Mine Manager (future)
 - Relevant consultants/contractors
 - Operational staff.
- External
 - Contractors, consultants and site visitors
 - State and Local Government authorities (in particular DMIRS/DWER)
 - Pastoral lease holders (Riverina and Perrinvale (Zenith Australia Group))
 - Shire of Menzies and the local community
 - Neighbouring mining companies and tenement holders (K. Mader/Walling Rock; Red Dirt Minerals; Jupiter, etc)

- Local Aboriginal community (Leonora based)
- Pastoral Lands Board.

Due to the remote location of the Project and its lack of adjacent sensitive receptors, some of the usual key stakeholders are not relevant to this Project, such as Main Roads, Department of Biodiversity, Conservation and Attractions, Native Title groups and various State infrastructure providers.

Principle 2: Effective engagement is an inclusive process which encompasses all parties and should occur throughout the life of the mine.

Aurene ALT Resources has an open and upfront engagement style and has demonstrated this through early engagement of external stakeholders in discussing and resolving issues. The following objectives have been incorporated:

- Identification of relevant stakeholders
- Post-mining land use to be agreed with stakeholders
- Actively engage stakeholders on a regular basis
- Prioritise outcomes of community and stakeholder consultation in relation to closure are taken into consideration in development and reviews of the MCP
- Redundant surface infrastructure is to be salvaged and removed on completion of mining and processing operations unless an alternative agreement is reached with relevant stakeholders.

Principle 3: A targeted communication strategy should reflect the needs of the stakeholder groups and interested parties.

The key objectives of the communication strategy for the Project include:

- Inform local stakeholders of the closure planning process and allow opportunities for stakeholder input into planning decisions
- Inform local stakeholders of the proposed timeframe for closure, including key closure planning milestones (such as the preparation of a final decommissioning plan) and decision points (such as the designation of end land uses for rehabilitated sites)
- Identify any closure issues not covered in this or subsequent MCPs.

Details of stakeholder consultation are included in **Appendix B4**. Consultation with stakeholders will continue on a regular basis and consultation regarding closure of the Project will be undertaken with relevant stakeholders during the life of the Project and the development of the MCP and will continue through to decommissioning and closure.

Principle 4: Adequate resources should be allocated to ensure the effectiveness of the engagement process.

The Exploration and (future) Mine Manager and COO are the key roles involved with the engagement process with both internal and external stakeholders, regularly visiting the site, and maintain contact with key stakeholders.

Principle 5: Wherever practical, work with communities to manage the potential impacts of mine closure.

Aurenne recognise that mine closure has a potential impact on the local community and will work with the community to navigate through closure issues. Stakeholders are kept informed of the Project status, and any proposed major changes to the Project and closure plan will be communicated. Stakeholder input has been incorporated into this MCP and recorded in the Stakeholder Register (extract provided in **Appendix B4**).

3.2.1 Ongoing Community and Stakeholder Engagement

Aurenne is committed to ongoing and meaningful stakeholder engagement. Given the expected timeframe of operating in the Mt Ida mining area (~10 years) and the ongoing opportunities to increase this timeframe, liaison will continue with our identified stakeholders and expected further tenement holders, over the life of the Project.

3.3 Aboriginal Heritage

A desktop assessment conducted by consulting anthropologist Rory O'Connor (2019) noted that "no registered Aboriginal sites or other heritage places within those parts of the five tenements listed ... which make up this Prospect. One previous report is listed in the DPLH database as relevant to E29/1008, M29/151, L29/137, E29/1007 and M29/150, namely the March 2009 Assessment of Aboriginal Heritage at Mt Forrest Prospect, Bulga Downs Project, Southeast of Sandstone. All sectors ...which make up the Bottle Creek Prospect were included in their entirety in the research upon which the assessment is based. That research comprised a desktop study followed by fieldwork to re-record known sites and inspect the Mt Forrest tenements. That fieldwork included a consultation with the relevant native title claimants (p8). As a result of that research, the assessment states that based on these findings, and on the re-recording of registered sites, it is possible to state with confidence that there was little Aboriginal activity in the land constituting the Mt Forrest Prospect. Few archaeological sites are likely to occur in the tenements and fewer ethnographic sites would be expected."

There is no active Native Title claim over the Project area. The Darlot Claim (WC 2018/005) was filed in April 2018 but dismissed by the National Native Title Tribunal for the fifth time on 21 October 2020. Aurenne does not have a heritage agreement or pre-existing arrangement with any Aboriginal party that prescribes processes for compliance with the *Aboriginal Heritage Act 1972*. Therefore, the *Aboriginal Heritage Due Diligence Guidelines* (Department of Planning, Lands & Heritage and Premier and Cabinet 2013) were applied to the proposed Project areas and a consultant was engaged to consult with local elders and engage with them to undertake surveys of the project areas.

Three recent field-based Aboriginal heritage surveys have been undertaken for the Project (A J Rayner Consulting in 2019; 2020;2024). No places of cultural interests or ethnographic and archaeological sites of importance and significance to the Aboriginal people were identified during the survey; areas which may have higher perspective for artefacts or cultural significance include water sources, elevated ranges containing shelters, pronounced landforms features. These prospective places are not within the proposed Project disturbance areas and are limited locally.

Aurenne is aware of its obligations under the *Aboriginal Heritage Act 1972* and in regard to future potential Native Title claims and will continue to manage its responsibilities accordingly.

3.4 European Heritage

The Project is within the locality of Ularring, a small Western Australian rural location within the local government area of Menzies, located approximately 475 km from Perth covering an area of 26,564 km². Ularring has a recorded population of 4 residents (Australia's Guide 2021).

The Mt Ida area has an historic value from a social perspective for the goldrush history still evident in the local area with gravesites, mining shafts and remnants of past goldrush towns. Less is known of the Aboriginal land-use but evidence in artefact scatters in the local area also remains. Given the lack of permanent water or springs, the area may have been less frequently visited.

The Commonwealth Protected Matters (under the EPBC Act) Search Tool results recorded no World or National Heritage places (DAWE 2021).

3.5 Stakeholder Engagement in Closure Planning

Aurenne is maintaining regular discussion with co-lease holders over the Perrinvale airstrip and the N-S access track to the north of the Perrinvale airstrip (refer Stakeholder Register extract **Appendix B4**). Red Dirt Minerals (formerly Ora Banda Mining (Mt Ida Gold Pty Ltd)) and the pastoral lease holder (Zenith Australia Group) are aligned on Aurenne's offer to develop the airstrip to a CASA standard aerodrome. Discussion will continue over the LoM in regard to shared access, provision of alternative access from the south (in discussion phase only) and aerodrome relinquishment to the Perrinvale pastoral lease holder at mine closure.

4 BASELINE AND CLOSURE DATA AND ANALYSIS

The following section provides an overview of the key environmental aspects of the Project that are relevant to closure planning, characteristics including local:

- climatic conditions
 - environmental conditions – topography, geology, hydrogeology and geotechnical data
 - ecology including flora, fauna, ecological communities and habitats
- water resources details – type, location, extent, hydrology, quality, quantity and environmental values (ecological and beneficial uses)
 - soil and waste materials characterisation.

This information provides the background from which to inform the development of completion criteria and performance indicators for closure monitoring and performance

4.1 Climate

The Project is situated within the arid to semi-arid Goldfields region, experiencing hot, dry summers and cool, wet winters (Cowan 2001). Menzies weather station (012052) is the closest Bureau of Meteorology (BOM) station to the Project area but has not recorded data since April 2019. Therefore, Kalgoorlie weather station (012038) data were used for this summary.

The area experiences average maximum temperatures between 33.7 °C and 16.8°C in January, and average minimum temperatures between 18.3°C and 5.1°C in July (**Figure 9**). The area experiences approximately 266 mm of rainfall per year, and an average of 39 days of rain per year. Rainfall is highest in February at 31 mm and lowest in September at 13 mm (2021). Mean rainfall and the average rainfall days within each month are shown in **Figure 10**. Periods of high rainfall in summer generally falls over few days, following cyclones in the north of the state or summer thunderstorms.

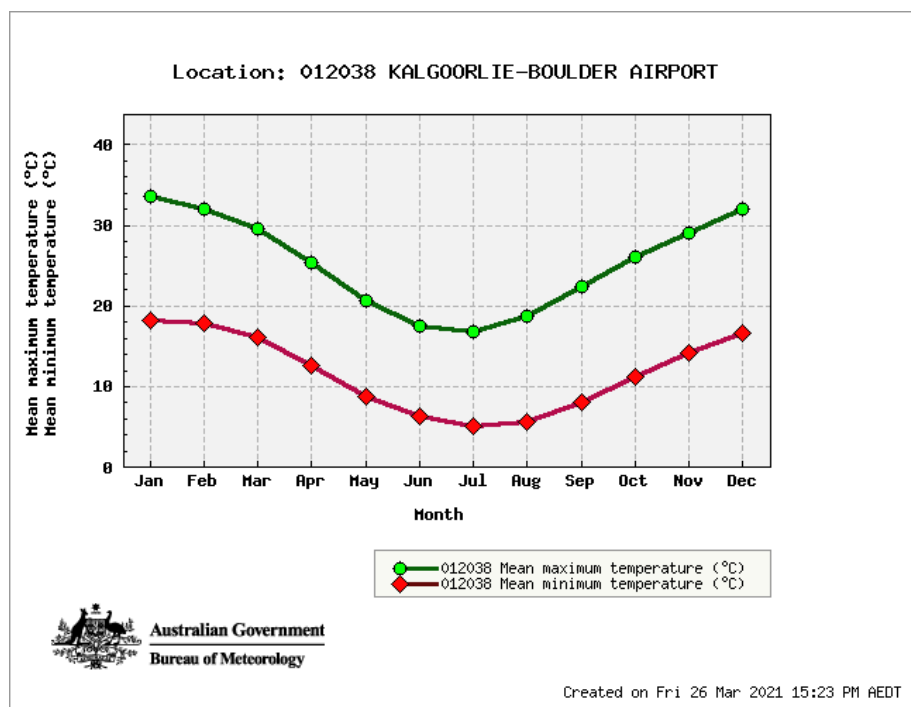


Figure 9: Mean Monthly Maximum and Minimum Temperatures (BOM 2021)

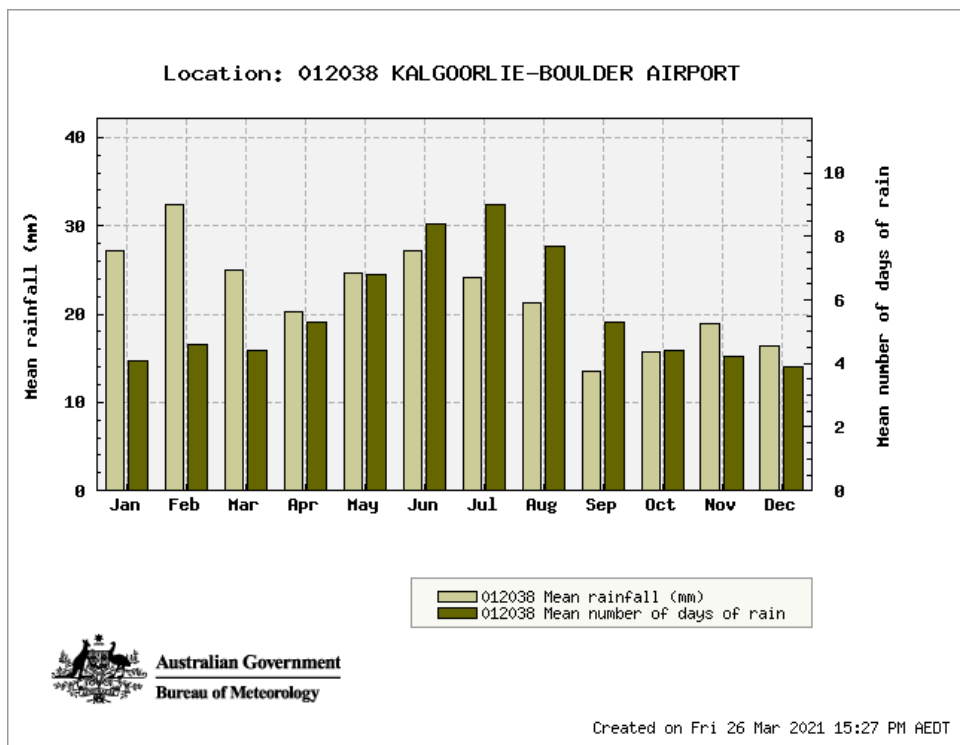


Figure 10 Mean Monthly Rainfall (1939-2021) (BOM 2021)

Annual evaporation rates of 2400 – 2800 mm/year (**Figure 11**) exceed rainfall, with surface water bodies remaining only for short periods of time after rainfall. Rain that may fall and pond on mine landforms usually evaporates quickly. Similarly, water within the pits is subject to high evaporation rates and the formation of pit lakes is usually the result of groundwater and surface water inflows rather than rainfall.

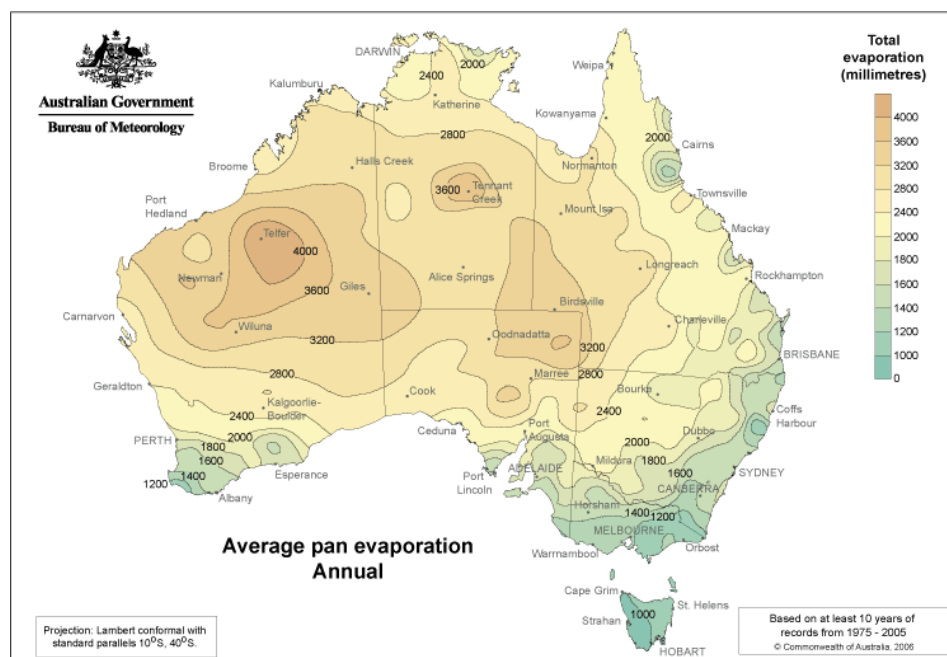


Figure 11: Annual evaporation (BoM 2021)

An Annual Exceedance Probability (AEP) is defined as the chance that an extreme rainfall event will occur in any given year. Based on AEP calculations by BOM, there is a 1 in 100

(1%) chance that the Kalgoorlie area will receive 52 mm of rain for a 1-hour period, 159 mm for a 24-hour period and 206 mm for a 72-hour period based on AEP calculations (BOM 2016).

Across the average year, morning (09:00) humidity levels are highest in January with an average of 74%, dropping to an average of 43% in December. Afternoon humidity levels (15:00) are highest in June at an average of 48%, with the months of December and January experiencing the lowest afternoon humidity levels at 24% (BOM 2021). Average daily evaporation rates in the region range between 12.5 mm in January and 2.6 mm in June (BOM 2021).

Wind conditions are predominantly from the easterly, north-easterly, and south-easterly winds, and between 10 and 30 km/hr (**Figure 12**). Average afternoon wind direction is variable, and is most predominant as westerlies, easterlies, and south-easterlies. Stronger winds (30-40 km/hr) are commonly associated with westerlies in the afternoons. Maximum wind gusts are generally seen in January, on average (BOM 2021).

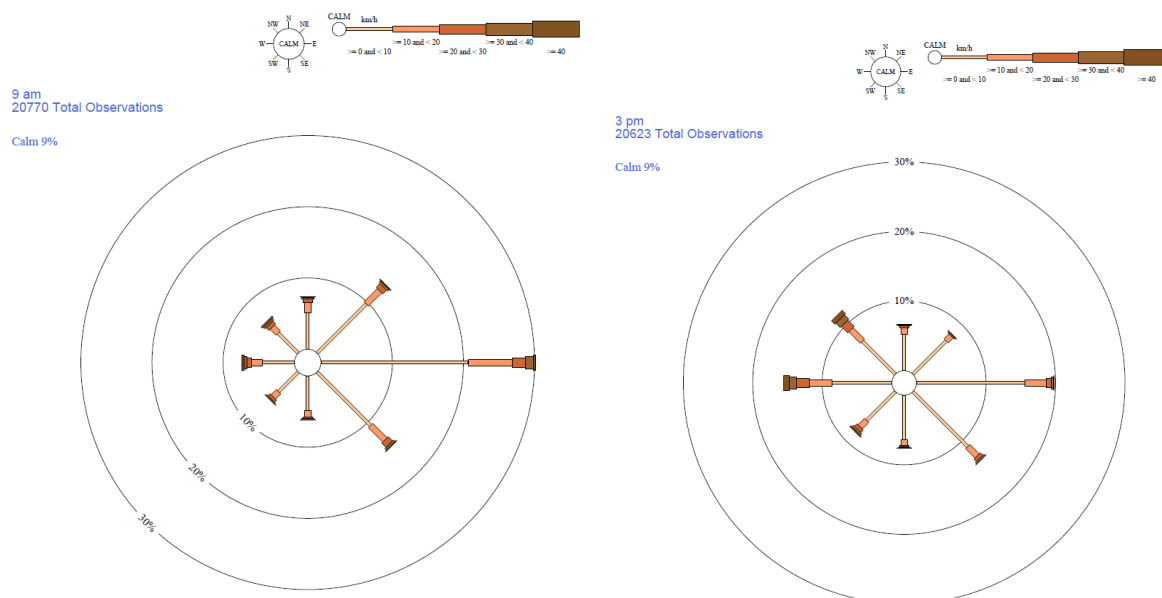


Figure 12: Wind Rose of Wind Direction Versus Wind Speed (km/h) (Bom (2021) 1957-2014

The future climate scenarios CSIRO's Regional Climate Vulnerability Assessment: Goldfields-Esperance (CSIRO, 2010) generally point towards a hotter, drier climate for Goldfields-Esperance region, which is described as hot and dry for most of the year. Where water is already at a premium, increased evapotranspiration and less rainfall will put additional stress on the water resources available, suggesting that both mining companies and the local community will need to adapt their practices to use less water and cope in the hotter extremes. The region expect greater incidence and severity of extreme weather events or storms, including high winds (10 to 15% increase by 2030) and intense rainfall (20 to 30% increase by 2030).

4.2 Interim Biogeographic Regionalisation of Australia

The IBRA recognises 89 bioregions within Australia and 419 subregions (DOEE 2017). The Project is situated in the Norther parts of 'Eastern Goldfields' Terrain of the Yilgarn Craton within the Murchison IBRA subregion (MUR01). Characterised by its internal drainage, and

extensive areas of elevated red desert sandplains with minimal dune development. Salt Lake systems associated with the occluded paleodrainage system.

4.3 Topography and Landforms

The Eastern Murchison comprises the northern parts of the craton's 'Southern Cross' and 'Eastern Goldfields' Terrains and is characterised by internal drainage and extensive areas of elevated red desert sandplains with minimal dune development. Salt lake systems are associated with the occluded paleodrainage system. Broad plains of red-brown soils and breakaway complexes as well as red sandplains are widespread (CALM, 2002).

Broad plains of red-brown soils and breakaway complexes as well as red sandplains. Vegetation is dominated by Mulga Woodlands often rich in ephemerals; hummock grasslands, saltbush shrublands and *Halosarcia* shrublands.

The dominant land uses of the MUR subregion are: Grazing-Native (85.47%), unallocated Crown land and Crown reserves (11.34%), freehold (7.15%), and mining leases (CALM, 2002)

The area is flat lying, rising gradually to low hill or ridges to the west. The physiography generally reflects the underlying geology, with areas underlain by granite generally as flatter sandy plains and with low gentle hills developed over the greenstones. Lake Ballard, a large salt lake to the southeast, is surrounded by areas of sand and silt dunes. Elevations at the Project area range 468 to 460 m AHD.

The landscape through the site is described in CSIRO (1991) as broken slopes and ridges characterised by breakaways, generally on gneissic granites and allied rocks; iron-stone gravel pavement variably present. Chief soils tend to be shallow earthy loams. The only significant elevated feature in the local area is outside of the MIG Project tenements, being the banded ironstone range mapped as 'Perinvale/Waling Priority Ecological Community' to the southwest. While the BIF does not extend geologically into the Project area, it does provide visual amenity to the Village.

4.4 Geology

4.4.1 Regional Geology

The Project lies almost entirely within the Kalgoorlie Terrane of the Yilgarn Craton, encompassing Archean mafic-ultramafic intrusive and volcanic rocks with minor interflow sediments that make up the Mt Ida-Ularring Greenstone Belt. The northern half of the belt forms a gently south plunging anticline (Kurrajong Anticline) with the Copperfield Monzogranite at its core. The belt is bounded to the east by the Ballard/Zulieka shear and the Mt Ida Shear to the west. The Mt Ida Shear is a major structural break and forms the boundary between the Kalgoorlie Terrane and the Southern Cross Terrane to the west.

The Mt Ida Gold Project is located on the northern extremity of the Mt Ida-Ularring Greenstone belt extending from Davyhurst to Mt Alexander. The Bottle Creek Emu Formation comprises carbonaceous black shale, graphitic chert and BIF and is an interflow sedimentary unit between volcanic flows. Gold and silver mineralisation is found close to the contact of two sequences and coincides with the shear, up to 20m thick, Emu Formation which on the eastern contact is a felsic volcanic unit. The western contact appears as weathered quartz-biotite schists and mafic volcanics (Legge et al 1990).

At the surface, the sheared Emu Formation is a gossanous ironstone, oxidised and lateritised, to a depth of up to 100m below surface. Below the base of weathering and oxidation, a

massive pyrite-pyrrhotite zone, up to 6m thick, occurs within the sheared black shale in a variable gangue of quartz, mica and schist.

The area is characterized by two landforms: alluvial flats along the drainage courses with shallow (1m red, earthy loam to sand over red-brown hardpan); and low rises between drainage lines with shallow red earths overlying red-brown hardpan; rises with a stony surface mantle (Pendragon 2021).

4.4.2 Land Systems & Soils

The Project lies in Salinaland Plains Zone (279) of the Murchison Province (Tille, 2006). The Salinaland Plain zone consists of “*sandplains (with hardpan wash plains and some mesas, stony plains and salt lakes) on granitic rocks (and some greenstone) of the Yilgarn Craton. Red sandy earths, Red deep sands, Red shallow loams and Red loamy earths with some Red-brown hardpan shallow loams, Salt lake soils and Red shallow sandy duplexes. Mulga shrublands with spinifex grasslands (and some halophytic shrublands and eucalypt woodlands).*”

An assessment of WA Department of Agriculture and Food land systems mapping indicates that the Rainbow and Bevon systems comprise the majority of the Project area (**Table 6** and **Figure 13**); and the early activities are within these two units only. Soils in these systems are characterised by red loamy earths, shallow loams, deep sands, and sandy duplex soils.

Table 6: Land Systems Descriptions

Land System	Soils	Land System Description
Rainbow (279Rb) (green in Fig 8)	Red loamy earth, shallow loam-deep sand	Hardpan plains supporting mulga tall shrublands.
Bevon (279Bv) (blue in Fig 8)	Red shallow loam-sandy duplex soil	Irregular low ironstone hills with stony lower slopes supporting mulga shrublands.

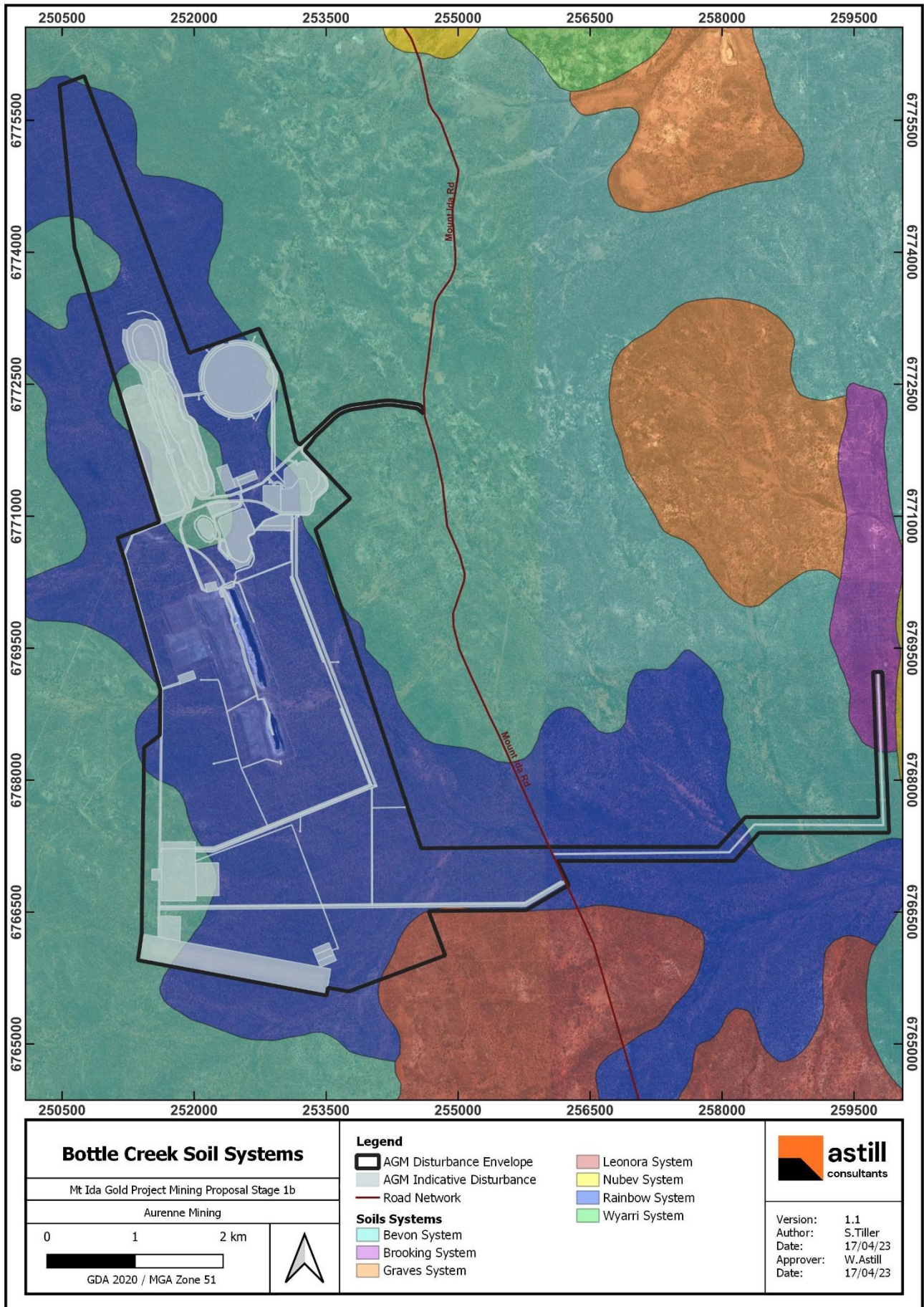


Figure 13: Land Systems Map

The Australia Soil Classification (ASC) (Isbell & National Committee on Soil and Terrain 2021) maps the site as:

- Predominantly Kandosol (lack strong texture contrast, have massive or only weakly structured B horizons, and are not calcareous throughout the profile)
- A very small area around Boags pit Rudosol (soils with negligible (rudimentary) pedological organisation)
- The Accommodation Village, sited within the highest terrain of the Project area, is mapped as Calcarosol (calcareous throughout the solum, or calcareous at least directly below the A1 horizon or a depth of 0.2 m (whichever is shallower)).

The Soil Group of WA (SGWA) (Schoknecht & Pathan, 2013) describes the site as almost entirely Loamy Earths, being uniform loam and loam grading to clay loam or clay with very small areas mapped and described as Shallow Loams.

A full soil sampling program and characterisation was undertaken for the Project area (Landloch 2021; **Appendix C**) and informs the use and management of topsoils, in particular for rehabilitation. The ASC and SGWA classifications were used to provide insight into the soils present on site and to inform Landloch's (2021 **Appendix C**) classification of Project's Soil Mapping Units (SMUs). The SGWA classification system resulted in only slightly different classifications for some of the inspection sites and provided limited detail useful for defining soil spatial distributions.

The SMUs defined for the Project area are:

1. Deep Loamy Earths
2. Calcareous Loamy Earths
3. Shallow Loams.

Rocky Ridges are also defined in the (Landloch 2021; **Appendix C**) but these are not within the Bottle Creek Project area.

An association between the soils and their landscape position (relief and gradient, i.e., upper slopes - lower slopes - flat areas) was observed. In general, the Deep Loamy Earths were found on the low gradient areas or areas of sediment deposition, the Shallow Loams were found on the low rises or low hills and/or the mid-upper slope areas, and the Calcareous Loamy Earths were found on the upper slopes and areas adjacent to areas of higher elevation.

Figure 14 shows the SMUs mapped for the Project.

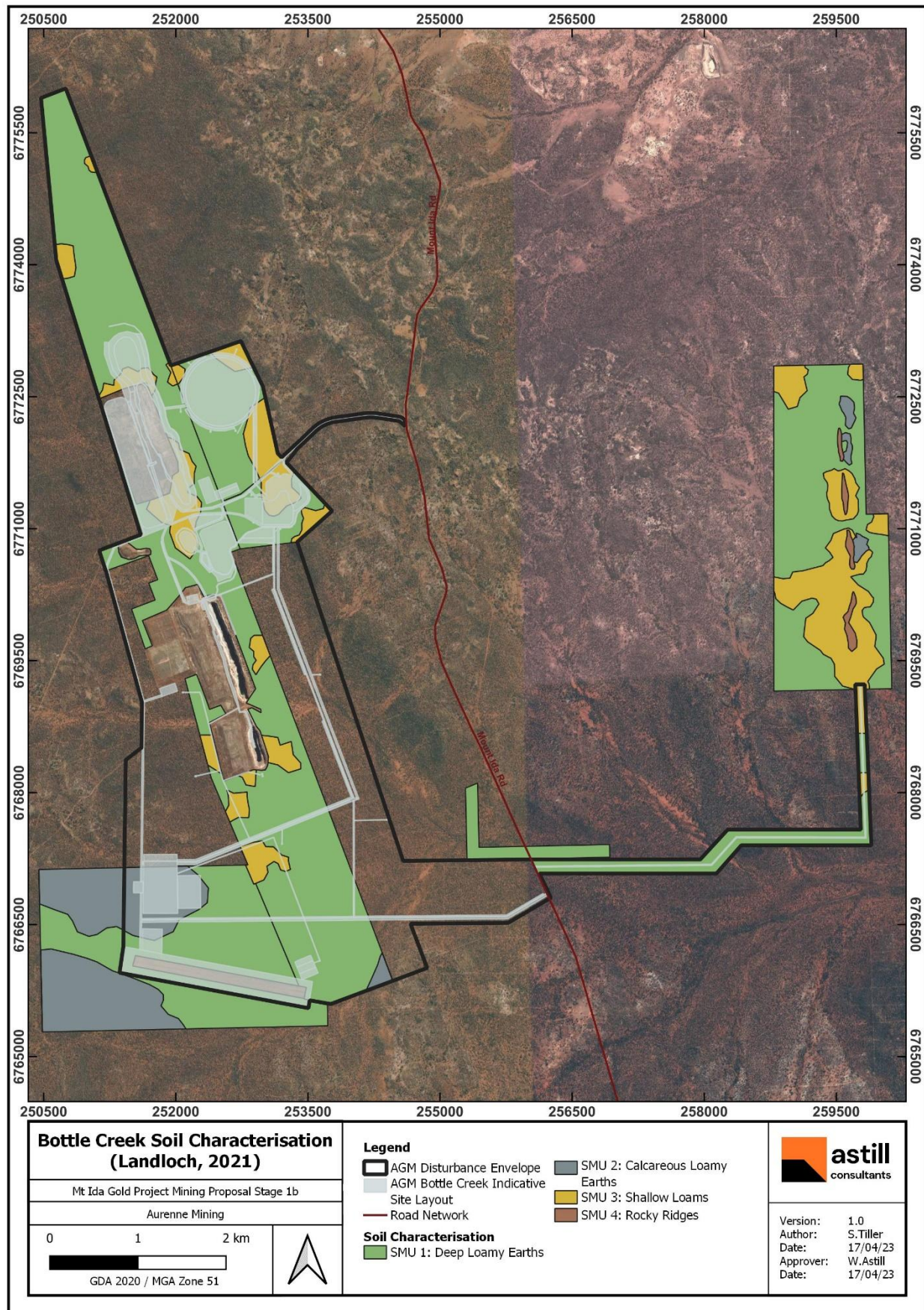


Figure 14: Soil mapping units (SMU) of the Project area (Landloch 2021)

Landloch (2021) further described the site's SMUs:

1. **SMU1: Deep Loamy Earths** are located on low gradient areas or areas of sediment deposition. They are expected to have mostly formed from a combination of *in situ* soil formation processes and depositional processes. In general, this SMU consists of a deep (>800mm), red-reddish brown soil, with generally uniform sandy loam to clay loam textures in the A and B horizons, and often overlying a sandy/rigid C horizon. Where the rigid C horizon was not observed, the layer is expected to exist at deeper depths than the excavation limit of this study (1.2m). The key defining attributes of the Deep Loamy Earths are their deep loamy soil profile (>800mm depth) and their typically low coarse fragment abundance (<50%) and small size (<20mm) in the topsoils, that generally increases in abundance and/or size with depth and summarised in **Table 7**.
2. **SMU2: Calcareous Loamy Earths** following soil assay as “generally located on the upper slopes and areas adjacent to the rocky ridges of the survey area. They are expected to have mostly formed from a combination of *in situ* soil formation processes and depositional processes. In general, this unit consists of a deep (>1000mm), red-reddish to light red soil, with sandy loam to clay loam textures in the A horizon, loamy sand to loam in the B horizons and a loamy sand C horizon. The key defining attributes of the Calcareous Loamy Earths are their deep calcareous loamy soil profile (>1000mm depth) and their elevated abundance (>50%) and size (>~50mm) of coarse fragments in the B horizon, that generally increases in abundance and/or size with depth.” Typical soil characteristics are summarised in **Table 7**.
3. **SMU3: Shallow Loams** are generally on the low rises or low hills and/or the mid-upper slope areas of the survey area and are expected to have formed from pedogenic and depositional processes. In general, this SMU consists of a shallow profile (<~300mm) with sandy loam - clay loam textures, overlying a sandy rigid C horizon. The key defining attribute is their shallow profile (~300mm) and lack of coarse fragments. **Table 7** summarises the typical characteristics of the Shallow Loams with median values shown in brackets.

Table 7 summaries the key characteristic of each unit.

Table 7: Soil Mapping Units Summary

Characteristics	Topsoil	Subsoil	Subsoil
Horizon	A	B2	C
Deep Loamy Earths			
Depth (mm)	0-150	150-700	800-1200
Texture (class)	Sandy loam - clay loam	Sandy loam - clay loam	Sand - clayey sand
Structure (grade)	Weak - moderate	Weak - massive	Massive
Consistency	Very weak - weak (dry)	weak (dry)	Firm - rigid (dry)
Coarse fragments	~20% 2-6mm	20-50% 6-20mm	~50% 2-15mm
pH	5.5 - 6.0 (5.5)	5.5 - 7.0 (6.0)	6 - 8.7 (7.0)
Salinity (dS/m)	0.03 - 0.13 (0.04)	0.03 - 0.17 (0.05)	0.05 - 0.28 (0.13)
Sodicity, ESP (%)	8.4 - 9.7 (9.1)	8.6 - 9.8 (8.7)	12.3
ESI	<0.05	<0.05	<0.05
Ca:Mg	3.0 - 3.6 (3.4)	1.7 - 2.6 (2.1)	7.0
Emerson Class	3 - 7 (5)*	3 - 6 (5)*	3 - 5 (4)*
Fertility Class	Very low - moderate	Very low - moderate	-
Shallow Loams			
Depth (mm)	0-150	150-300	300-600
Texture (class)	Sandy loam - clay loam	Sandy loam - clay loam	Clayey sand - sand
Structure (grade)	Weak - moderate	Weak - moderate	Massive - single grain
Consistency	Weak (dry)	weak (dry)	Weak - rigid (dry)
Coarse fragments	10-20% 2-6mm	20-50% 6-20mm	20-50% 6-20mm
pH	5.5 - 8.0 (6.5)	5.3 - 7.5 (6.25)	8.0 - 8.5 (8.0)
Salinity (dS/m)	0.03 - 0.1 (0.05)	0.4 - 2.3 (0.06)	0.1 - 1.8 (0.2)
Sodicity, ESP (%)	11.4	10.3	16.5
ESI	<0.05	<0.05	0.06
Ca:Mg	2.12	3.2	3.5
Emerson Class	5*	5*	4*
Fertility Class	Low - moderate	Very low - moderate	Very low - moderate
Calcareous Loamy Earths			
Depth (mm)	0-150	150-800	800-1200
Texture (class)	Sandy loam - clay loam	Loamy sand - sandy clay loam	Loamy sand - sandy clay loam
Structure (grade)	Weak - moderate	Weak - massive	Massive - single grain
Consistency	Weak (dry)	weak (dry)	Weak - rigid (dry)
Coarse fragments	20-50% 6-20mm	50-90% 60-150mm	50-90% 20-100mm
pH	8.0 - 8.6 (8.0)	8.0 - 8.8 (8.0)	8.0 - 8.9 (8.4)
Salinity (dS/m)	0.12 - 0.8 (0.2)	1.1 - 2.7 (2.3)	2.3 - 3.5 (2.9)
Sodicity, ESP (%)	1.4	25.1	24.1
ESI	0.145	0.07	0.09
Ca:Mg	7.5	2.34	1.23
Emerson Class	4	3 - 4	4
Fertility Class	Very low - moderate	Very low - moderate	Very low - moderate

4.4.3 Waste Rock Characterisation

The waste material to be mined from the Project was assessed and characterised (Pendragon Environmental Solutions 2021; **Appendix D**) and found that:

- VB North & Emu will not be mining to fresh rock depths and will not intercept PAF
- Southwark open pit may include some PAF material (~2.5% of total waste)
- Waste rocks are predominantly low saline but sodic materials
- ~87% of the waste stream are non-acid forming
- ~ 8% of the waste stream are predominantly uncertain being transitional waste materials
- ~ 5% of the waste stream are predominantly potentially acid forming (fresh materials) but also contain having large anc's classifying as non-acid forming
- Laboratory leachate testing indicated that waste materials may leach elevated concentrations of al, as, co, pb, cd, cr, ni, se and zn.

The primary considerations for managing waste rocks at the Project (detailed in Section 4 of Pendragon 2024 (Appendix D)), include:

- Waste rock is expected to be benign with a low risk of acid generation (and low metals concentrations), however this risk may increase as the open pits are mined at increasing depth. To control this risk composition of the deeper lying waste materials may be required in future. The IWL design is to be developed for management/ placement of waste rock materials to minimise leachate risk
- Assessment of the compositional elements of each of the WRLs and the IWL through monitoring of the geochemical and geotechnical characteristics of waste on an ongoing basis for the life of mine
- Continuing characterisation of the mining waste during grade control drilling to predict any changes, under the proposed placement and disposal strategy, through a program of progressive sampling and analysis, characterisation and classification
- Monitoring of surface, ground and pit water quantity and quality at both upstream and downstream locations of the IWL, in such a way as to provide early detection of oxidation, AMD, and generation and transport of other contaminants. The locations, analytes, frequency of sampling, management actions and review and contingency measures will be confirmed by an external hydrological consultant
- The IWL will be constructed by stripping topsoil to expose the underlying relatively impermeable materials. The underlying rock types were recently assessed for their geotechnical characteristics (CMW 2021; O'Bryan & Assoc 2021; Pendragon 2021) and found to be NAF and clay-rich and should compact to an impermeable layer. The base of the IWL will extend beyond the limits of the wastes to include the catch drains and bunds surrounding the final IWL shape
- All PAF materials will be encapsulated within the WRL. Ongoing assessment during grade control drilling will include collection, characterisation, assessment and management of actual waste rock to confirm expected geochemical properties of these materials. This may employ a sampling approach starting from set Total Sulphur and pH triggers and extending through to laboratory testing as required

- Surface water structures will convey and contain waters from ore and waste rock dumps. Surface water management structures will be designed according to Hydrologia (2022; Appendix I).

4.4.4 Implications for closure

The clearing and ground disturbance undertaken in stages, has designated topsoil and vegetation Stockpile areas according to the SMUs.

The proposed Stockpile locations were selected away from potential erosion areas to protect the resource. Landloch (2021; **Appendix C**) recommended stripping up to a depth of ~150 mm and the Project was not noted as lacking in topsoil as a rehabilitation resource.

Topsoil Stockpiles will be managed for erosion, dust generation, and weeds according to Aurenne's **E-PRO-009 Topsoil Management Procedure (Appendix A2)**.

The implications of soil and SMU characteristics informs the MP of Topsoil Stockpiling management but is particularly important for mine closure as it informs the MCP of the fertility, suitability to revegetation and therefore success potential of rehabilitation. The following summary in regard to the potential constraints and opportunities for each soil unit are provided:

Deep Loamy Earths (~90% of the Project area)

Typically sandy loam to clay loam textures, often overlying a rigid cemented C horizon. The key defining attributes are their deep loamy soil profile, and their typically low coarse fragment abundance (<50%) and small size (<20mm) in the topsoils, that generally increases in abundance and/or size with depth. These materials are considered as a potential rehabilitation resource; however, their usefulness on sloping surfaces is limited. They are variably sodic in the topsoils and subsoils and considered prone to structural decline (especially in the topsoils) potentially causing low permeability, hard setting surfaces, and/or tunnel erosion. They are likely to be prone to water erosion and are potentially susceptible to wind erosion. They have a relatively high capacity to hold water and nutrients due to their elevated clay content (especially in the topsoils). They typically were found to be non-saline, with pH values within acceptable bounds for soils of the region and on site.

Shallow Loams (infrequent occurrences within the Deep Loamy Earths; relevant to the IWL, Mill site, and pit development)

Shallow (~300mm) loam textured soils that generally lack coarse fragments, overlying a rigid cemented C horizon. This SMU is generally located on the low rises or low hills and/or the mid-upper slope areas of the survey area. They are typically non-saline and have pH values that support vegetation. They are considered a potential rehabilitation resource, though limited by their susceptibility to structural decline and clay dispersion. They have limited durable rock present, are potentially susceptible to wind and water erosion, and are not likely to be suited to use as a rehabilitation material on batter slopes. Stripping depths may be limited in areas by the underlying C horizon.

Calcareous Loamy Earths (relevant only to Accommodation Village)

Deep (>1,000mm), reddish soils with sandy loam to clay loam textures in the A horizon, loamy sand to loam in the B horizons and a loamy sand C horizon. The key defining attributes are their deep calcareous loamy soil profile (>1,000mm depth) and their elevated abundance (>50%) and size (>~50mm) of coarse fragments in the B horizon, that generally increases with

depth. They are considered a potential rehabilitation resource as the topsoils are non-saline with pH values that support vegetation and are non-sodic. However, they are considered to be prone to soil erosion by water and wind due to their particle size distribution. The subsoils have elevated levels of salinity, that increase with depth. They are not considered prone to structural decline due to their low clay contents and appreciable coarse fragment content.

Given these properties, recommendations for stripping depths will be adhered to for all Project clearing/ground disturbance according to the MP. The Topsoil stockpiles will be managed for erosion, dust and weeds and are included in the monthly Environmental Audit.

The nutrient status for the Loamy Earths, Calcareous Loamy Earths and Shallow Loams typically ranges from low to moderate for soils of the area and therefore application of fertiliser is recommended (Landloch 2021). A suite of locally endemic species have shown good colonising and self-sustaining propensity in low nutrient conditions (NorGold rehabilitated WRLs) and these species will be targeted in rehabilitation.

The proposed limited clearing and ground disturbance is low risk for erosion or the mobilisation of soils that may have an adverse impact on surrounding vegetation or groundwater due to the staged clearing and construction of surface water management structures, which will be staged according to the development of the Project. As there is limited excavation outside of the two proposed pits, the likelihood of interacting with problematic soils is not anticipated.

Waste characterisation found that oxide materials classify predominantly as NAF; Transitional materials classify as NAF or UC; and Fresh materials classify predominantly as PAF, albeit some fresh materials with large ANC capacities classify as NAF.

- **Emu and VB North** – No fresh materials will be mined from the Emu and VB North Open Pits therefore the risk of acid forming material from these pits is considered low.
- **Southwark** – Approximately 75,000 BCM of fresh waste material will be excavated from the Southwark Open Pit. This makes up just 2.5% of total waste material to be mined; therefore, a sufficient volume of competent NAF waste is available to ensure any PAF encapsulation.
- **Cascade** – No fresh materials will be mined from the Emu and VB North Open Pits therefore the risk of acid forming material from these pits is considered low.
-

Further waste characterisation will be undertaken over the LoM during mine planning and to inform further revision on the MPMCP.

Recognition of the long-term behaviour of the existing (NorGold) TSF and WRDs, which remain stable after almost 40 years with no indications of acid and/or metalliferous drainage (Pendragon 2023), although these structures contain oxide materials.

Fibrous materials, silicates and radioactive materials are absent and/or considered not to warrant further investigation and assessment and/or management measures (Pendragon 2023).

The IWL will be constructed according to detailed design (CWM Geosciences 2021; (MP **Appendix M**) and specialist input (Pendragon 2023) based on the geotechnical assessment (MP **Appendix C1 & C2**) to understand the requirements to constructing impermeable base layers.

Groundwater monitoring utilising a suite of bores over the LoM and during Closure will ensure that where monitoring data trends significantly away from baseline data, adaptive management measures may be implemented to ensure no negative impacts to the surrounding environment ensue.

4.5 Hydrogeology

The local and regional aquifers are characterised by weathered and fractured bedrock with faulting and shearing which controls the occurrence and movement of groundwater. The Raeside Fractured Rock Aquifer extends across the northern third of the tenements whilst the south is occupied by the Rebecca Fractured Rock Aquifer with the Rebecca Paleochannel underlying the Bottle Creek drainage line.

Surface and groundwater assessments were commissioned for the Project to understand the local and regional hydrogeology, catchment conditions, and to incorporate these features into planning and design of the Project (Pendragon 2021b; Hydrologia 2019 & 2021).

A hydrogeological assessment for the proposed Mt Ida Gold Project, undertaken in accordance with Department of Water Operational Policy No. 5.12 (DoW 2009) was undertaken in 2021 (Pendragon 2021b). Generally, the geology of the area comprises weathered and fractured mafic-ultramafic intrusive and volcanic rocks with minor interflow sediments. Groundwater across the region occurs in basins of weathering and shear/fracture systems, which vary in vertical and lateral extent, and which may be compartmentalised on a regional scale where there is little if any hydraulic connection between the different compartments. Consequently, ground water is likely to move or drain very slowly and may be considered stagnant (Pendragon Environmental 2021) and therefore localised drawdown for the early project activities is likely to be negligible in the catchment.

4.5.1 Surface Water

The Project is within the catchment of Bottle Creek, which ultimately drains to Lake Ballard regional catchment (). Lake Ballard is an internally drained, intermittent salt lake in the wider Raeside-Ponton catchment. Inflow occurs from direct rainfall and flow from creeks and washplain on all sides. The lake is inundated about every five years on average, usually as a result of a single major weather event in summer or autumn with water recorded up to 0.5 m deep in the lake at peak. Water in the lake tends to be fresh after filling then becomes saline as the water evaporates. The lake dries out over a period of six to nine months (DEC 2009) (DoEE 2000).

Lake Ballard is recognised as a nationally important wetland, listed in *A Directory of Important Wetlands in Australia* (DoEE 2000) and has been nominated for listing as a Ramsar wetland. The lake is one of the most important breeding sites in Australia for the endemic Banded Stilt (*Cladorhynchus leucocephalus*) and is an important migration stopover for many other species of waterbird (Hydrologia, 2019 & 2021).

Topography at the site is characterised by low hills and a north-south ridge dissected west to east and to the north by drainage lines. The more distinct drainage lines are characterised by broad, vegetated, and ill-defined, small main channel. The floodplain for the main channel is heavily vegetated with mulga and occasional trees (Hydrologia 2023; **Appendix I**).

A baseline surface water assessment was developed to meet the WA guideline for mining proposals (DMIRS, 2020b) by Hydrologia (2022; **Appendix I**). Flooding characteristics for the site were defined using detailed hydraulic modelling of drainage lines that pass through the

site. Potential risk of flood impacts to human life and mine operation was considered (Hydrologia 2022, **Appendix I**). For characterisation of climate, a daily record generated for the site using SILO Data Drill (Queensland Government 2019) and Bureau of Meteorology observed weather data for Station 012052 Menzies (BoM 2018a) were used. 2016 design rainfall intensity data were used (BoM 2018a). Probable maximum precipitation (PMP) was derived for the site using the Generalised Short Duration Method (2003 as referenced in Hydrologia (2022, **Appendix I**)).

Following the finalisation of the Disturbance Envelope, the surface water modelling and management structures were revised again (Hydrologia 2023). The surface water assessment and modelling was further refined following alterations to the Project's layout to incorporate changes to WRL design (Hydrologia 2023, **Appendix N**) with measures provided for a surface water strategy to support the Project. A surface water strategy is required for the Project to understand the surface water hydrological regime within the Disturbance Envelope and to develop a Surface Water Strategy (Section 4 of Hydrologia 2023, **Appendix I**) that defines surface water management, diversion of drainage lines through the proposed mine area and a proposed closure strategy.

Detailed hydraulic modelling was undertaken for the area around the proposed IWL and used to characterise local flow conditions (PMF, peak flow depth, water level and velocity) external to the structure. Existing topography with the proposed IWL landform in place as a boundary in the model for the 1% AEP & PMP design event was modelled. Hydrology and one-dimensional channel hydraulics was modelled using the Mike SHE model (DHI 2021). It was used to characterise existing conditions and proposed diversion drains. A rain-on-grid approach was used to represent overland flow. Channel flow was represented using the one-dimensional model component, Mike Hydro. The Mike SHE model was parameterised and calibrated using the available data; the Australian Rainfall and Runoff (ARR) regional flood frequency estimation tool (ARR 2019; RFFE 2016; Ball et al. 2016) was not available for the site so Mike SHE model was parameterised using the available data and based on experience applying the model in similar environments (Hydrologia 2021).

The Stage 3 expansion initiated a reassessment by Hydrologia (2024) of the of the baseline assessment and modelling and a revised Water Management Strategy for both Operational and Closure Phases (**Figure 16**).

All Surface Water Management Structures will be constructed to ultimate (PMF) design from Construction Phase according to Hydrologia (2024; **Appendix I**) Water Management Strategy for Operational phase. Due to the staged approach to MPMCP submission, surface water modelling according to PMF/PMP will continue of LoM and will be undertaken prior to Closure to inform Closure planning.

After closure, the site will be rehabilitated to a stable landform with minimal impact on the surrounding environment. Key flood protection assets (levees and drains) will be constructed to allow a functional drainage system to operate in perpetuity. This involves setting levee crest levels higher than the predicted probable maximum flood (PMF) level and ensuring drainage lines return to natural flow paths downstream of the mine (Hydrologia 2024; **Appendix I**).

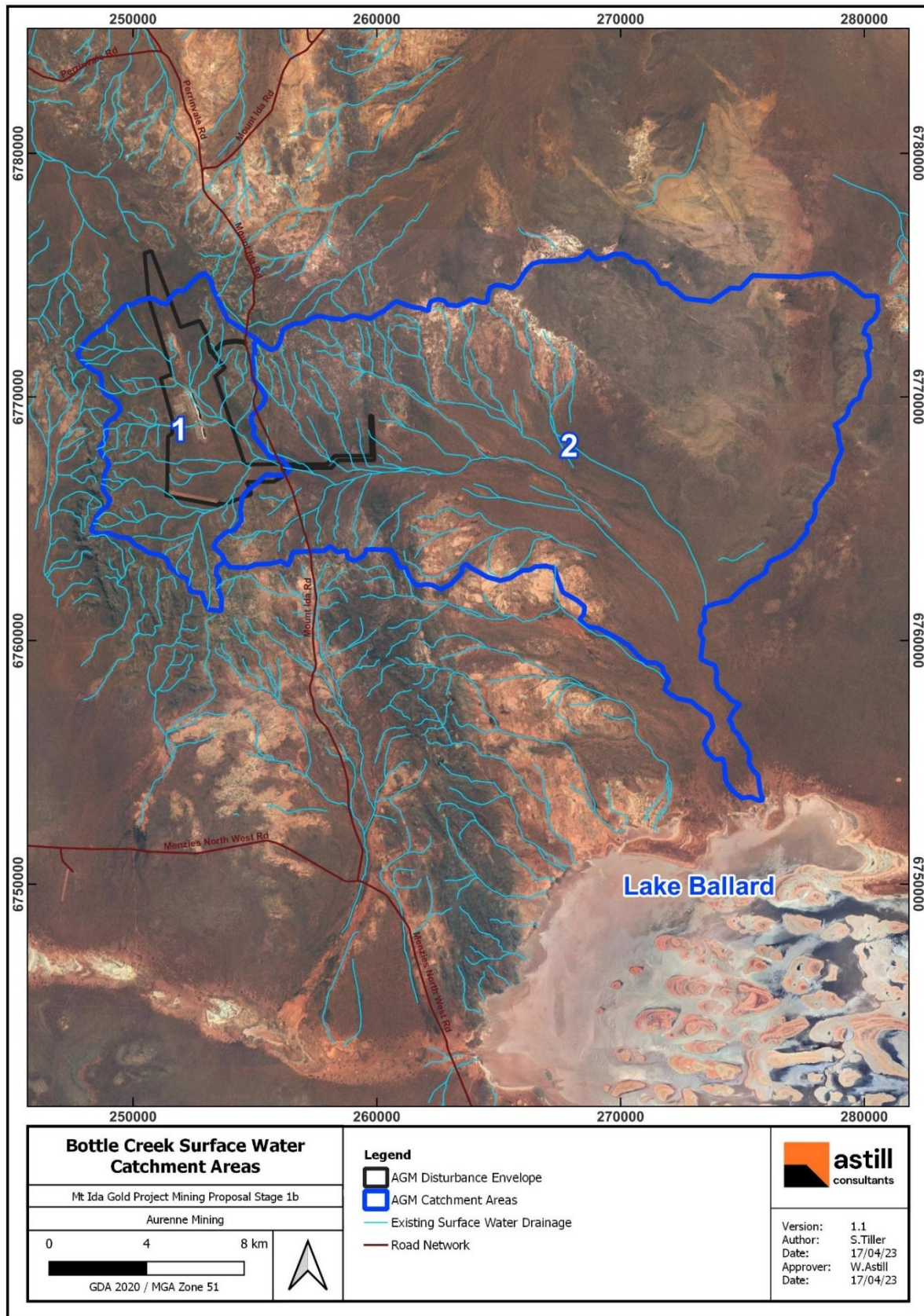


Figure 15: Catchment Areas

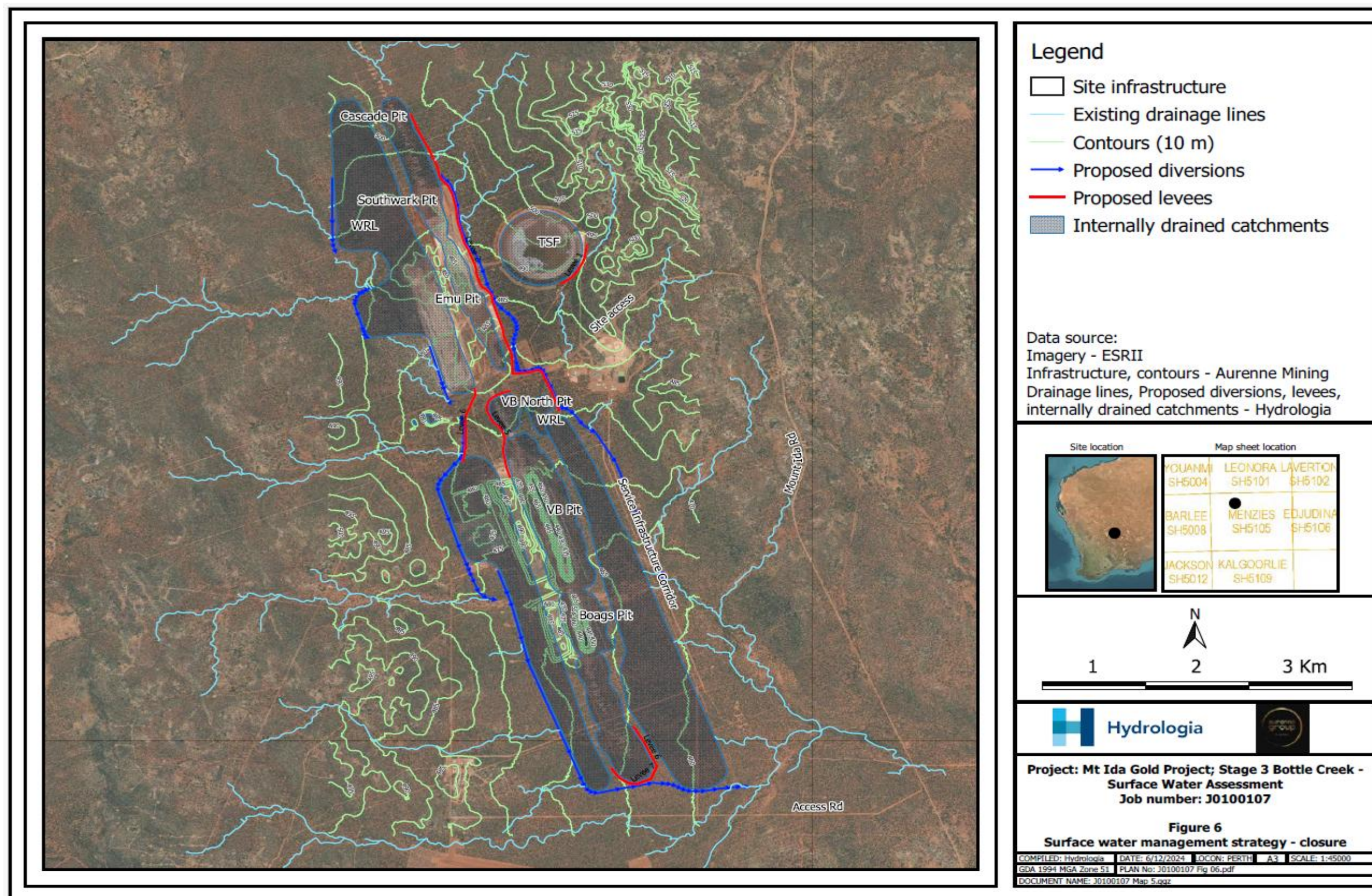


Figure 16: Surface Water Management Strategy – Closure (Hydrologia 2024)

4.5.2 Groundwater

The project lies within the Rebecca subarea of the Goldfields which included fractured rock and paleochannel aquifers. A Groundwater Licence has been granted for 250,000kL over the Project area with a supporting Licence to Construct Well application to draw water for mining related activities and dust suppression purposes from the proposed bores. A copy of these Licences can be found in the MP (**Appendix H1**).

Groundwater in the existing bores and open pits (Mining Proposal Figure x) are sampled quarterly (Gecko 2021-) and data shows slightly to moderately alkaline and saline to highly saline. The heavy metals Al, Be, Co, Pb and Mo are absent and there are sporadic trace concentrations of Cd, Cr, Cu, Ni and Zn. As, Ba, B and Mn are the most dominant metals in ground and pit waters. The current pit water quality may be considered as indicative of future open pit and groundwater qualities (Pendragon Environmental 2021).

4.5.3 Implications for Closure

Surface water

Average annual rainfall (as observed at Menzies) is 254 mm; average annual evaporation is 2,685 mm, much higher than average rainfall. Evaporation exceeds rainfall in all months of the year. However, exceptional rainfall events have been considered in surface water management; the largest event on record (from SILO data), associated with Cyclone Bobby, generated a total of 316 mm over four days. Therefore, much of the year's annual total could fall in a single event. Towards end of mine life, surface water management structures will need review to rationalise which structure can be removed and which will need to be maintained.

Hydrologia (2023; **Appendix I**) summarised the potential surface water management issues as:

Erosion

Erosion of topsoil from disturbed areas and steep slopes could occur. This will be managed with appropriate design and construction of stormwater and facility infrastructure and with rapid rehabilitation. There is considerable buffer between the site and the main downstream receiving riverine environment (Bottle Creek and Lake Ballard). The site is located in the upper catchment, some 26 km from Lake Ballard. Accordingly, local erosion is unlikely to affect the wider environment.

Water quality

The potential for contamination of stormwater is low. Workshop and the mill area will manage stormwater generated on site internally. Any watering of roads and disturbed areas with saline water is unlikely to lead to significant salt build over the short term. Stormwater generated on the pits and WRL's will be managed internally within the structure and will not be released to the environment.

Diversion of overland flow

Shadowing of downstream vegetation due to diversion of shallow overland flow along the upstream edge of linear infrastructure, particularly roads, could occur. Shadowing can be managed by minimising concentration and diversion of overland flow and by returning diverted flow to natural flow paths immediately downstream.

Groundwater

Groundwater in the existing bores and open pits are slightly to moderately alkaline and saline to highly saline. The heavy metals Al, Be, Co, Pb and Mo are absent and there are sporadic trace concentrations of Cd, Cr, Cu, Ni and Zn. As, Ba, B and Mn are the most dominant metals in ground and pit waters. This water quality may be considered as indicative of future open pit and groundwater qualities (Pendragon 2021). As PMLU will likely return to low intensity stock grazing, water bores monitoring will inform if ANZECC standards for stock watering are being met and will inform if some bores can no longer be used to decreased water quality or increased salinity. Continued bore monitoring throughout Project life, and during/post closure will be undertaken as per licencing requirements and as a closure commitment.

Bore and pit lake water quality sampling is currently undertaken quarterly to inform process water quality and DWER licencing. The frequency of water sampling will increase under future DWER- regulated Prescribed Premise licensing conditions (IWL for example). Additional bores are proposed to ensure comprehensive up and down gradient groundwater monitoring pre-disturbance and during Operations and Closure according to the Groundwater Monitoring Plan (Pendragon 2022; **MP Appendix H**).

Post-closure, groundwater will continue to be monitored in compliance with DWER Part V license and for up to 5 years and will inform if any of the post-closure landforms are having a negative impact on the quantity of quality of groundwater. Groundwater quality parameters will be compared against pre-mining groundwater parameters with management intervention required should monitoring over the life of mine show a continued (over more than two successive monitoring occasions) trajectory of decline in water quality (excluding salinity which may varying seasonally and due to drying climate). Once monitoring is completed, monitoring and recovery bores would be plugged and decommissioned as required.

4.6 Biodiversity

4.6.1 Flora & Vegetation

A suite of flora, vegetation, fauna (including short range endemic (SRE) and subterranean fauna) surveys have been undertaken over the past three years to inform mine planning and approvals, summarised in **Table 8**.

Table 8: Biosurveys undertaken for the MIG Project

Year	Survey area & detail	Consultant	IBSA reference
2021	Flora, vegetation, fauna (including SRE and targeted conservation significant fauna) surveys across wider Project tenements (including camp, access tracks, ancillary infrastructure areas)	Phoenix Environmental Consultants	IBSA-2021-0332
	Subterranean fauna (including troglofauna and stygofauna) surveys across wider Project tenements and utilising regional bore suite	Bennelongia Environmental Consultants	IBSA-2021-0331
2019	Detailed Flora and Vegetation Survey of Tim's Find - Part 2	Native Vegetation Solutions (NVS)	IBSA-2020-0023
	Detailed Flora and Vegetation Survey of Tim's Find	Goldfields Landcare Services	
	Flora and Vegetation Survey of Bottle Creek	NVS	IBSA-2021-0130
	Level 1 Vertebrate Fauna Risk Assessment for Tim's Find	Terrestrial Ecosystems	IBSA-2020-0022
	Level 1 Vertebrate Fauna Risk Assessment for Bottle Creek		IBSA-2021-0175

As part of governmental regional survey for greenstone areas, the following report is relevant to the general Mt Ida area, although of differing geological features:

Meisner, R & Owen, G, 2010, Flora and vegetation of banded iron formations of the Yilgarn Craton: Mt Ida Greenstone Belt and Mt Hope. In: Conservation Science W. Aust. 7 (3): 583–592.

The Project area is located in the Eastern Murchison IBRA subregion (Cowan 2001). The vegetation of the Eastern Murchison botanical subregion is dominated by mulga woodlands and is often rich in ephemerals, hummock grasslands, saltbush shrublands and *Tecticornia* shrublands (CALM, 2002). The results of the botanical surveys are consistent with this summary; however given the long history of the site for both gold prospecting and mining, and a continuous use for pastoralism, then vegetation condition and diversity (particularly in annual/ephemeral and herbaceous taxa has been reduced.

Vegetation mapped for the Project area is typified by mulga woodland with emergent eucalypts (Phoenix 2021) with no TEC/PECs within the Project area. Vegetation condition remains in 'Very Good' to Excellent condition (Phoenix 2021). Disturbance is limited and mostly attributed to historic mining activities, access tracks, airstrip, exploration related activities, and also grazing from managed and feral ungulates (cattle, donkeys).

NatureMap (2021) and the Protected Matters Search Tool (DAWE 2021) show that 152 plant taxa are recorded from the local area with no threatened flora, one Priority 1 (*Drosera eremaea*), no Priority 2 taxa, two Priority 3 (*Calotis* sp. Perrinvale Station (R.J. Cranfield 7096), *Calytrix hislopilii*), and two Priority 4 (*Hemigenia exilis*, *Lepidosperma lyonsii*). The Project area is largely mulga-eucalypt plains with little relief or areas of extruding geological features. It has a simple flora due to the lack of habitat diversity.

Priority flora has been identified from the Project area and the taking of Priority flora is conditioned according to CPS 9383/1. It has been noted that recruitment of *Jacksonia lanicarpa* Priority 1 flora, has occurred post disturbance (in exploration tracks and sumps) and therefore it is reasonable to assume that post-closure rehabilitation may support the recruitment of more individuals.

Weed management will be part of site environmental management and mine closure criteria success.

4.6.2 Fauna & Habitat

Fauna assessments over 2019-2021 have identified the following fauna habitats:

- Drainage line
- Eucalypt mallee woodland
- Mulga woodland
- Previously disturbed areas.

Three threatened species of fauna (Malleefowl, Night Parrot, Princess Parrot), the Priority 4 long-tailed dunnart and five migratory species of birds (Common sandpiper, Fork-tailed swift, Sharp-tailed sandpiper, Pectoral sandpiper, Streaked shearwater) identified under the EPBC Act potentially occur in the project area or surrounds. The migratory birds are discussed more fully in Phoenix (2021) (MP Appendix K1) noted in the desktop assessment due to proximity to Lake Ballard, which would provide suitable habitat when inundated. The Project area does not contain wetland or inundated areas.

The 2021 Short Range Endemic and Subterranean Fauna SRE surveys were undertaken to better understand the baseline biodiversity values of the Project area. New species of millipede, centipede and spider was collected but due to the homogeneity of habitats in the Project area and the wider region, no species is likely to be restricted to the Project area (Phoenix 2021). Subterranean communities are found regionally in paleodrainage channels or subterranean calcretes, which do not occur within the Project area (Bennelongia 2021).

The PMST listed 10 feral animals recorded from the local area: camels, donkeys, dogs, cats, goats, horses, rabbits and foxes. All are likely to occur at varying densities and noting that the Project area is an active pastoral lease running a herd of cattle with a large resident herd of feral donkeys.

4.6.3 Considerations for closure & rehabilitation

The Project area is wholly within pastoral leases that have been actively grazed by feral and managed stock for over 100 years. There are no records of Threatened flora nor Threatened Ecological Communities and the fauna habitats are not restricted or of higher value to the local or regional area. The historical prospecting, mining, and exploration has degraded habitats and brought many access tracks which have increased feral predators within the area.

The Project area and Disturbance Envelope contains native vegetation that may be utilised by Malleefowl as foraging habitat; however no active/recently active mounds have been located within the proposed disturbance areas. Malleefowl will be managed as an environmental value present in the Project area and at closure, the aim will be to recreate habitat suitable for Malleefowl use. NVCP CPS 9383/1 has fauna management conditions relating to Malleefowl. Closure revegetation will aim to recolonise post-mining landforms with native vegetation found within the local area to reduce potential impacts to Malleefowl utilisation. Locally endemic species will be selected for rehabilitation based on SME advice on seeds with high success rates and suitability for soil types and landforms to be rehabilitated. Data from the rehabilitated NorGold landforms will be reviewed to target the same species/genera for use in seed mixes.

Weeds will be managed to ensure their presence does not impact on the ability of native vegetation recruitment success; and to ensure that no weeds increase in abundance and distribution across the Disturbance Envelope. Weeds will be managed over LoM to ensure that they do not proliferate and adversely impact progressive rehabilitation and closure objectives.

4.7 Other Closure Data

As a recent exploration and mining enterprise, Aurenne Mining is actively undertaking baseline surveys across Aurenne's wider tenements. This information will assist in local and regional contextualisation of a suite of biological and physical environment parameters. This information and interpretation will continue to inform mine planning and closure planning and will be incorporated into future revisions of MP/MCPs.

Data collected during the clearing, ground preparation and construction may be useful in informing mine closure requirements and therefore may be included in future reviews of this MCP.

All incidents reported to DMIRS as part of Annual Environmental Report (AER) and will be recorded in the Project **E-REG-001 Environmental Event Management Register**. Where or when contamination meets thresholds established in DWER's *Contaminated Sites Management Series*, contamination will be reported to DWER, as required under the *Contaminated Sites Act 2003*. Any known contamination will be managed appropriately during construction and operations. There are no contaminated sites located at the Project that are recorded in DWER's contaminated sites database (DWER 2021; **Appendix E**). A Detailed Site Investigation will be undertaken Closure to determine if any site contamination exists that should be reported to DWER.

4.7.1 Materials for Rehabilitation

Soil and waste characterisation assessments have been commissioned for the wider Project (Landloch and Pendragon 2021). Landloch (2021) recommendation stripping to a depth of ~150 mm and topsoil and subsoil estimates for disturbance areas based on Soil Mapping Units (SMU) as per **Table 9**. Topsoil and rehabilitation material was not noted as a limiting factor for future rehabilitation post-closure and will be managed according to **E-PRO-009 Topsoil Management Procedure** to ensure this valuable resource is well managed over LoM.

Table 9: Volume of available topsoil & subsoil by SMU for each disturbance area

SMU	Volume (m³)			Total Volume (m³)
	Deep Loamy Earths	Calcareous Loamy Earths	Shallow loams	
	Bottle Creek			
Topsoil*	224,000	17,000	37,000	277,500
Subsoil	970,000	39,500	37,000	1,046,000
Total	1,193,500	56,500	73,500	1,323,000
	Mt Ida			
Topsoil*	16,500	3,000	7,500	26,500
Subsoil	70,500	6,500	7,500	84,000
Total	86,500	9,500	15,000	110,000
	Haul Road Corridor			
Topsoil*	169,500	-	12,000	181,500
Subsoil	734,500	-	12,000	746,500
Total	904,000	-	24,000	928,000

* Topsoil depth assumed to be 150mm.

The large majority (87-95%) of material mined, including future projects, is NAF and low risk of acid mine drainage. The remaining 5% is considered PAF, fresh rock material.

Some PAF material is anticipated from the Open Pits. A sufficient volume of competent NAF material is available to ensure PAF encapsulation.

Rock mass qualities were assessed from the geotechnically logged boreholes. Rock units/zones were classified using the empirical Geomechanics Classification System which is based on calculating a Rock Mass Rating 3 (RMR), a summation of ratings based on: intact rock strength; rock quality designation (RQD); defect spacing; defect conditions and weathering grade. Assessed RMR values derived from geotechnically logged cores for Bottle Creek along the shear (6 holes) with the average of the median RMR values for the oxide material at Bottle Creek is ~ 19, indicating very poor quality rock, excluding borehole SWKGT001, which is improved by a thicker interval of lower saprolite than the other boreholes in the deposit area. Transitional material (weathered rock) ranges from 26 to 65, with an average median value of ~ 50, or fair quality rock.

4.7.2 Topsoil Stockpiles

Topsoil stockpiles will have restricted access and be sign posted to ensure the valuable resource is not impacted by unauthorised activities. Stockpiles have been sited to ensure reduced erosion risk and loss of resource. They will be managed for dust, weeds and erosion according to **E-PRO-009 Topsoil Management Procedure (Appendix A2 EMS)** and monitoring during the site environmental audits (**E-PRO-016 Environmental Audit Procedure**).

4.7.3 Progressive rehabilitation

Progressive rehabilitation will occur as areas no longer required are identified and will utilise the closure activities outlined per domain and the topsoil resources according to defined/mapped SMUs.

4.7.4 Benchmarking against comparable rehabilitation

There has been no rehabilitated landforms resulting from the Project to date, therefore no benchmarking against comparable rehabilitated landforms is available. The rehabilitation of these first two WRLs will inform the future rehabilitation of the WRLs that follow over the LoM.

The existing pit voids from NorGold operations (VB, Boags) and the surrounding WRLs and TSF were developed in the late 1980's and rehabilitated in the early 1990s. NorGold's Bottle Creek project is one of the few sites that have met rehabilitation completion and have been relinquished back to the State. **Figure 17** and **Figure 18** shows the NorGold WRLs and TSF with continuous vegetation cover. The WRLs at Bottle Creek will be of similar design (14 degree slopes consistent with NorGold rehabilitated landforms) and therefore positive rehabilitation results are anticipated.

The NorGold waste landforms remain stable, non-polluting and have a reasonable cover of native vegetation with low weed loads. Given the progress in revegetation techniques, landform design, and rehabilitation knowledge, future rehabilitation success should be secured.

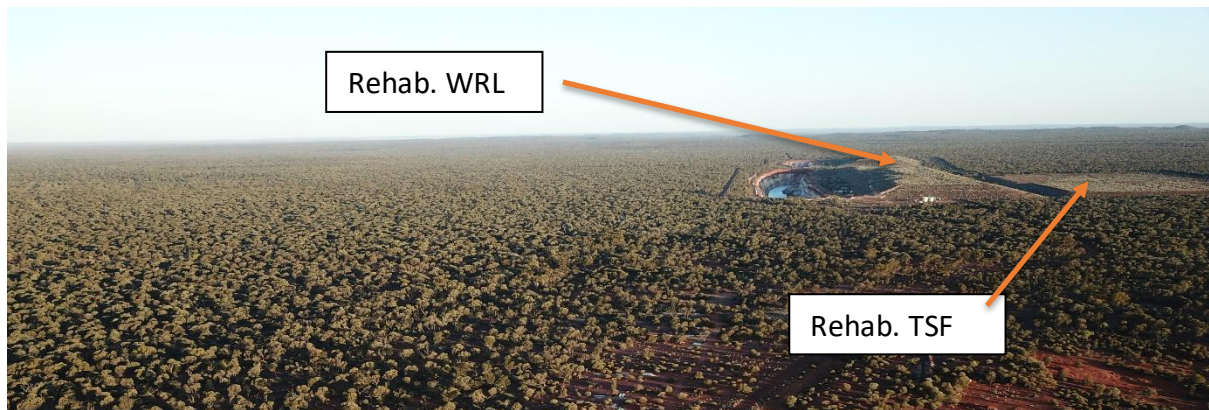


Figure 17: NorGold Bottle Creek Rehabilitation Compatible With Surrounding Landscape



Figure 18: NorGold TSF showing ~14-degree slopes and no erosion after ~30 years

5 POST-MINING LAND USE(S)

The overall site philosophy is to leave the site in a safe, stable and non-contaminating state, with self-sustaining ecosystems present. The current intent for the Project at closure is to revert to the existing pastoral land use (light grazing by domesticated animals; future carbon farming). The closure, consolidation or continued use of access tracks and associated ancillary infrastructure will be discussed prior to closure with interested key stakeholders (pastoralists and exploration/mining interests).

The 2020 Statutory Guidelines for Mine Closure Plans (DMIRS, 2020a) state that PMLUs must be:

- Relevant to the environment in which the mine will be operate or is operating
- Achievable in the context of post-mining land capability
- Acceptable to the key stakeholders
- Ecologically sustainable in the context of local and regional environment.

As outlined in **Section 3 Stakeholder Engagement**, Aureenne is working closely with our neighbours and co-lease holders according to **E-PRO-015 Stakeholder Liaison Strategy Procedure (MP Appendix G)** to ensure the Project develops with sensitivity to the current and proposed future land uses. It is expected that at closure that the pastoral lease holder will identify areas such as the N-S access track and aerodrome as areas to be retained, while returning mining and processing areas back to a rehabilitated landform consistent with low intensity pastoralism and carbon farming.

Details associated with the proposed final land use, as well as any specific closure requirements such as legal transfer of mining assets, infrastructure and other improvements will be determined closer to the planned closure date and in consultation with relevant stakeholders.

6 CLOSURE RISKS ASSESSMENT

In order to identify, evaluate and mitigate closure risks, an environmental risk assessment was undertaken and includes Closure and Post Closure.

6.1 Methodology

The aim of the environmental risk assessment undertaken for the Project was to ensure the project meets the DMIRS's principal objective for environmental regulation, viz: *"Resource industry activities are designed, operated, closed, decommissioned and rehabilitated in an ecological sustainable manner, consistent with agreed environmental outcomes and end land-uses without unacceptable liability to the State."* Further, the risk assessment was conducted to ensure that the Project can comply with the DMIRS environmental factors and objectives for biodiversity, water resources, landforms, and mine closure.

The risk assessment matrix utilised to determine risks for the Project is consistent with principles set out in AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines and adopts definitions of likelihood and consequence that have been used to evaluate each risk as it stands and determine whether it is tolerable (requiring no further management) or requires further management.

Each risk event is assigned an overall level which is determined as a factor of probability (likelihood) and the associated environmental consequence. The levels for likelihood and consequence are detailed in **Table 10** and **Table 11** respectively. The risk matrix (**Table 12**) combines the level of likelihood and consequence to determine the associated inherent level of risk. The impact of each identified risk is then categorised as extreme (red), high (orange), medium (yellow) and low (green). Management and mitigation measures for each identified risk are then included and the residual risk rating re-categorised. A risk priority is assigned to each of the 25 possible outcomes. The management and mitigation measures have been selected to remediate the risk to an acceptable level based on "As Low as Reasonably Possible" (ALARP) principles.

Table 13 reviews the specific Project risks and consequences, summarised against the identified environmental factors.

Table 10: Likelihood of risk definitions

Level	Likelihood	Frequency	Description
(a)	Almost Certain	Occurs more than once per year	The event is common or frequent occurrence or an ongoing impact
(b)	Likely	Typically occurs once or twice per year	The event is expected to occur under some conditions or has occurred more than once
(c)	Probable	Typically occurs in 1-3 years	The event will probably occur, or has occurred under some conditions
(d)	Unlikely	Typically occurs in 3-10 years	Known to have occurred but not often
(e)	Rare	Typically occurs in 10 – 100 years	Very unlikely/may occur in exceptional circumstances

Table 11: Defined consequence of a given risk

Level	Likelihood	Description
1	Insignificant	Confined to the immediate area, rapid clean up, no environmental damage
2	Minor	Confined to an isolated area, rapid clean up using internal resources, minimal environmental damage
3	Moderate	Impact confined to the mine, clean up may require external assistance, moderate environmental damage
4	Major	Major environmental impact, extends beyond mine, considerable clean up using external resources
5	Catastrophic	Severe environmental impact, extensive clean up and recovery period, requires ongoing Aurenne and external resources

Table 12: Risk Assessment matrix

Risk Matrix		Consequence				
		Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Likelihood	Almost Certain (a)	Moderate (15)	High (19)	Critical (22)	Critical (24)	Critical (25)
	Likely (b)	Moderate (10)	Moderate (14)	High (18)	Critical (21)	Critical (23)
	Possible (c)	Low (6)	Moderate (9)	Moderate (13)	High (17)	High (20)
	Unlikely (d)	Low (3)	Low (5)	Moderate (8)	Moderate (12)	High (10)
	Rare (e)	Low (1)	Low (2)	Low (4)	Moderate (7)	Moderate (11)

Outcome:

- Critical risk: immediate action required
- High risk: senior management attention needed
- Moderate risk: management responsibility must be specified
- Low risk: manage by routine procedures

Table 13: Project consequences definitions according to identified risks

Environmental Factor	Aspect	Insignificant	Minor	Moderate	Major	Extreme
Biodiversity	Vegetation /Flora / Fauna / Fauna Habitat	- Small area of vegetation loss with negligible impact on habitat or species - Loss of a Priority-listed individual plant/animal	- Alteration or disturbance to <10% of a habitat or ecosystem resulting in a recoverable impact within 2 years - Loss of multiple Priority-listed flora /fauna species	- Alteration or disturbance to 10-40% of a habitat or ecosystem resulting in a recoverable impact within 2-5 years - Loss of <50% known local population Priority-listed flora /fauna species - Loss of a Malleefowl	- Alteration or disturbance to 40-70% of a habitat or ecosystem resulting in a recoverable impact within 5-15 years - Loss of >50% known local population of Priority-listed flora / fauna species - Loss of an active Malleefowl mound	- Alteration or disturbance to >70% of a habitat or ecosystem resulting in a recoverable impact >15 years - Loss of conservation significant or listed species locally or regionally; extinction of a species
	Introduce d plants (weeds)	Manageable, localised weed infestation that does not result in competition with native species	Manageable, localised weed infestation that results in minor competition with native species	Localised weed infestation that results in competition with native species requiring considerable management/control measures	Regional weed infestation that results in competition with native species requiring extensive management/ control measures & impacts pastoral activities	Uncontrollable regional weed infestation that results in competition with native species & impacts pastoral activities
	Pest animals (ferals)	Manageable increase in pest species numbers, but does not impact population viability or abundance of native fauna	Manageable increase in pest species numbers, resulting in localised impacts to the population viability or abundance of native species	- Increase in pest numbers, resulting in widespread impacts to the population viability or abundance of native species - May impact pastoral activities	- Pest species introduced and populations expand into the regional area resulting in temporary exclusion of native species that can be controlled by external resources. - Impacts pastoral activities	- Pest species introduced and populations expand into the regional area resulting in permanent exclusion of native species unable to be controlled by external resources - Significant impacts to pastoral activities resulting in economic detriment
Water resources	Surface Water	- Negligible change to surface water quality within the project area that does not change its ability to be used by livestock and fauna. - Short term, minimal changes to local water volumes that do not affect beneficial uses, including livestock and fauna	- Low level change to surface water quality within the project area and minimal change to downstream watercourses that does not affect its use by livestock and fauna - Medium term, minimal changes to local water volumes that do not affect beneficial uses, including livestock and fauna	- Moderate (mid-level) change to surface water quality within the Project area & low level change to downstream watercourses that affects its use by livestock and fauna in the short term - Short term minimal changes to regional water volumes that affect beneficial uses, including livestock & fauna	- High level decline in surface water quality in the project area and mid-level change to downstream watercourses that prevents medium to long term use by livestock and fauna - Medium-term low-level changes to regional water volumes that affect beneficial uses, including livestock & fauna	- Mid-level decline in surface water quality on a regional scale that prevents long term use by livestock and fauna - Project causes permanent, high-level loss of surface water resources that affects livelihoods and/or survival of communities
	Ground water	- Minimal change to groundwater quality in the project area that does not change its ability to be used by beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna - Minimal changes to groundwater levels/availability in the project area that do not affect beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna	- Short term, minimal, localised decline in groundwater quality that affects beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna - Local, minimal changes to groundwater levels/availability that do not affect beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna	- Medium term, low level, localised decline in groundwater quality that affects beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna - Local, low level changes to groundwater levels/availability that affect beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna in the short to medium-term	- Short to medium term, low level regional decline in water quality that prevents beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna - Regional, low level changes to groundwater levels/availability that affect beneficial uses including livestock, fauna, groundwater dependent ecosystems & subterranean fauna in the medium term	- Long term, mid-level regional decline in water quality that prevents beneficial uses, including livestock, fauna, groundwater dependent ecosystems & subterranean fauna - Regional, mid-level changes to groundwater levels/availability that affect beneficial uses, including livestock, fauna, groundwater dependent ecosystems and subterranean fauna in the long term
Landforms & soils	Compatible final landforms	- Post mining landforms are consistent with their surroundings - Post mining landforms are stable	- Post mining landforms are generally consistent with their surroundings with minor variations in elevation, profile and vegetation - Post mining landforms are stable but may experience minor erosion, such as rilling	- Post mining landforms are generally consistent with their surroundings but show distinguishable variation in elevation, profile and vegetation - Post mining landforms are generally stable, but may experience moderate erosion, such as limited gully erosion	- Post mining landforms are inconsistent with their surroundings with notable differences in elevation, profile and vegetation - Post mining landforms are unstable, with significant erosion, such as tunnelling and gully erosion & subsidence	- Post mining landforms are inconsistent with their surroundings, represented by significant differences in elevation, profile and vegetation - Post mining landforms fail (e.g. IWL embankment failure), with extensive ongoing management
Rehabilitation & Mine Closure	Land Degradation	- Clean-up by site personnel, rectified immediately - Confined to immediate area around source	- Clean-up by site personnel, remediation within 1 year - Confined to operational area	- Clean-up by site personnel, remediation within 1-3 years - Minor impact outside disturbance envelope or minor impact to soil stockpiles	- Clean-up requiring external specialist, remediation within 3-10 years - Impact has migrated outside the disturbance envelope or	- Clean-up requiring external specialist. Remediation >10 years, or permanent residual impact - Impact outside the tenement boundary

Environmental Factor	Aspect	Insignificant	Minor	Moderate	Major	Extreme
					contamination of soil stockpiles	
	PMLU	Site is safe, stable and non-polluting. Post mining land use is not adversely affected	- Site is safe, all major landforms are stable, and any stability or pollution issues are contained and require no residual management - Post mining land use is not adversely affected	- Site is safe, and any stability or pollution issues require minor, ongoing maintenance by end land-user - Post mining land use cannot proceed without some management	- Site cannot be considered safe, stable or non-polluting without long-term management or intervention - Post mining land use cannot proceed without ongoing management	- Site is unsafe, unstable and/or causing pollution or contamination that will cause an ongoing residual affect - Post mining land use cannot be achieved
Stakeholders/ Social	Heritage (European or Aboriginal)	No loss or disturbance of physical or cultural heritage within local area	Loss or disturbance of non-significant physical or cultural heritage within local area	Loss or disturbance of significant European or Aboriginal physical or cultural heritage in local area in agreement with the respective parties (TOs or Sof Menzies) and following regulatory approval to impact	Loss or disturbance of significant physical or cultural heritage that requires	Loss or disturbance of significant physical or cultural heritage not in agreement with traditional owners
	Key Stakeholders	Stakeholders not responding to engagement on PMLU	Stakeholders not engaged in PMLU process	Stakeholders do not agree on PMLU	Stakeholders express dissatisfaction with post mining landforms, roads, aerodrome, etc	Stakeholders will not accept post-closure landforms
NA	Env. Compliance	Minor technical/legal compliance issue unlikely to attract a regulatory response	- Technical/legal compliance issue may attract a low-level administrative response from the regulator - Incident requires reporting in routine reports (e.g. monthly)	- Breach of regulation with possible prosecution and penalties - Continuing occurrences of minor breaches - Incident requires immediate (within 48 hours) notification	- Major breach of regulation resulting in investigation by regulator - Prosecution, penalties or other action likely	- Serious breach of regulation resulting in investigation by regulator - Operation suspended, licenses revoked

Table 14: MIG Project ERA

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
Biodiversity	Vegetation/ fauna habitat	1	Unauthorised clearing/ ground disturbing activities resulting in: - impacts to vegetation which comprises general fauna habitat - unauthorised impacts to Malleefowl mounds	Loss of native vegetation and reduction in availability of habitat for local flora and fauna species Loss of Malleefowl breeding habitat	Clearing Construction Operation	Possible	Insignificant	L	- Site Induction & Site Induction Presentation (doc refs: Z-IND-001 & 003) to clearly inform staff, contractors & visitors of vegetation clearing permit process & requirements, Malleefowl presence in area - Environmental baseline studies data added to Aurenne Corporate dataset & used in GIS to inform project planning and proposed clearing assessments - Adherence to MIG internal Environmental Permit process, which includes internal Vegetation Clearing Permit Procedure E-PRO-001 - Clearing areas demarcated pre & post clearing, recorded spatially, documented on the site plan according to Vegetation Clearing Permit Procedure E-PRO-001 - No clearing without Vegetation Clearing Request Form E-FRM-001 and the authorisation: Vegetation Clearing Permit Assessment & Authorisation Form E-FRM-001 - Annual reconciliation and reporting of clearing areas against approved disturbance areas in MP and MIG internal Permit process (E-PRO-001) - Malleefowl Management Plan E-PLA-005 adherence for general requirements and pre-clearing surveys for mounds; reporting requirements to DBCA - Any incidence of unauthorised/unapproved clearing is recorded (Environmental Event Management Register E-REG-001) & reported (internally and externally to regulating authority, where required) and areas of vegetation cleared are rehabilitated immediately - Disturbance is limited to that approved in this MP and within the approved disturbance envelope - Site compliance inspections; monthly E-PRO-016 Environmental Audit Procedure with E-FRM-004 Environmental Audit Record Form - Annual clearing audit confirmed through annual Remote Sensing assessment (Astron Env. Consultants) - Restricted access for contractors and employees - All Mining Act (approved Mining Proposal/MCP) and EP Act (Works Approval, NVCP) approvals are acquired prior to any land disturbance. Noting that Works Approval (W6574-2021-1) and NVCP (CPS 9383/1) are under assessment and no clearing or Prescribed Premise activities can occur under these mechanisms until instrument is granted	Planning Construction Operation	Possible	Insignificant	L
		2	Increased dust due to vegetation clearing and increased activity	Smothering of native vegetation leading to death of vegetation or a decline in vegetation health and condition	Construction	Possible	Insignificant	L	- Use of water carts for active dust suppression as required during clearing & ground disturbance - Speed limits will be enforced on unsealed roads through signage and education of all personnel Site Induction & Site Induction Presentation (doc refs: Z-IND-001 & 003) - Progressive rehabilitation - Land disturbance will be kept to the minimum necessary for development of the project (per best practice & tenement conditions) - Vehicle traffic will be confined to defined roads and tracks	Construction Operation Closure	Possible	Insignificant	L
		3	WWTP spray field nutrient loading	- Reduced vegetation health - Potential soil residue affecting future closure	Operation	Possible	Insignificant	L	- Baseline surveys informed Project planning and environmental siting to ensure spray field is appropriately sized and located away from sensitive receptors - WWTP to be constructed and operated as per DWER Works Approval (W6574-2021-1) & subsequent license requirements (when received) - Sprayfield and WWTP conforms & operates according to Department of Health approval (Approval # 249.21 received 6-12-2021)	Operation	Possible	Insignificant	L
	Flora	4	Accidental taking of Priority flora during clearing, driving off tracks (noting that no Priority flora is found in proposed activity areas but is included as a precautionary approach)	Loss of conservation significant flora individuals or populations	Construction	Possible	Minor	M	- Baseline surveys informed Project planning and environmental siting to ensure avoidance of majority of Priority flora - Induction and education of staff & contractors regarding clearing requirements Site Induction & Site Induction Presentation (doc refs: Z-IND-001 & 003)) - Adherence to MIG internal Environmental Permit process, which includes internal Vegetation Clearing Permit Procedure E-PRO-001, & clearing areas demarcated prior to clearing; audit	Construction Operation Closure	Possible	Low	L

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
									- following clearing; E-FRM-002 Vegetation Clearing Request Form & approval through E-FRM-001 Vegetation Clearing Permit Assessment & Authorisation Form - Vehicles to remain on designated tracks and parking areas only - 54Adherence to CPS 9383/1 conditions (Appendix P) that ensure no significant impacts to the local populations of Jacksonia lanicarpa through limiting impact on clearing of plants				
	Fauna	5	Vehicle interactions with fauna Fauna accessing Process Water Ponds/IWL/	Injury or death to local fauna species, including Malleefowl	Construction Operation	Possible	Moderate	M	- Site induction includes Mallee Fowl information and contractors are provided with information in regard to potential Mallee Fowl sightings, mounds and recording Site Induction & Site Induction Presentation (doc refs: Z-IND-001 & 003) - O-PLA-004 Traffic Management Plan in place with posted speed limits; speed limits will be enforced on unsealed roads through signage and education of all personnel - All fauna strikes are recorded (E-REG-001 Environmental Event Management Register) and reported to the Environmental Superintendent, recorded, investigated and used to determine management actions - All incidences involving fauna species of conservation significance are reported to DBCA - Fauna Management Plan E-PLA-003, Malleefowl Management Plan (including report forms) E-PLA-005 includes responsibilities for fauna & conservation significant fauna - Daily inspections of the IWL (Procedure to be developed) will include recording any fauna entrapment, injuries or death (E-FRM-006 Environmental Incident Form) and reported to Env. Depart. that will retain data (E-REG-001 Environmental Event Management Register) and review for adaptive management purposes should bird attraction and deaths be at an elevated level (compared to other IWL/TSFs in the region) - All monitoring bores will be capped to prevent fauna ingress. - Any native fauna species injured or killed as a result of collision will be recorded as an incident in E-REG-001 Environmental Event Management Register, reported to DBCA where required, and reported in the AER - Adherence to NVCP CPS 9383 fauna management conditions (Appendix P) that limit clearing to non-breeding seasons - Environmental Department to review E-REG-001 Environmental Event Management Register weekly to review bird deaths recorded in Ponds & enact adaptive management (i.e. bird deterrents) should bird entrapment or deaths exceed 2 per week & is included in E-PRO-016 Environmental Audit Procedure	Construction Operation	Possible	Moderate	M ₁
	Introduced flora (weeds)	6	Introduction of new weeds or proliferation of existing weeds	Decline in habitat quality and native vegetation Compromised topsoil stockpiles: reduced seed bank, soil viability and suitable growth medium required to establish vegetation	Construction Operation Closure Operation Closure	Possible	Insignificant	L	- Earthmoving equipment to be inspected, cleaned and weed free prior to arrival on site (inspection checklist (E-PRO-007 Vehicle Hygiene Inspection Procedure) signed) - Ensure that no weed-affected soil, mulch, fill or other material is brought into the area to be cleared - Restrict the movement of machines and other vehicles to the limits of the areas to be cleared - If weeds are identified, weed spraying/eradication campaigns will be completed during operations and 5 years post-closure - Environmental Audit for weed occurrence & weed control instigated where new occurrences or abundance increases E-PRO-006 Weed Management Procedure; E-PRO-016 Environmental Audit Procedure - Rehabilitation areas seeded with local native species; inspection for weed proliferation - Monitoring of rehabilitated areas annually and at/post closure	Construction Operation Closure	Possible	Insignificant	L
	Introduced fauna (ferals)	7	Increased feral animal presence	Overgrazing or feral predation on native fauna		Possible	Minor	M	- Putrescible waste is managed appropriately according to E-PRO-005 Waste & Landfill Management Procedure with fencing, gates kept closed, and wastes regularly covered - No feeding of fauna - Increased sightings of feral animals will trigger liaison with Pastoralist to discuss management - Camp pest animals (mice, cats) will be managed appropriately by camp manager/contractor		Possible	Insignificant	L

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
Water Resources	Surface & ground water	8	Spillage, leakage from used or stored hydrocarbons or chemicals	Contamination of surface & groundwater resources through mobilization of sediment, waste materials, potential pollutants etc	Construction Operation Care & maintenance Closure Post-closure	Possible	Minor	M	- All hydrocarbon and chemical storages will be designed and constructed in accordance with Australian Standards AS1940 and AS1692 - All hydrocarbons and chemicals are stored in bunded areas or containers - Spill kits are fully stocked, located in strategic locations and personnel are training in their use - Adherence to Spill Procedure Spill Management Procedure E-PRO-012 (all spills are contained, controlled and cleaned up immediately) (Environmental Spill Incident Form E-FRM-003) and record made in Environmental Event Management Register ((E-REG-001) - Monthly environmental audit inspections are completed (Environmental Audit Record Form E-FRM-004 & E-PRO-016 Environmental Audit Procedure - Pre-start checks are completed on all vehicles - Equipment is regularly serviced and maintained - Low volumes of hydrocarbons stored on site - Hydrocarbons stored away from drainage areas - Hydrocarbon contaminated soil identified during closure to be excavated and remediated or disposed offsite - Assessment and remediation of potentially contaminated areas as part of mine decommissioning - E-PRO-008 Surface Water Management Procedure - Monitoring in accordance with Groundwater Bore Monitoring Plan (Pendragon 2022; Appendix Q) - Surface water management structures are constructed to ultimate (PMF event) design as per Hydrologia (2022; Appendix N) Water Management Strategy for Operational phase from the onset to mitigate for PMP/PMF events	Construction Operation Care & maintenance	Possible	Moderate	M ₂
		9	PMP/PMF event										
		10	Seepage, mounding, contamination from constructed landforms	Change to hydrological regimes or contamination of surface or groundwater as a result of Project		Possible	Moderate	M	- IWL will be managed and operated in general accordance with the IWL Operations Manual (Appendix K of CWL 2021(MP Appendix M) - Records within E-REG-001 Environmental Event Management Register for non-compliance or incidents - Annual remote sensing & analysis of Vegetation Health in Bottle Creek Project area (Astron Env 2021-) monitoring in tandem with Groundwater Bore Monitoring Plan (Pendragon 2022; Appendix Q)	Construction Operation Closure	Possible	Moderate	M ₂
		11	Changes to catchment surface water regime	Water starvation &/or ponding as a result of constructed water management features		Possible	Moderate	M	- Baseline hydrological assessment & modelling undertaken (Hydrologia 2021;2022; Appendix N) to understand catchment dynamics - Baseline vegetation health assessment (Astron 2021) to understand vegetation health with assessment to be conducted annually through to closure - Surface water management structures designed for PMP (Hydrologia 2021;2022; Appendix N) - Surface Water Management Structures constructed according to locations & design in Hydrologia2022; Appendix N - Surface Water Management Assessment to be undertaken to review all structures and re-run modelling prior to full site closure, to inform MCP; MCP to be updated and approved accordingly	Construction Operation Closure	Possible	Moderate	M ₂
	Ground water	12	Water use is excess of allocation	Local impacts to groundwater dependent vegetation	Construction Operation	Possible	Minor	M	- Water use within DWER licensing parameters (as per DWER license conditions GWL204119(1) & CAW 26D license 204120(1))(Appendix H1) - Water bore meters in use and recorded (monitoring) as per GWL204119(1) as administered by DWER (Appendix H1) with annual reporting to DWER (Water online) - No GDEs mapped within Project area - Groundwater Operating Strategy will be developed once borefield is explored & developed. DWER will regulate groundwater use - In addition, Groundwater Monitoring Plan (Pendragon 2022) (Appendix O) will ensure appropriate groundwater use, monitoring & reporting consistent with licensing requirements once borefield and monitoring bores are developed (Q1-2 2022)	Construction Operation	Possible	Minor	M ₂

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
Landforms, Land & Soil	Soils	13	- Spillage, leakage and/or seepage from used or stored hydrocarbons or chemicals - Poor hydrocarbon & DG management during operations - Contamination from hydrocarbon or other operation chemical not remediated adequately during LoM	Localised soil, land contamination; contaminated site	Construction Operation Care and maintenance Closure Post-closure	Possible	Minor	M	- All hydrocarbon and chemical storages will be designed and constructed in accordance with Australian Standards AS1940 and AS1692 - All hydrocarbons and chemicals are stored in bunded areas or containers - Spill kits are fully stocked, located in strategic locations and personnel are training in their use - Adherence to E-PRO-0012 Spill Management Procedure (all spills are contained, controlled and cleaned up immediately); all spills reported Environmental Spill Incident Form (E-FRM-003) and corporately recorded Environmental Event Management Register (E-REG-001) - Daily work area inspections - Storage & handling in accordance with E-PRO-004 Hazardous Substances & Dangerous Goods Management Procedure - E-PRO-016 Environmental Audit Procedure are completed & recorded according to E-FRM-004 Environmental Audit Record Form - Pre-start checks are completed on all vehicles - Equipment is regularly serviced and maintained - Low volumes of hydrocarbons stored on site - Hydrocarbons stored away from drainage areas - Hydrocarbon contaminated soil identified during closure to be excavated and remediated or disposed offsite - Assessment and remediation of potentially contaminated areas as part of mine decommissioning - Reporting to DWER if a significant (as per E-PRO-0012 Spill Management Procedure) spill occurs	Construction Operation Care & maintenance	Possible	Insignificant	L
		14	- Loss of topsoil as a result of wind/water erosion, removal by machinery or weed invasion or damage to structure of topsoil during stripping or storage	- Reduction in topsoil quality and quantity available for rehabilitation works, and subsequently a reduction in revegetation/ rehabilitation success	Construction Operation Closure	Possible	Minor	M	- Topsoil will be stripped to a depth of 200 mm where possible and stored to a height of 2 m according to E-PRO-009 Topsoil Management Procedure - Dedicated topsoil storage areas as per approved MPMCP - Water cart dust suppression during clearing, earthworks, construction & operations & during closure if required - Dust suppression according to E-PRO-017 Dust Management Procedure - Progressive rehabilitation of temporarily cleared and/or no longer required areas	Construction Operation Closure	Possible	Insignificant	L
	Landforms	15	Fugitive dust	- Decline in vegetation health due to smothering - Stakeholder dissatisfaction		Possible	Minor	M	- Water cart dust suppression during clearing, earthworks, construction & operations & during closure if required - Dust suppression according to E-PRO-017 Dust Management Procedure - Record of potential tailings dust noted during E-PRO-017 IWL Monitoring Procedure with tailings beaches could be irrigated (i.e. with sprinklers or similar) or tailings deposition managed such that beach areas do not dry back to such that dust generation occurs - IWL will be managed and operated in general accordance with the IWL Operations Manual (Appendix K of CWL 2021(MP Appendix M)) - Reporting according to E-REG-001 Environmental Event Management Register for nuisance dust & audit records or complaints	Clearing Construction Operation Closure	Possible	Insignificant	L

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
		16	- Unstable, weathering, loss of containment, or leaching of IWL, including burial of process pond liners - PAF material not sufficiently encapsulated causes AMD	- Site contamination - Surface or groundwater contamination		Possible	Moderate	M	- IWL designed according to best practice (CMW 2021; Appendix M) - Pond liners deposited according to Rural landfill Regulations & Prescribed Premise Works Approval/licence (at time of closure) - Monitoring of IWL according to CMW 2022 (Figure 18) VWP - Groundwater monitoring according to Groundwater Monitoring Plan (Pendragon 2022; Appendix Q) - DSI Audit at Closure to detect potential contamination - IWL ground preparation, construction, commissioning, operation, monitoring, & Closure according to DWER Works Approval (W6640-2022-1) & licencing (once WA progresses to operation) - All PAF material will be appropriately encapsulated in the WRL. Compacted NAF material of a nominal 2.5 to 4 m thickness will cover the encapsulation cell. Sufficient volume of NAF material is available to ensure total encapsulation.	Construction Operation Closure	Unlikely	Moderate	M ₈
		17	Impacts of permanent infrastructure (WRLs, IWL, Surface Water Management Structures) on catchment	- Water starvation, ponding, reduction - Increased erosion, scouring, sedimentation		Possible	Moderate	M	- Design and location of all permanent infrastructure located and constructed according to relevant specialist reports as listed in approved MPMCP (Reg ID 5300063) - Audit & Monitoring of all built structures during construction, commissioning, operation & closure - DWER reporting according to Works Approvals	Construction Operation Closure	Possible	Moderate	M ₃
	AMD	18	- IWL & WRLs leaching to land and groundwater - Potential to interact with sulphides	- Contamination of soils or groundwater - Ecological impacts to vegetation, local catchment - Deemed contaminated site - Inability to reach relinquishment post closure	Operation Closure Post-closure	Possible	Moderate	M	- Mining Procedure M-PRO-009 Sulphide Assessment is followed to determine the presence of sulphides prior to the mining of each bench. - All PAF material will be appropriately encapsulated in the WRL. Compacted NAF material of a nominal 2.5 to 4 m thickness will cover the encapsulation cell. Sufficient volume of NAF material is available to ensure total encapsulation. - IWL designed according to industry best practice - IWL constructed according to design - IWL construction, operation, and monitoring under DWER Works Approval (W6640/2021/1) & licencing (when licenced) with on-going reporting to DWER on IWL & monitoring (LoM) - WRLs designed, constructed and operated according to approved MPMCP (Reg ID 5300063) - Up to 5 years post-closure monitoring of landforms and groundwater according to approved MCP(Reg ID 1015557) - Groundwater Monitoring Program (Appendix P) to monitor potential changes in groundwater quality or quality	Construction Operation Closure	Unlikely	Moderate	M ₈
Rehabilitation & Mine Closure	Rehabilitation Mine closure	19	Rehabilitation failure due to: - Poor regrowth media, reduced seed bank, grazing, droughts - Inappropriate landform design Inability to achieve self-sustaining, stable & non-polluting landforms to sustain the PMLU	Rehabilitation failure resulting in inability to meet closure criteria Post-mining land use cannot be sustained	Operation Closure Post-closure	Possible	Moderate	M	- Pre-closure planning in accordance with approved MCP - Topsoil handling according to Topsoil Management Procedure E-PRO-009 to maximise viability of resource - Scheduling to maximise direct placement of growth medium where possible - Preparation & planning for rehabilitation according to MCP Reg ID 5300063 - Rehabilitation trials for soil amelioration during progressive or final landforms according to MCP Reg ID 101557 - Research data gaps according to those identified in MCP Reg ID 5300063 during LoM - Seeding with local provenance species - Scheduling of rehabilitation activities - Implement monitoring programs, as per approved MCP (for a minimum of 5 years) after rehabilitation to track progress and implement contingency measures to remediate shortfalls - Specialist external consultants will be engaged for seed collection, rehabilitation services and Remote Sensing/EFA monitoring - Continued Stakeholder liaison in regard to PMLU for LoM according to E-PRO-015 Stakeholder Liaison Strategy Procedure	Operation Closure Post-closure	Possible	Moderate	M ₄

DMIRS Environmental Factor	Component	Ref #	Risk Pathway	Risk Impact	Phase(s) Unwanted Event likely to occur	Likelihood	Consequence	Inherent Risk	Treatment (Note: all cited policies, plans, procedures provided in Appendix G)	Phase(s) Treatments to be implemented	Likelihood	Consequence	Residual Risk
		20	Disruption of surface flows in the event of a PMF event, causing ponding of water resulting in deterioration and/or death of vegetation	Erosion or ponding of water resulting in reduction in vegetation health	Closure Post-closure	Possible	Moderate	M	- Design; layout has incorporated natural ephemeral drainage lines in arrangement (Hydrologia 2022 Appendix N) - Design; all surface water assessment and management structures proposed for Project according to Operational & Closure Surface Water Management Strategy (Hydrologia 2022; Appendix N) - Ensure rehabilitated land surfaces are contoured consistent with the surrounding undisturbed landscape and that any natural, ephemeral drainage lines are connected and not impeded at closure - Deep ripping for revegetation to be ripped along contours to promote a natural surface drainage catchment - Post-closure assessment of retention of drainage management structures - Post-closure monitoring of diversion drains - PMF modelling and surface water management will be reviewed over LoM - Remote sensing and EFA monitoring by specialist consultant consistent with approved MCP (Reg ID 5300063)	Operations Closure Post-closure	Possible	Insignificant	L
	Financial	21	Under-estimation of closure costs	Shortfall in closure financial provisioning	Closure Post-closure	Possible	Minor	M	- MCP costs reviewed bi-annually and revised for each MCP submission - CFO presents to Board annually on updated closure planning costs	Operation Closure Post-closure	Possible	Minor	L
	Access to post-closure landforms	22	Human or animal access to post-closure landforms (pits, pit lakes, waste landforms etc)	Access that may result in injury or adverse health impact	Post-closure	Possible	Minor	M	- Sign posting of restricted access due to site rehabilitation/danger - Ensure all abandonment bunds are constructed as per guidelines and located outside of the PZOI - Action approved MCP accordingly - Audit for signs of ingress during 5 years post-closure; address egress breaches	Closure Post-closure	Unlikely	Insignificant	L
Social/ Stakeholders	Rehabilitation Mine closure	23	- Incomplete closure (failure to remove buildings, Village, & associated infrastructure) that may impact the surrounding environment - Stakeholder complaints to company or Minister	- Incomplete removal of buildings & infrastructure will detrimental impacted closure, rehabilitation and may entrap fauna or pose other risk to environment - Stakeholders dissatisfied with operational impacts or closure completion	Closure Post-closure	Possible	Minor	M	- Mine closure planning and process follows approved MCP (MIG-E-DOC-005; Reg ID101557) - All building and associated infrastructure to be removed from site, or buried where appropriate and consistent with approvals unless otherwise agreed to with stakeholders (and as detailed in approved MCP) - Legal agreements with interested parties (Red Dirt Minerals/Ora Banda Mining & Zenith Australia Group) in relation to the upgraded airstrip (Aerodrome) & N-S Access Track - Continued Stakeholder liaison in regard to PMLU for LoM according to E-PRO-015 Stakeholder Liaison Strategy Procedure - Agreements recorded & actioned through E-REG-003MIG Project Stakeholder Register	Closure Post-closure	Unlikely	Insignificant	L

6.2 Risk Management

The risks identified in the previous section and identified by the risk assessment have potential to negatively impact on the ability to relinquish the site in accordance with the closure priorities of safe, noncontaminating, stable and self-sustaining ecological communities.

In order to meet the final closure criteria, risk management measures will be prioritised to address the closure concerns in accordance with the risk rating assigned for each feature. These management measures will be then implemented with an aim to reduce the inherent risk to an acceptable level.

Aurene has identified some priority actions through the risk assessment that are summarised in **Table 15**.

Table 15: Priority Actions to Reduce Closure Risk

Item	Action
PAF Encapsulation	All PAF material will be appropriately encapsulated in the WRL. Compacted NAF material of a nominal 2.5 to 4 m thickness will cover the encapsulation cell. Sufficient volume of NAF material is available to ensure total encapsulation.
Dispersive soils & waste rock	Refine placement & management of waste rock and soils; monitoring of WRL sand progressive rehabilitation to inform future rehabilitation Retain competent rock as a source material for armouring and structural stability for closure utilisation
PZOI	Monitoring throughout LoM to confirm ZOI inferences
Groundwater quality	Groundwater monitoring t/out LoM and post-closure to address any potential negative trends & research contingency actions
Revegetation	Early engagement with seed supplier to source & secure seed for revegetation
Financial provisioning	Incorporate published information on industry costs associated with closure bulk earthworks, labour, equipment, etc to improve financial forecasting for closure

7 CLOSURE OUTCOMES AND COMPLETION CRITERIA

Closure outcomes are outlined in **Table 16**, which will guide effective mine closure and ensure:

- Enable all stakeholders to have their interests considered during the mine completion process
- Allow completion to occur in an orderly, cost-effective and timely manner
- Enable the cost of completion to be adequately represented in company accounts
- Provide clear accountability and adequate resources for completion
- Establish a set of indicators that will demonstrate the success of the completion process
- Reach a point where the company has met agreed completion criteria to the satisfaction of the relevant authorities.

Table 16: Closure Outcomes

Aspect	Closure outcome
Public safety	Inadvertent access is restricted as much as practicable to any landforms or structures that are considered unsafe
	Inadvertent access is restricted as much as practicable to any landforms or structures that are considered unsafe. Site closure activities are completed in a manner which ensures the safety and health of workers
Physical/Landform stability	Final landforms meet design criteria and ensure long-term geotechnical stability
	Long term stability and integrity of engineered mine landform covers based on geomorphological processes observed within the local region.
Non-polluting	The mined environment will be managed so as to minimise impacts to the quality of the surrounding environment
Sustainable Final Land use	Rehabilitate previously disturbed areas to establish a modified environment receptive to vegetation regrowth and recovery over time and which where possible, blends with the surrounding landscape
Key Stakeholders	Mine closure planning includes effective internal and external stakeholder consultation
Closure planning	Cost effective and timely closure planning and implementation
	Adequate closure provision is made to cover all agreed to closure commitments
Legal compliance	Maintain compliance with all legal and other requirements during the closure planning and implementation process

Consistent with the *Statutory Guidelines for Mining Proposals* (DMIRS 2020) environmental outcomes with an inherent risk rating of moderate or above are required.

Monitoring requirements were determined for the Project so that the performance of the Project can be measured against the baseline data and limits. Any breach of or an incident which has caused, or has the potential to cause significant environmental harm, will be reported to DMIRS in accordance with specified timeframes.

7.1 Completion Criteria Methodology

Completion criteria are needed to ensure that the overall objectives of rehabilitation have been met. These criteria must also be designed to allow effective reporting and auditing to define an endpoint for rehabilitation activities. Guidelines published by ANZMEC/MCA (2000) state that completion criteria should be:

- Specific enough to reflect unique sets of environmental, social and economic circumstances
- Flexible enough to adapt to changing circumstances without compromising objectives
- Include environmental indicators suitable for demonstrating that rehabilitation trends are heading in the right direction
- Undergo periodic review resulting in modification if required due to changed circumstances or improved knowledge (referred to as Adaptive Management)
- Based on targeted research which results in more informed decisions.

Progressive assessment against completion criteria demonstrates the relative success of rehabilitation in achieving the stated closure objectives outcomes. Completion criteria aim to be:

- Clear and as simple as possible
- Aligned with legal obligations and commitments
- Aligned with the stated closure outcomes
- Assessed at various stages of mine completion.

7.2 Completion Criteria

Completion criteria have been developed consistent with Closure Outcomes (**Table 16**) and aligned with legal obligations and include:

- Public safety
- Physical stability (landform stability)
- Non-polluting
- Sustainable final land-use
- Key Stakeholder engagement
- Closure planning
- Legal compliance.

Completion Criteria will be refined over the LoM in consultation with stakeholders with addition of information from additional studies and monitoring to define the measurable goals for rehabilitation and closure. Closure outcomes, activities and completion criteria are summarised in **Table 16**.

Table 17 Closure Outcomes, Activities and Completion Criteria

Closure Outcome	Completion Criteria	Performance Indicator	Measurement Tool	Timeframe
Compliance				
Maintain compliance to legal obligations	Conditions and commitments relevant to closure & rehabilitation (as per approved MPMCP) are met during LoM & either prior to, or if appropriate, at Closure	- Legal obligation register developed and maintained for all closure obligations - Audit documentation developed & audit conducted biennially	- Environmental Superintendent to audit E-REG-005 Environmental Compliance Register quarterly - External auditor engaged - Legal obligation register developed & maintained for all closure obligations - Audit documentation developed & audit conducted biennially	- Quarterly until relinquishment - External audit – every 5 years
Contaminated site risks have been appropriately managed	Requirements of the <i>Contaminated Sites Act 2003</i> met for the identification remediation, management and transfer of any contaminated sites during LoM & prior to Closure	- Confirm compliance with the CS Act with evidence of a current Detailed Site Investigation (DSI) at the time of closure - Evidence of monitoring in accordance with the site specific DSI and remediation requirements - Contaminated sites are remediated to meet DSI recommendations and CS Act requirements with compliance with remediation plans	- Evidence that the DSI is current at the time of closure - Monitoring to be undertaken in accordance with the DSI findings and remediation requirements	Closure
Biodiversity & Rehabilitation Function				
Maintain representation, diversity, viability & ecological function at the species, population and community level	- Cleared areas are rehabilitated progressively where possible or upon closure of the site, using local provenance species - Remote sensing (vegetation health) monitoring reports positive trajectories for native vegetation densities, diversity, cover & abundance - EFA Monitoring results meet s or exceeds Completion Criteria for each Closure Domain	- Identified areas are progressively rehabilitated over LoM - All areas are rehabilitated at Closure	- Annual EFA monitoring - Annual remote sensing & Vegetation Health Assessment monitoring - Quarterly Env. Audits	- Annually until relinquishment - External audit – every 5 years
Rehabilitation is ecologically sustainable & reflects surrounding ecology, geography & hydrology, or, where appropriate, the ecosystem relevant to an appropriate PMLU	- Establishment of self-sustaining ecosystem comprised of local provenance species - Establishment of key structural vegetation species - Vegetation compatible with PMLU	- Evidence of values that are similar to those/ or trending towards enabling the continuation of Pastoral PMLU in terms of plant cover and key structural species composition. - Phoenix (2021) quadrats provide analogue quadrats for species composition, diversity and density from which revegetation seed mixes and success criteria will be evolved		Year 0, +2, +5, +5 etc. until relinquishment
	Revegetation demonstrates viability through self-sustaining propagule development & seedling recruitment	Evidence of reproduction has been observed and recorded for mature plants (e.g. fruit, seed or flowers) and native perennial seedlings (second generation) in rehabilitation areas		Evidence of monitoring on an annual basis for three years post closure, then less frequent monitoring until relinquishment
Weed (introduced) species do not dominate rehabilitated areas	- Weed (introduced) species do not dominate rehabilitated areas - The occurrence of weeds (particularly BAM Act Declared Pest plants) is reduced and managed such that they do not significantly impact on the rehabilitation success - No new weeds are to be introduced particularly WONS or declared weeds and no existing weed populations are spread during closure activities	- Confirmation that the cover (%) of weed (introduced) species does not exceed the total native perennial vegetation cover (%) - Zero BAM Act Declared Pest plants recorded in annual monitoring		- Weed surveys undertaken annually for three years post closure. The monitoring frequency will be reviewed after three years - Evidence of monitoring on a three-yearly basis for three years post closure, then less frequent monitoring until relinquishment
Landforms				

Closure Outcome	Completion Criteria	Performance Indicator	Measurement Tool	Timeframe
Landforms are geotechnically safe, stable and non-polluting landforms	- landforms are constructed in compliance with approved MPMCP - Landform design incorporates water and drainage management measures to mitigate erosion of final surfaces and slopes - construction compliance with approved MPMCP design. - No sediment recorded during quarterly Env. Audits migrating from constructed landform slopes being transported beyond sedimentation control structures - No decline in surrounding vegetation health recorded as a result of sedimentation in Bottle Creek during annual Remote Sensing Vegetation Health Analysis - landforms are constructed outside of the calculated PZIO in accordance with approved MPMCP - Risk associated with historic landforms within the ZOI are managed or mitigated through consultation with DMIRS - Tailing Storage (IWL) is compliant with relevant ANCOLD guidelines for safety and stability annually as monitored for up to 5 years post-closure - IWL remains non-polluting consistent with continuation of the pastoralism PMLU annually as monitored for up to 5 years post-closure	- Approved MPMCP Landform design incorporates containment measures for mined waste materials with potential for adverse environmental impact - Verification through review of DMIRS approval documentation, and relevant completed studies and reports. - Waste scheduling plans ensure adequate competent material available for landform encapsulation - Erosion features are stable over multiple years, and erosion does not threaten the integrity of unfavorable mine wastes nor impede post-closure management; no erosive degradation noted surrounding structures (during Env Audits) - No visible sediment deposition beyond containment structures - Landform slopes are constructed in accordance with approved design criteria (as detailed in approved MPMCP), so they are geotechnically stable, have suitable cover material, and surface water management. - Erosion features on landforms are self-armouring according to design - Surrounding vegetation health annual monitoring records no decline attributable to Project activities - All landforms located outside the PZIO in accordance with DMIRS Guideline - Safety Bund walls around abandoned open pit mines (1997) (unless geotechnical assessment to vary is accepted by DMIRS) & in accordance with approved MPMCP - Submission of an annual audit to the DMIRS for three years post deposition ceasing into the TSF. Confirmation of compliance with regulatory guidelines and reporting requirements. - Groundwater quality/depth remains within livestock drinking guidelines	- IWL Design according to CMW (2021) Appendix F - Waste characterisation studies and reports identify hostile material prior to disposal to landforms (Pendragon 2021; Appendix D) - Audit to confirm compliance to waste scheduling plans - Survey pick-ups and reports for the location of any identified hostile material available at the time of closure - Env. Audit of toe drains & sedimentation bunds for sedimentation accumulation (Env. Audits/Site inspections); E-PRO-016 Environmental Audit Procedure - Records within E-REG-001 Environmental Event Management Register from E-FRM-004 Environmental Audit Record Form - Annual remote sensing & analysis of Vegetation Health in Bottle Creek Project area - Audit of landform at closure conform with design in approved MCP - Written evidence of authorisation from DMIRS for landforms to remain within the ZOI - Compliance audit inspections of TSFs for a minimum of three years post cessation of deposition	- Construction (2022-2023) - Management during operations, verification at closure - Survey pick-ups as required - Annual Env. Review of MPMCP - Management during operations, verification at closure - Annual Remote sensing & Vegetation Health Assessment - Quarterly Env. Audits - Management during operations - Verification at closure - Annually for minimum 3 years post closure or until confirmation is obtained from data - Audit of constructed landforms at Closure
Hydrology				
Surface water drainage patterns will be reinstated or managed where practicable to be consistent with the regional drainage function	- Surface drainage to downstream environments is compliant with Surface Water Management Plan during operations and at Closure - Surface water diversion structures to remain post-closure are constructed in accordance with approved engineered designs (in approved MPMCP)	- Surface water drainage assessment completed during operations - Post-closure surface water management infrastructure complies with approved design specifications and locations (Hydrologia 2023); Appendix I) - Annual Remote Sensing Analysis reports no evidence of substantial ponding or water starvation downstream & resultant vegetation decline - No scouring from exacerbated flows identified during Env. Audits	- Records of monitoring of surface water interactions with operational infrastructure to inform potential problematic areas requiring post closure management - E-PRO-016 Environmental Audit Procedure - Records within E-REG-001 Environmental Event Management Register from E-FRM-004 Environmental Audit Record Form - Annual remote sensing & analysis of Vegetation Health in Bottle Creek Project area	- Initial surface water drainage assessment in year 1 post closure finalisation - Remote sensing spatial assessment annually until relinquishment
Groundwater quality does not pose an ecological or health risk to livestock and/or other water users	Groundwater in the vicinity of the Project area trends towards recovery consistent with baseline conditions in terms of groundwater level & quality	- Compliance with Groundwater Monitoring Plan (Appendix H) - Groundwater monitoring results comply with DWER licence & Groundwater Operating Strategy (once developed & submitted to DWER) conditions.	- Groundwater Monitoring Plan (Appendix H) - Annual DWER groundwater Monitoring results comply with criteria set by approval conditions	- Quarterly during Operating Phase - Annually for the first three years after closure. If positive trends observed, reassess monitoring frequency
	Pit lakes are excluded from stock access as water chemistry may exceed Livestock Drinking Water Guidelines given high regional evaporation rates creating hypersaline water	Confirmation from pastoralist that pit exclusion bunds are sufficient to exclude stock	Stakeholder Register E-REG-003 MIGP Stakeholder Register	At closure
Mining Infrastructure				

Closure Outcome	Completion Criteria	Performance Indicator	Measurement Tool	Timeframe
Public Safety maintained by exclusion from the site	- Decommissioning of infrastructure is conducted in accordance with the Decommissioning (to be developed) Plan - At Closure, safety signage installed at potential access points to warn public of safety hazards - No infrastructure remaining on-site at completion of closure activities unless custodial transfer agreements of residual assets are in place - All outcomes described in the decommissioning plan & closure commitments in the stakeholder register are completed within 3 years post-cessation of Operations (Closure)	- Decommissioning Plan to be developed by 2027 - Closure legal agreements completed with vested stakeholder (Red Dirt Minerals & Zenith Australia Group) prior to 2025 - Inspection and sign off for abandonment by District Inspector of Mines	- Audit against Decommissioning Plan & stakeholder register - Audit against approved MCP closure commitments	- During Operation phase or before 2025 - Verification at relinquishment
All infrastructure removed and disturbed areas rehabilitated to reflect the post mining land use	Infrastructure removed in line with stated commitments, approval conditions and guidelines	- Commitments outlined in MCP are met to the satisfaction of DMIRS - No unauthorised infrastructure remaining on site	- E-REG-003 MIGP Stakeholder Register - E-PRO-015 Stakeholder Liaison Strategy Procedure - Site inspection report and decommissioning audit report submitted to DMIRS - Legal agreement with stakeholders acknowledging ownership of agreed infrastructure remaining post-closure	- Lo Project - Verification at relinquishment
Post Mining Land Use				
Return as much of the site, as possible, to a condition (excluding mine voids) to allow safe and unimpeded use of the surrounding area for the nominated PMLU	- abandonment bunds in place as per approved MP - PMLU achieved satisfaction stakeholders	Records of consultation with regulatory and other stakeholders confirms the final closed landscape is acceptable to meet the expectations of the end land user	- Audit against the Department of Industry and Resources (DOIR), Safety Bund Walls Around Abandoned Open Pit Mines Guideline 1997 (or equivalent) - Assessment to ensure that an adequate abandonment bund is in place - Legal agreement on PMLU reached with Stakeholders prior to Closure E-REG-003 MIGP Stakeholder Register E-PRO-015 Stakeholder Liaison Strategy Procedure	Throughout operations and during closure period until tenure relinquishment
Closure Financial Provisioning				
The cost of closure is adequately provisioned throughout the life of the Project to ensure that the final land user, other stakeholders and the State of WA are not left with a liability	Closure costs are reviewed annually by CFO to enable adequate financial provisioning for planned and sudden closure	Closure financial provisioning reported by Board annually	Minutes of Board meetings	- Prior to commencement of operations through to relinquishment - Reviewed annually

8 CLOSURE IMPLEMENTATION

Closure implementation can be initiated through planned closure, un-planned closure and temporary closure (care and maintenance).

Planned and unplanned mine closure effectively occurs in two distinct stages – decommissioning and rehabilitation. Decommissioning involves the removal and appropriate disposal of infrastructure and contaminated material and rehabilitation the undertaking of earthworks to create appropriate landforms and subsequent revegetation of those landforms. Only some of the decommissioning and rehabilitation activities will be undertaken during temporary closure.

Detailed closure works programs are presented in Section 8.5. These closure activities are followed with several years of post-closure rehabilitation performance monitoring and maintenance (Section 9).

Ongoing refinement of the completion criteria will be managed through the future stakeholder consultation process and subsequent MCP reviews, to incorporate improved knowledge and community expectations. In addition, ANZMEC/MCA (2000) guidelines state that closure completion criteria should:

- Be specific enough to reflect unique set of environmental, social and economic circumstances
 - Be flexible enough to adapt to changing circumstances without compromising objectives
- Include environmental indicators suitable for demonstrating that rehabilitation trends are heading in the right direction
- Undergo periodic review resulting in modification, if required, due to changed circumstances or improved knowledge
 - Based on targeted research which results in more informed decisions.

8.1 Planned Closure

Planned closure takes place at the end of mine life when no further viable mineral resource remains.

Should the planned mining not proceed, all infrastructure will be removed and the disturbance footprint rehabilitated and profiled to resemble the surrounding environment.

All mine related contamination will be identified and where necessary, remediated such that there is a low risk of long-term detrimental impact on the environment. All landforms are to be rehabilitated to provide long-term geotechnical stability allowing the establishment of native vegetation for pastoralism. The mine void will be made safe to restrict unauthorised access by the public.

8.2 Unexpected or Temporary Closure

In the event of unexpected or temporary closure where the site will be placed in care and maintenance (C & M) for a period of time, provisions in the *Mines Safety and Inspection Regulations 1995* govern care and maintenance periods. The provisions in the regulations will form the basis of a suspension plan to be implemented in such a situation, and include:

- Environmental and safety audit (under sections 42 and 88 of the *Mines Safety and Inspection Act 1994*) undertaken to ascertain high priority tasks
 - Notify DMIRS prior to suspension
 - Develop a detailed C & M plan in consultation with DMIRS to include:
 - Monitoring schedule (geo-technical, geo-chemical or high-risk areas, groundwater and in-pit monitoring, erosion and rehabilitation monitoring)
 - Program to address high priority risks and ensure they are maintained in an appropriately safe condition
 - Be based on this MCP.

The C & M plan will be submitted within three months of the decision to put the site on care and maintenance. In the event the site is unexpectedly placed in permanent early closure due to unforeseen circumstances, the C & M plan will be implemented and in consultation with DMIRS a strategy and implementation plan will be developed and implemented for unexpected permanent closure.

Notification of the suspension of mining operations at a mine must, in addition to the details set out in regulation 3.12 of the *Mines Safety and Inspection Regulations 1995*, include details of:

- **The reason for the suspension** and the planned duration of the suspension
- Whether the closure is total or whether access to underground and/or pit workings is to be maintained
- If underground and/or pit access is to be maintained, details of the arrangements that have been
- **Made for** the provision of regular services and emergency services to ensure the safety of employees engaged in maintaining the mine
 - The measures that have been taken to prevent unauthorised access or entry to the mine
- **The precautions that have been taken to protect** underground equipment and service installations
 - Any plans required to be prepared under section 88 of the act.

Aurenne has an existing, on-site caretaker who will continue in the event of unexpected or unplanned cessation of operations. He will attend to site security and ensure all building, pipes, electrics and storage areas are in the appropriate state of security and decommissioning to ensure no potential for leaks, spills or other emissions or damage to people or the environment.

8.3 Decommissioning

The final decommissioning phase will commence once full mining and mineral processing operations cease and will involve the following high-level actions:

- Removal/draining of all liquids/solids/materials (i.e. clearing out of all stores, chemicals, fuels, lubricants and supplies). Any remaining chemicals and hydrocarbon inventories to be returned to the supplier or sold to a third party
- Removal of all plant and equipment either for transfer to other sites, salvage/sale or disposal
- The dismantling of all salvageable infrastructure and removal to salvage laydown areas
- The demolition of all other infrastructure and removal to designated disposal sites
- The remediation of all identified contamination sites.

The Project facilities will only be provided to other users where formal agreement by the user to accept future liabilities is reached and where required, approval is obtained from the relevant agencies (e.g. DMIRS, Pastoral Lands Board).

A Decommissioning Audit will be conducted once decommissioning is complete, which will require approval by the Project Manager, the findings of which will be included in the Site Closeout Report.

8.4 Rehabilitation

Rehabilitation is the return of disturbed land to a safe, stable and non-polluting condition in consideration of beneficial uses of the land. The general objective is to return, where practicable, all areas impacted by mining to a condition that is capable of supporting pastoral activities. High level rehabilitation tasks for disturbed areas will involve:

- Design of landform to produce safe and stable slopes
 - Reshaping of landforms to this design
- Armouring of final surfaces (if required) with competent cover material to increase surface stability
 - Replacement of topsoil
- Ripping to break soil compaction and increase water infiltration
 - Seeding with local provenance seed.

Progressive rehabilitation of the disturbed areas will be undertaken throughout the LoM as areas are identified as no longer required.

8.5 Closure Work Programs

The Project Closure Domains are shown in **Figure 3** and directly relate to the activities defined and shown in the Mining Proposal, and are grouped:

1. Open pits
2. IWL (incl. tailings storage facility)
3. WRLs, ROM pad, and stockpiles
4. Processing infrastructure
5. Laydown, workshops, washdown, & accessory infrastructure
6. Water management structures (ponds and dams)
7. Transport services (haul roads, roads and airstrip/aerodrome)
8. Offices, Accommodation Village
9. Topsoil
10. Exploration.

Tables 16 to 25 detail the work programs in addition to investigation and trials required to be undertaken for the identified domains, with the current end of mine life followed by approximately 5 years of monitoring (pending fulfilment of criteria). Some of these tasks will include monitoring and maintenance programs and highlight areas where stakeholder involvement and engagement are required.

The Project LoM is 7-10 years and an estimated closure date is Q4 2031.

The closure work programs follow the overarching closure objectives and criteria defined for the Project.

8.5.1 Closure Work Program for Domain 1: Open Pits

Table 18: Closure Work Program for Domain 1: Open Pits

Feature Closure Work Program: Open Pits (VB North, Emu, Cascade)	
Description	Open pits VB North , Emu and Cascade , VB , Boags and Single Fin Stage of Rehabilitation: On going construction Estimated Closure Date: Q4 2027
Closure Outcomes & Completion Criteria	Closure Outcomes: Pastoral lease holders in agreement with closure plan (Zenith Australia Group) All landforms safe, stable and non-polluting. Completion Criteria: Remaining pit voids not accessible to the public (abandonment bunds in place) Pit lakes do not adversely affected groundwater quality; no risk of overtopping
Final Closure Design	Pit voids with pit lakes Access restricted by abandonment bund
Further research, investigation & trials tasks	Pit lake water quality sampling post-pit closure
Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audits Contaminated Sites Assessment Decommissioning Audit
Closure Materials Source	Competent/coarse rock to form abandonment bunds stockpiled during LoM
Closure Strategy	
Progressive	Limited during operations Maintain surface drainage structures to deviate water away from pits during LoM; reinstate natural surface flows post-closure
Active Closure	Remove contaminated earth (if req'd) and dispose of appropriately Remove signs, infrastructure and dispose of in a designated landfill Seal access; install abandonment & pit crest bunds No Access signage installed
Post Closure	Site audits Weed monitoring Pit lake water quality sampling (annual post-closure)
Unexpected/ Sudden Closure	Liaison and legal agreement with concurrent lease holders Zenith Australia Group Ensure public access is constrained; site caretaker engaged to control site Construct abandonment bunds

8.5.2 Closure Work Program for Domain 2: IWL

Table 19: Closure Work Program for Domain 2: IWL

Feature Closure Work Program: IWL (including TSF)	
Description	Integrated waste landform (IWL) that includes tailings storage Stage of Rehabilitation: To be Constructed Estimated (theoretical) Closure Date: 2031
Closure Outcomes & Completion Criteria	Closure Outcomes: All landforms safe, stable and non-polluting Completion Criteria: Rehabilitated areas are to have species diversity and cover that reflect surrounding vegetation, analogue vegetation communities and/or agreed future land use: Total vegetation cover is no less than 60% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment. Species diversity would be representative of a similar landform, not surrounding natural vegetation. Species would be endemic to the local area. EFA monitoring or other accepted methodology shows: • Stable or improving trend for species diversity and cover over at least 3 monitoring periods; and/or • Species diversity and cover are similar to analogue sites and follow seasonal fluctuations. • Stable or improving trends for efa indices. • Revegetation with locally endemic flora species appropriate for rehabilitated landform • Weed coverage does not exceed that recorded in analogues

	Prior to Closure Cover - Pond liners to be deep buried into final stage of IWL & must be consistent with DWER Part V Works Approval/Licence that includes: sufficient placement within inert material; distance above ground level; separation from edge of IWL; and sufficient depth of burial and cover material. Top surface Water at the decant will be allowed to evaporate. The top surface allowed to dry, settle and consolidate as pore water drains from the tailings mass At final closure, the decant structure will be sealed by: - Removal of the slotted concrete pipes and filter rock to a level between 2 m and 5 m below the surrounding tailings - Backfilling of the remaining slotted concrete pipe with dried tailings - Covering of the excavated rock layer (i.e. the rock surrounding the decant structure) with geo-fabric to prevent movement of fine material through the rock voids (Refer Cover section below in regards to store & Release Cover) - Backfilling of the excavation with tailings to the adjacent tailings level - Decant accessway dozed down to surrounding tailings surface prior to placement of mine waste cover Mix 50% competent rock with topsoil applied to batter slopes, to improve erosion resistance Cover Given that no potential of AMD at this stage a concaved (water containing) profile is favoured, combined with a store and release type cover system. The choice of final profile will be determined by tailings geochemistry and further study as part of detailed rehabilitation planning. The proposed store & release cover of IWL to be based on best practice industry standard at time of closure (such as O’Kane & Ayre 2012; Jamson et al 2019) viz: <i>a 0.6 m infiltration storage layer of soil or, stockpiled soil can be supplemented by using a 0.3 m infiltration storage layer of soil underlain by a 0.3 m RPL</i>. These covers provide a suitable balance between infiltration storage and evaporation effect resulting in low seepage. Preliminary Cover design Final overall slope angle – 18 degrees max Max reprofile height – 10 m Min. back sloping berm width - 15 m Berm backslope angle – 5 degrees Capping - 1m NAF rock armour on low stability waste types on both batters and flat surfaces WRD top design - Concave shape (5 degree backslope for 20 m from crest) with 1 m crest bund Cell bunds of 0.75m height to create 1-2 ha cells on top surface - Placement of a capping layer comprising NAF competent waste rock over tailings beach for erosion mitigation - Placement of nominal 300 mm layer of topsoil over capping, rip and seed with local species
Further research, investigation & trials tasks	Investigate IWL analogue sites in region for indicative rehabilitation approaches & revegetation success criteria Final profile will be determined by tailings geochemistry and further study as part of detailed rehabilitation planning Store & release cover for closure of facility according to industry best practice & contemporary research at time of detailed closure planning

Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audit Contaminated Sites Assessment Decommissioning Audit Groundwater bores monitoring to continue in compliance with DWER license & up to 5 years post-closure (MCP). Once monitoring is completed, monitoring and recovery bores would be plugged and decommissioned as required
Closure Materials Source	Topsoil will be sourced from stockpiles originating from the footprint. Proposed for Stockpiling on G 29/30 (surrounding IWL) Competent rock sourced from stockpile over LoM
Closure Strategy	
Progressive	Maintain drainage Limited ability to undertake progressive rehabilitation on a main access track & operational airstrip
Active Closure	Remove excess filter rock in the rock-ring to the surrounding tailings level Cover the rock layer surrounding the decant structure with geofabric to prevent movement of fine material through rock voids Backfill the annulus of the rock ring with tailings to the adjacent tailings level Cap the IWL decant areas with nominal 0.5 m thick clayey mine waste Re-contour to re-establish natural drainage lines (slope to be determined) Deep rip all compacted surfaces Store & release cover 9Deisgn to be confirmed) Topsoil will be spread, then ripped and seeded
Post Closure	Site inspection Weed monitoring Any areas which can be rehabilitated (not required by pastoralist or mining company) will be rehabilitated/revegetated and EFA monitoring to proceed as per all Domain 3 areas
Unexpected/ Sudden Closure	Decommission pipes and services Allow surface to dry (natural evaporation) Site caretaker in place; site access restricted Groundwater monitoring bores continue to be monitored and reported Site daily inspections by caretaker

8.5.3 Closure Work Program for Domain 3: WRL, ROM, Ore Stockpiles

Table 20: Closure Work Program for Domain 3: WRLs, ROM, Ore Stockpiles

Feature Closure Work Program: WRL, ROM, Ore Stockpiles	
Description	WRLs, ROM, Ore Stockpiles Area of disturbance: Stage of Rehabilitation: On going construction, no progressive rehabilitation Estimated Closure Date: WRL for VB North & Emu Q4 2025 WRL for VB , Boags & Single Fin Q4 2027 ROM & Stockpiles - 2031
Closure Outcomes and Completion Criteria	Closure Outcomes All landforms safe, stable and non-polluting. Completion Criteria Rehabilitated areas are to have species diversity and cover that reflect surrounding vegetation, analogue vegetation communities and/or agreed future land use: Total vegetation cover is no less than 60% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment; EFA monitoring or other accepted methodology shows: - stable or improving trend for species diversity and cover over at least 3 monitoring periods; and/or - species diversity and cover are similar to analogue sites and follow seasonal fluctuations. - stable or improving trends for EFA indices - Revegetation with locally endemic flora species appropriate for rehabilitated landform - Weed coverage does not exceed that recorded in analogues Rehabilitated areas provide habitat for fauna
Final Closure Design	ROM - Landform compatible with surrounding landscape; no greater than topsoil stockpiles graded and ripped back to original land surface WRLs – Closure design: Final overall slope angle – 14 degrees max Max. reprofile lift height – 10 m Min. back sloping berm width – 15 m Berm backslope angle – 5 degrees Capping – 1m NAF rock armour on low stability waste types on both batters and flat surfaces WRD top design Concave shape (5 degree backslope for 20 m from crest) with 1 m crest bund Cell bunds of 0.75m height to create 1-2 ha cells on top surface
Further research, investigation and trials tasks	WRL for Emu will be the first Closed & Rehabilitated landforms for the Project. Soil & mulch amelioration trials are proposed. Trial methodology will be developed during Q1-Q4 2025 & presented in next MPMCP revision Suitable analogue site for monitoring comparison will be investigated from local area and report during next MPMCP version Progressive rehabilitation over LoM to inform techniques and seed mixes
Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audit Contaminated Sites Assessment Decommissioning Audit
Closure Materials Source	Topsoil will be sourced from stockpiles originating from the footprint. Laterite & rock materials will be sourced and stockpiled during LoM
Closure Strategy	

Progressive	Maintain drainage Progressive rehabilitation where possible
Active Closure	Remove contaminated earth and dispose of appropriately Remove signs, delineator, culverts and dispose of in a designated landfill Re-contour to re-establish natural drainage lines (slope to be determined) Deep rip all compacted surfaces Topsoil will be spread, then ripped and seeded
Post Closure	EFA monitoring; remote sensing annually Weed monitoring Any areas which can be rehabilitated (not required by pastoralist or mining company) will be rehabilitated/revegetated and EFA monitoring to proceed as per all Domain 3 areas
Unexpected/ Sudden Closure	Liaison and legal agreement with concurrent lease holders Zenith Australia Group Ensure access track and aerodrome are in a safe and orderly state consistent with access agreements with both parties

Closure work program for Domain 4: Processing infrastructure

Table 20: Closure work program for Domain 4: Processing infrastructure

Feature Closure Work Program: Processing infrastructure	
Description	Bottle Creek Processing Plant Stage of Rehabilitation: To Be Constructed Estimated (theoretical) Closure Date: 2031
Closure Outcomes and Completion Criteria	Closure Outcomes: Co-existing lease holders in agreement with closure plan (Zenith Australia Group & Red Dirt/Ora Banda Mining) All landforms safe, stable and non-polluting. Completion Criteria: Rehabilitated areas are to have species diversity and cover that reflect surrounding vegetation, analogue vegetation communities and/or agreed future land use: ○ Total vegetation cover is no less than 65% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment EFA monitoring or other accepted methodology shows: ○ stable or improving trend for species diversity and cover over at least 3 monitoring periods; and/or ○ species diversity and cover are similar to analogue sites and follow seasonal fluctuations ○ stable or improving trends for EFA indices ○ revegetation with locally endemic flora species appropriate for rehabilitated landform ○ Weed coverage does not exceed that recorded in analogues ○ Rehabilitated areas provide habitat for fauna
Final Closure Design	Land surface compatible with surrounding land surface; reinstalment of natural surface drainage
Further research, investigation and trials tasks	Progressive rehabilitation to inform closure rehabilitation Future surface water management structures review
Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audit Contaminated Sites Assessment Decommissioning Audit
Closure Materials Source	Topsoil will be sourced from stockpiles originating from the footprint
Closure Strategy	
Progressive	Maintain drainage Limited ability to undertake progressive rehabilitation during operation
Active Closure	Decommissioning and demolition of offices, workshops, Plant infrastructure; removal from site or deep burial where appropriate Remove contaminated earth and dispose of appropriately Remove signs, delineator, culverts and dispose of in a designated landfill Re-contour to re-establish natural drainage lines (slope to be determined) Deep rip all compacted surfaces Topsoil will be spread, then ripped and seeded

Post Closure	Site inspection Weed monitoring Any areas which can be rehabilitated (not required by pastoralist or mining company) will be rehabilitated/revegetated and EFA monitoring to proceed as per all Domain 4 areas
Unexpected/ Sudden Closure	Liaison and legal agreement with concurrent lease holders Zenith Australia Group & Ora Banda Mining Ensure access track and aerodrome are in a safe and orderly state consistent with access agreements with both parties

8.5.4 Closure Work Program for Domain 5: Laydown, Workshops, & Accessory Infrastructure

Table 21: Closure work program for Domain 5: Laydown, Workshops, & Accessory Infrastructure

Feature Closure Work Program: Accessory Infrastructure	
Description	Laydown, Workshops, Washdown Bays & Accessory Infrastructure Stage of Rehabilitation: To Be Constructed Estimated Closure Date: 2031
Closure Outcomes and Completion Criteria	Closure Outcomes: All landforms safe, stable and non-polluting. Completion Criteria: Rehabilitated areas are to have species diversity and cover that reflect surrounding vegetation, analogue vegetation communities and/or agreed future land use: - Total vegetation cover is no less than 60% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment; EFA monitoring or other accepted methodology shows: - Stable or improving trend for species diversity and cover over at least 3 monitoring periods; and/or - Species diversity and cover are similar to analogue sites and follow seasonal fluctuations. - Stable or improving trends for efa indices. - Revegetation with locally endemic flora species appropriate for rehabilitated landform - Weed coverage does not exceed that recorded in analogues - Rehabilitated areas provide habitat for fauna
Final Closure Design	All buildings & infrastructure removed Land surface consistent with surrounding natural land surface profile Safe, stable, non-polluting, revegetated
Further research, investigation & trials tasks	Progressive rehabilitation will inform future revegetation
Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audit Contaminated Sites Assessment Decommissioning Audit
Closure Materials Source	Topsoil will be sourced from stockpiles originating from the footprint
Closure Strategy	
Progressive	Maintain drainage Limited ability to undertake progressive rehabilitation due to requirement for LoM
Active Closure	Remove building, infrastructure, services, signage, etc Remove contaminated earth and dispose of appropriately Re-contour to re-establish natural drainage lines (slope to be determined) Deep rip all compacted surfaces Topsoil will be spread, then ripped and seeded
Post Closure	Site inspection Weed monitoring EFA monitoring to proceed as per all Domain 5 areas
Unexpected/ Sudden Closure	Secure site; caretaker in place Daily site inspections



Feature Closure Work Program: Accessory Infrastructure	
	Services decommissioned

8.5.5 Closure Work Program for Domain 6: Water Management Structures

Table 22: Closure work program for Domain 6: Water Management Structures

Feature Closure Work Program: Water Management Structures	
Description	Water Management Structures; process water ponds/dams Stage of Rehabilitation: To be Constructed Estimated Closure Date: 2031
Closure Outcomes and Completion Criteria	Closure Outcomes: All landforms safe, stable and non-polluting. Completion Criteria: Rehabilitated areas are to have species diversity and cover that reflect surrounding vegetation, analogue vegetation communities and/or agreed future land use: Total vegetation cover is no less than 65% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment; EFA monitoring or other accepted methodology shows: • Stable or improving trend for species diversity and cover over at least 3 monitoring periods; and/or • Species diversity and cover are similar to analogue sites and follow seasonal fluctuations. • Stable or improving trends for efa indices. • Revegetation with locally endemic flora species appropriate for rehabilitated landform • Weed coverage does not exceed that recorded in analogues • Rehabilitated areas provide habitat for fauna
Final Closure Design	Surface profile consistent with surrounding natural land surface profile
Further research, investigation and trials tasks	Prior to closure a surface water assessment of structures to be retained and those to be removed will be commissioned
Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audit Contaminated Sites Assessment Decommissioning Audit
Closure Materials Source	Topsoil will be sourced from stockpiles originating from the footprint
Closure Strategy	
Progressive	Maintain drainage Limited ability to undertake progressive rehabilitation due to ongoing operational requirement
Active Closure	Close or retain surface water management structures according to revised Surface Water Assessment Remove contaminated earth and dispose of appropriately Fill-in and re-contour to re-establish natural drainage lines (slope to be determined) Process Water & Oily Water ponds to be let run dry with sludge and pond liners to be cut, folded and taken for disposal in IWL where consistent with a DWER EP Act Part V licence. Disposal of liners within the IWL will meet <i>Environmental Protection (Rural Landfill) Regulations 2002</i> & comply with DWER licensing conditions (where/if relevant at the time of closure) that ensure: burial within inert waste material; minimum separation distance from ground level (and therefore groundwater); minimum separation distance from the edge of the IWL; and a minimum burial depth from the top of the final IWL landform is complied with . If disposal to the IWL is not approved under a Part V licence, a service provider for waste disposal will be sourced for off-site disposal.

Feature Closure Work Program: Water Management Structures	
	Pond embankment walls pushed into centre and spread across the base compatible with surrounding surface Deep rip all compacted surfaces Topsoil will be spread, then ripped and seeded
Post Closure	Site inspection Weed monitoring Rehabilitated/revegetated and EFA monitoring to proceed as per all Domain 6 areas
Unexpected/ Sudden Closure	Ensure ponds/dams are fenced, drained and decommissioned so as not to hold water

8.5.6 Closure Work Program for Domain 7: Transport Services

Table 23: Closure work program for Domain 7: Transport Services

Feature Closure Work Program: Transport Services	
Description	Transport Services; haul roads and access roads/tracks Stage of Rehabilitation: To Be Constructed Estimated Closure Date: 2031
Closure Outcomes and Completion Criteria	Closure Outcomes: Co-existing lease holders in agreement with closure plan (Zenith Australia Group & Ora Banda Mining) L 29/137 held by all parties All landforms safe, stable and non-polluting. Completion Criteria: Rehabilitated areas are to have species diversity and cover that reflect surrounding vegetation, analogue vegetation communities and/or agreed future land use: • Total vegetation cover is no less than 65% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment; • EFA monitoring or other accepted methodology shows: • stable or improving trend for species diversity and cover over at least 3 monitoring periods; and/or • species diversity and cover are similar to analogue sites and follow seasonal fluctuations. • stable or improving trends for EFA indices. • revegetation with locally endemic flora species appropriate for rehabilitated landform • Weed coverage does not exceed that recorded in analogues • Rehabilitated areas provide habitat for fauna
Final Closure Design	L 29/137 are utilised by two other lease-holding parties (pastoralist and Red Dirt Minerals/Ora Banda Mining) and unlikely to be rehabilitated, unless formal agreement with stakeholder's request otherwise All other roads & tracks negotiated for retention with stakeholder, otherwise rehabilitated
Further research, investigation and trials tasks	Determine stakeholder interest in retaining any of the existing tracks & roads
Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audit
Closure Materials Source	Topsoil will be sourced from stockpiles originating from the footprint
Closure Strategy	
Progressive	Maintain drainage through culverts and road drainage structures Limited ability to undertake progressive rehabilitation on a main access track
Active Closure	Remove contaminated earth and dispose of appropriately Remove signs, delineator, culverts and dispose of in a designated landfill Re-contour to re-establish natural drainage lines (slope to be determined) Deep rip all compacted surfaces Topsoil will be spread, then ripped and seeded
Post Closure	Site inspection Weed monitoring

Feature Closure Work Program: Transport Services	
	Any areas which can be rehabilitated (not required by pastoralist or mining company) will be rehabilitated/revegetated and EFA monitoring to proceed as per all Domain 7 areas
Unexpected/ Sudden Closure	Liaison and legal agreement with concurrent lease holders Zenith Australia Group & Red Dirt Minerals/ Ora Banda Mining Ensure access track and aerodrome are in a safe and orderly state consistent with access agreements with both parties

8.5.7 Closure Work Program for Domain 8: Offices & Accommodation

Table 24: Closure work program for Domain 8: Offices, Accommodation

Feature Closure Work Program: Accommodation Village, Offices	
Description	Offices, Accommodation Stage of Rehabilitation: Accommodation Village on L 29/143; all other offices To Be Constructed predominantly on G 29/30 Estimated Closure Date: Q4 2031
Closure Outcomes and Completion Criteria	Closure Outcomes: Landform is safe, stable and non-polluting Completion criteria: Final landform is consistent with immediately surrounding undisturbed landform/land surface Rehabilitated areas are to have species diversity and cover that reflect surrounding vegetation, analogue vegetation communities and/or agreed future land use: Total vegetation cover is no less than 65% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment - EFA monitoring or other accepted methodology shows: - Stable or improving trend for species diversity and cover over at least 3 monitoring periods; and/or - Species diversity and cover are similar to analogue sites and follow seasonal fluctuations. - Stable or improving trends for EFA indices. - Revegetation with locally endemic flora species appropriate for rehabilitated landform - Weed coverage does not exceed that recorded in analogues. - Rehabilitated areas provide habitat for fauna
Final Closure Design	Infrastructure, buildings, etc removed Land surface consistent with surrounding undisturbed land surface Natural ephemeral drainage lines effective without scour Ripped - 0.5m deep Topsoil and wood-mulched
Further research, investigation and trials tasks	Nothing identified; do not require significant disturbance areas or mobilisations of high-risk material and therefore rehabilitation should be straightforward
Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audit Contaminated Sites Assessment Decommissioning Audit EFA Vegetation Monitoring conducted annually to note erosion, vegetation, weeds, and other revegetation success criteria
Closure Materials Source	Topsoil and mulch will be sourced from stockpiles originating from the Village disturbance envelope that are proposed for Stockpile on M 29/150; and adjacent to facilities on G 29/30

Feature Closure Work Program: Accommodation Village, Offices	
Closure Strategy	
Progressive	Maintain drainage features Develop an inventory of all potentially contaminated soils Investigate salvage and recycling options for infrastructure prior to decommissioning
Active Closure	Remove infrastructure Remove fuel from tanks, lines and sumps Remove all infrastructure including: bunding, tanks and buildings Concrete footings, may be left in-situ and covered with 1 m of benign mine waste All pipelines and pumps flushed and removed from site Remove and remediate all contaminated soils Re-contour to re-establish natural drainage lines Compacted areas deep ripped along the contour
Post Closure	EFA Vegetation Monitoring continues minimum 5 years post closure Records and reporting is maintained/continued
Unexpected/ Sudden Closure/ Contingency	All pumps and pipes isolated Buildings & infrastructure secured and access restrictions in place Caretaker is already resident on site and will manage access and site security Financial provisioning is cost and committed Accommodation Village & offices will be placed in C&M until Project is either sold, or buildings and infrastructure is sold

8.5.8 Closure Work Program for Domain 9: Topsoil Stockpiles

Table 25: Closure work program for Domain 9: Topsoil Stockpiles

Feature Closure Work Program: Topsoil Stockpiles	
Description	Topsoil Stockpiles & Topsoil Stockpile Facilities Stage of Rehabilitation: Constructed on M 29/150; all other Topsoil Stockpiles to Be Constructed Estimated Closure Date: Q4 2031
Closure Outcomes and Completion Criteria	Closure Outcomes: Landform is safe, stable and non-polluting Completion criteria: Final landform is consistent with immediately surrounding undisturbed landform/land surface Rehabilitated areas are to have species diversity and cover that reflect surrounding vegetation, analogue vegetation communities and/or agreed future land use: • Total vegetation cover is no less than 65% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment • EFA monitoring or other accepted methodology shows: • stable or improving trend for species diversity and cover over at least 3 monitoring periods; and/or • species diversity and cover are similar to analogue sites and follow seasonal fluctuations. • stable or improving trends for EFA indices. • revegetation with locally endemic flora species appropriate for rehabilitated landform • weed coverage does not exceed that recorded in analogues. • rehabilitated areas provide habitat for fauna
Final Closure Design	Signs, fencing, etc removed Land surface consistent with surrounding undisturbed land surface Natural ephemeral drainage lines effective without scour Ripped - 0.5m deep Topsoil and wood-mulched
Further research, investigation and trials tasks	Application of lime to improve dispersive/sodic materials; trials to be initiated & comparative areas (without lime applications)
Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audit EFA Vegetation Monitoring conducted annually to note erosion, vegetation, weeds, and other revegetation success criteria
Closure Materials Source	Topsoil and mulch sourced in situ
Closure Strategy	
Progressive	Maintain drainage features Utilise Topsoil Stockpiles for progressive rehabilitation over LoM
Active Closure	Remove signs, fencing, etc Re-contour to re-establish natural drainage lines Compacted areas deep ripped along the contour
Post Closure	EFA Vegetation Monitoring continues minimum 5 years post closure Records and reporting is maintained/continued

Feature Closure Work Program: Topsoil Stockpiles	
Unexpected/ Sudden Closure/ Contingency	Caretaker is already resident on site and will manage access and site security Financial provisioning is cost and committed

8.5.9 Closure Work Program for Domain 10: Exploration

Table 26: Closure work program for Domain 10: Exploration

Feature Closure Work Program: Exploration	
Description	Exploration Area of disturbance: TBC Stage of Rehabilitation: Progressive Estimated Closure Date: Q4 2031
Closure Outcomes and Completion Criteria	Closure Outcomes Areas of temporary disturbance progressively rehabilitated Completion criteria Final landform is consistent with immediately surrounding undisturbed landform/land surface Rehabilitated areas are to have species diversity and cover that reflect surrounding vegetation, analogue vegetation communities and/or agreed future land use: • Total vegetation cover is no less than 65% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment • Weed coverage does not exceed that recorded in analogues.
Final Closure Design	Land surface consistent with surrounding undisturbed land surface Natural ephemeral drainage lines effective without scour
Further research, investigation and trials tasks	Nil
Closure Monitoring & Maintenance	Rehabilitation/ Compliance Audit to note erosion, vegetation, weeds, and other revegetation success criteria
Closure Materials Source	NA
Closure Strategy	
Progressive	Progressive rehabilitation according to PoW approvals
Active Closure	Remove all bags, wastes, rubbish etc Remove and remediate all contaminated soils Re-contour to re-establish natural drainage lines Compacted areas deep ripped along the contour
Post Closure	Records and reporting is maintained/continued
Unexpected/ Sudden Closure/ Contingency	Remove refuse, plug and secure pipes Grade and tyne samples back to ground level

9 CLOSURE MONITORING AND MAINTENANCE

The aim of closure monitoring and maintenance is to ensure the success of the rehabilitation and closure works and achievement of closure criteria within the framework of agreed post-mining land- use. Monitoring will be undertaken on regular basis during operation and post-closure and the frequency will decrease as the rehabilitation progresses and will cease completely once the closure objectives and criteria have been met.

Section 8.5 (Closure Work Program) contains details of the monitoring and maintenance required. The work program will be implemented during development of the closure monitoring and maintenance programs.

A summary of the key closure monitoring and maintenance requirements is summarised following.

9.1 Post-Closure Monitoring Requirements

Once final rehabilitation and closure work has been completed, the post-closure monitoring program will commence, with the aim of confirming that rehabilitation has been effective and closure criteria satisfied. In general terms, post-closure monitoring will be incorporated into the Project closure and include:

- Public safety Confirm that access to rehabilitated landforms has been effectively prevented and will not allow access to vehicles. Third party access is managed by the installation of a locked gate at the site entry points and construction of abandonment bunds.
- Geotechnical stability Confirm that earthworks have been completed as per design, and there is no significant subsidence, slumping or slippage in the structure.
- Physical stability Confirm that no significant erosion is occurring and no undermining of material by wind or water.
- Revegetation Confirm that rehabilitated areas are likely to become comparable with the surrounding vegetation undisturbed by mining.

It is expected that on-ground mine closure works are likely to span a period of approximately 6-9 months. This will be followed by a period of post-closure monitoring and maintenance, which is envisaged to continue for a minimum five-year period post-closure but will continue until all completion criteria are met. The frequency of monitoring will decrease as closure progresses and will cease when closure objectives and completion criteria have been met, leading to relinquishment of tenements.

Table 27 is an indicative schedule based on an anticipated mine commencement in 2022 with completion of mining in Q4-2031. The execution of the monitoring program is the responsibility of the Mine Manager.

Table 27: Closure Monitoring Program Schedule – based on estimated monitoring of 5 years

Monitoring Program	Methodology	2032	2033	2034	2035	2036	2037	2038*
Safety inspections	Visual inspection to identify any safety/access issues			A	A	A	A	A
Groundwater monitoring	In accordance with the Groundwater Operating Strategy (2021)	A	A	A	A	A	A	A
Rehabilitation/ Compliance Audit	Visual inspection/ observation of erosion Visual inspection of presence and distribution of weeds		A	A	A	A	A	A
Contaminated Sites Assessment	Site audit		A					
Decommissioning Audit	Site audit		A					
Vegetation Monitoring	Field (EFA) verification		A	A	A	A	A	A

Green Cells: Closure works; Orange Cells: Post Closure. A = Annually.

*Closure monitoring is anticipated to be conducted for a minimum of five years post closure (completion criteria are expected to be met within five years). Should rehabilitation not reach completion criteria within the minimum five-year period, monitoring will be extended annually until criteria are met.

9.2 Rehabilitation/Compliance Audit

A Rehabilitation/Compliance audit will be conducted annually for each disturbance domain with inspection and the following recorded:

- Description of each disturbance
- Total area of each disturbance
 - Total area rehabilitated
- Description of rehabilitation progress
 - Stage of rehabilitation completed (based on dmirs rehabilitation stages)
 - Proposed rehabilitation/remedial tasks required.

Rehabilitation will be assessed based on its compliance with the compliance register completion criteria. The Rehabilitation/Compliance audit will be used to further develop the Closure Works Program reported in the MCP until all areas are fully rehabilitated (i.e. sites classified as 'rehabilitated land' in MRF submission) and will be reported in the AER/MRF.

Post decommissioning monitoring is a vital component of the sites closure process and is fundamental to demonstrating that the site is meeting its nominated completion criteria; it will be undertaken annually for a minimum of 5 years to ensure a positive trajectory and may indicate where remedial actions if required.

9.3 Contaminated Sites Assessment & Reporting

Aurenne Mining is obliged to report any known or suspected contamination on its tenements that may present a material hazard to human health or the environment, as defined by the *Contaminated Sites Act 2003*, to DWER's Contaminated Sites Branch. DWER may then require Aurenne to investigate the contamination, and depending on the outcome of the investigation, remediate it.

If contamination does not present an immediate threat, remediation may often be left until closure, subject to consultation with DWER. Liability for any contamination under the CS Act is however separate to obligations under the Mining Act and can remain even after the site is relinquished and tenements extinguished.

Aspects of Project operations have potential to create liabilities under the CS Act if not properly managed. These include release/spills of tailings, chemicals, fuels and other hydrocarbons. Aurenne manages these aspects during operations through measures to prevent contamination such as standard work procedures, maintenance, spill reporting and clean-up, and monitoring (**E-FRM-005 Environmental Incident Form**, **E-PRO-004 Hazardous Substances & Dangerous Goods Management Procedure**, **E-PRO-012 Environmental Spill Management Procedure**, **E-REG-001 Environmental Event Management Register**; **E-PRO-016 Environmental Audit Procedure**; **E-REG-007 Environmental Risk Register (Appendix A2 EMS)**).

On completion of mining, an assessment of the Project to ensure that compliance with the *Contaminated Sites Act 2003* and Regulations 2006 are met. Details on potential contamination (including remediation activities) will be recorded and reported annually in the AER. Currently no contaminated sites are record in the Project area or vicinity (**Appendix E**).

9.4 Decommissioning Audit

A decommissioning audit will be conducted at the completion of decommissioning by the Project Manager for all areas of disturbance. All areas of disturbance will be inspected, and the following will be recorded:

- Description of infrastructure remaining
- Total area of infrastructure remaining
- Assessment of legal obligations/commitments for infrastructure
 - Total area rehabilitated
- Stage of rehabilitation completed (based on dmirs rehabilitation stages)
 - Proposed decommissioning tasks required.

Completion of decommissioning will be assessed based on its compliance with the compliance register and completion criteria. Results of the audit will be reported to the DMIRS in the Site Closeout Report to obtain approval for final closure.

9.5 Ecosystem Function Analysis Monitoring

Remote sensing vegetation trend analysis will be undertaken over the LoM with a baseline capture in 2021 (pre-disturbance). To verify the annual remotely sensing data and analysis, on-ground monitoring will support the data analysis. In the absence of a better monitoring system, Ecosystem Function Analysis (EFA) (Lacy et al 2008 after Tongway) will be established at disturbance domains once the rehabilitation has been completed and analogue sites in the target ecosystem. Rehabilitated areas will be assessed against comparable characteristics within the local environment and measured against set completion criteria.

Monitoring data will be used to determine whether rehabilitated landforms are showing positive trends in vegetation cover and diversity and are meeting the following performance indicators:

- Total vegetation cover is no less than 60% of analogue site in a similar land use based on the vegetation monitoring methodology at the time of relinquishment
 - EFA monitoring or other accepted methodology shows:
 - Stable or improving trend for species diversity and cover over at least 3 monitoring periods; and/or
 - Species diversity and cover are similar to analogue sites and follow seasonal fluctuations
 - Stable or improving trends for EFA indices.

In conjunction with the landscape/vegetation monitoring an assessment of weed species at the permanent sites will be made (identification/ density).

The results of the EFA monitoring will be compared against completion criteria to determine whether performance indicators have been met and reported annually in the AER. Should monitoring indicate completion criteria targets are not being met/trending towards completion criteria, a rehabilitation specialist will be commissioned to assess the rehabilitated landforms prior to the next monitoring period and determine any remediation/maintenance works required. Details on the assessment will be reported to DMIRS in the AER. Following this a rehabilitation maintenance programme will be implemented to address any landform stability or other issues that arise through the monitoring programme.

EFA monitoring is anticipated to be conducted for a minimum of five years post closure (completion criteria are expected to be met within five years). Should rehabilitation not reach completion criteria within the minimum five-year period, monitoring will be extended annually until criteria are met.

9.6 Remote Sensing Vegetation Condition

Aurenne has recently engaged a remote sensing-ecology consultancy to undertake annual aerial captures of the Project area to obtain both a baseline capture of vegetation, and to utilise this as a baseline for future condition monitoring. There is additional capacity to utilise this technology and interpretation for future post-closure revegetation/rehabilitation monitoring and troubleshooting. As the mine develops the MPMCP will be updated with additional content is regards to ongoing remote sensing of vegetation condition.

9.7 Post-Closure Maintenance Requirements

The following maintenance requirements will need to be accounted for during the post closure phase for the preliminary infrastructure:

- Weed control and management of over-represented plant species
 - Minor erosion maintenance around landforms
 - Integrity of the ephemeral surface drainage lines
- Maintenance of equipment and infrastructure associated with the closure implementation and monitoring, including required roads.

10 FINANCIAL PROVISIONING FOR CLOSURE

Aurene understand the importance of ensuring adequate funds are set aside for rehabilitation and closure to ensure the community is not left with an unacceptable liability.

The costing methodology is based on the total area of disturbance for all components outlined in Mining Proposal as summarised in Error! Reference source not found.. The costing considered estimated volumes of material requiring placement, hours of equipment usage or resource hours required. The total disturbance footprint is approximately 2,108 ha and includes two open pits, two WRLs, IWL, ROM, haul roads and Processing Plant, supporting services and infrastructure with a 200-person Village. There is potential for the majority of assets to be sold given they are all newly constructed and there is a demand in the current market.

Cost planning and contingency for the closure of this Project component will continue to be refined and adjusted as following the submission of future MPMCP revisions as the Project develops. Costs will include review of published information to improve accuracy of key cost components (such as Wilson et al 2003) **Figure 19**.

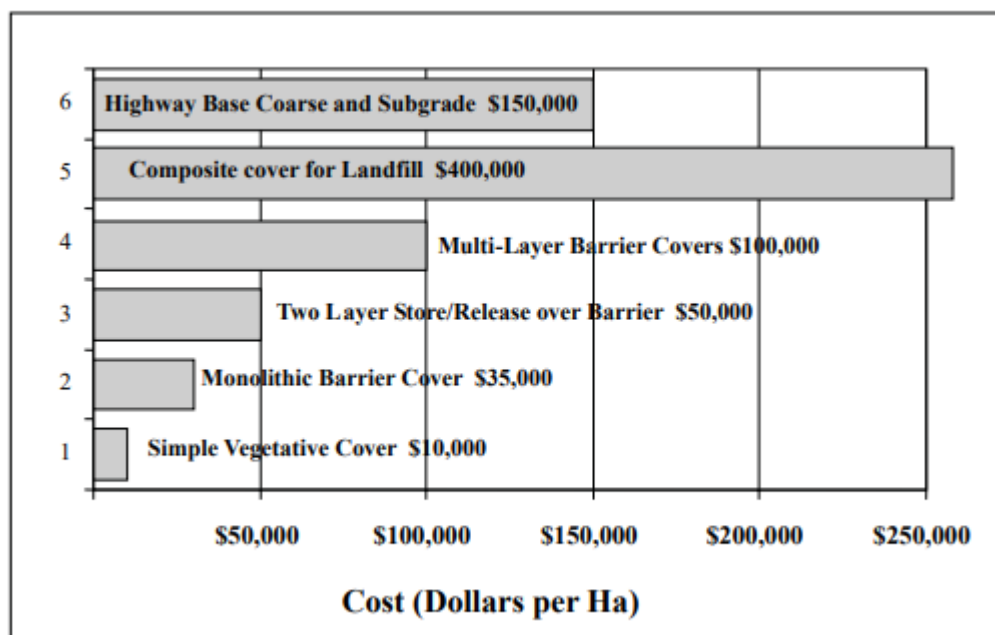


Figure 19: Indicative costs for cover construction (Wilson et al, 2003)*

**Dollars amounts are approximate for construction in Australia, Canada & USA, in local currency.*

The total disturbance areas provided in **Section 1.6.1** are the basis for closure cost model calculations.

Table 28: Costed Activities Related To Domains

Domain	Indicative costed activities
Integrated Waste Landforms (IWL)	- Reprofiling of embankments and upper surface, transport & application of rehabilitation materials in accordance with cover strategy, ripping, seeding, fertilising - Capital and operating costs associated with post-closure water management (e.g. IWL seepage management once processing ceases; groundwater bore monitoring)
Laydown, Workshops, Washdown & Accessory Infrastructure	- Decommissioning & removal of infrastructure (building, concrete, services) - Reprofiling, topsoil application, ripping/seeding - Contaminated Site Audit
Offices, Accommodation Village	- Decommissioning & removal of infrastructure (building, concrete, services) - Reprofiling, topsoil application, ripping/seeding
Open Pit	Construction of pit abandonment bunding, blocking of access, signage to warn of open void
Processing Infrastructure	- Infrastructure demolition, decontamination (e.g. cleaning out of tanks and pipes) and disposal, removal or burying of concrete footings and rehabilitation of the remaining disturbance footprint (including laydown areas) - Reprofiling, topsoil application, ripping/seeding
Topsoil stockpile	Topsoil stockpiles will be utilised for rehabilitation; transport, then ripping & reseeded; removal of signage, fencing
Transport Services	Reprofiling, topsoil application, ripping/seeding of roads that are not required to be retained post-closure. Reinstatement of surface water drainage systems, removal of infrastructure such as culverts
Water Management Structure	- Removal of dam liners and embankments, re-profiling, transport, application of rehabilitation materials, ripping, seeding, fertilising - Costs of rehabilitating any drainage structures or constructing structures if required post-closure
WRLs, ROM Pad, Stockpiles	Re-profiling, transport and application of rehabilitation materials, ripping, seeding, fertilising
Exploration	- Should be minimal as progressive rehabilitation is done in accordance with PoWs - Any residual works may incl 2 ptude: Plugging of drill holes, rehabilitation of drill pads, sumps and grid lines. - Audit of exploration disturbance to ensure no outstanding liability
Monitoring	Estimated costs of conducting the proposed post-closure monitoring program both EFA , remote sensing, & associated operational monitoring (e.g. groundwater monitoring)
Contingency	- Project Management - Rehabilitation issues requiring intervention - Caretaker
Resourcing	Staffing & mobilisation costs for min. 5 years post-closure

10.1 Assumptions

The following assumptions were made in determining the closure costs for mining and processing:

- The proposed Aerodrome (airstrip upgrade) and major access (North-South) track (L 29/137) are under lease with co-existing tenement holders and will likely be requested to be retained. Therefore, costs are limited to the decommissioning of the terminal building and associated infrastructure (toilets, service, power generation, etc)
- The mine closure schedule is as per the current life of operations as described in the MPMCP with post closure monitoring and maintenance commences during 2032 and closure works and runs over a five-year period to 2037-8
 - Costs are based on current day closure costs
 - All redundant infrastructure will be decommissioned and removed from site
 - Labour redundancy and other human resource costs are not included
- Closure cost estimate assumes a planned closure and does not include costs for sudden or unexpected closure or for the mine being put on a care and maintenance program
 - Sufficient rehabilitation resources (i.e. topsoil) are available to complete closure works
 - Cost assumes no resale value of scrap metal
 - Cost does not include transport of removable items beyond the mine lease boundary
 - Allowance has been made for potential remediation work for a period of five years
- Allowance has been made for ongoing monitoring costs and rehabilitation monitoring for a period of five years.

In the event of temporary closure, Aurenne has a caretaker at the Project who would undertake any care and maintenance activities required.

Based on the infrastructure and activities detailed in this MCP, Aurenne has calculated the cost of the closure works and details of the costings, based on the assumptions above can be provided upon request.

The financial closure provisions will be reviewed annually by the Chief Financial Officer (CFO) to ensure that it adequately covers the costs of rehabilitation and decommissioning of the project based on the proposed mine schedule. Financial provisioning for Closure is presented by the CFO to the Aurenne Group board of directors.

11 MANAGEMENT OF INFORMATION AND DATA

Aurene has document, data, and information management systems in place for records of all key closure information and data. These systems will continue to operate following site closure, and all relevant data will be retained accordingly, and includes:

- Monitoring databases and analytical reports
- Regulatory reports for example Annual Environmental Reports
 - Rehabilitation trials, studies and reports
 - Information regarding areas of disturbance
- Availability and volumes of materials required for rehabilitation
 - Life of mine plans
- Layout diagrams/maps of infrastructure and landforms
- Design, construction and waste characterisation details of landforms
- Location and volumes of waste and controlled waste tracking records
- Significant spills/incidents and Regulatory reportable incident records
 - Correspondence with regulators and other stakeholders.

Aurene utilises spatial data for determining, interrogating and managing the closure domains, elements and rehabilitation activities. Spatial data is maintained for closure planning, which will contain the following information:

- Tenements
- Mine Activity Reference
- Mine Activity Type
 - Year Disturbed
- Disturbance Area
- Approved Disturbance
- Disturbance Category
- Disturbance Unit Rate
- Rehabilitated Area
- Land Under Rehabilitation Category
 - Rehabilitation Unit Rate
 - Total Area of Activity Ha
 - RLE Total
 - FCR
 - Notes.

Closure planning is a complex process that commences at initial mine planning and evolves with the Project and improved knowledge. Therefore, this MCP is intended to be a live document that is subject to changes during mine operations and mine closure and will be subject to annual review and triennial revisions (as a minimum) to DMIRS, in accordance with s83AA of the *Mining Act 1978*.

The Project will implement a management strategy to review and update this plan every three years (or at such time as specified in writing). Consequently, completion criteria will be reviewed every three years as part of the schedule for review and submission of this MCP. Measures for monitoring the attainment of completion criteria may be improved with research and best practice over time.

This plan will be reviewed periodically and updated accordingly for currency with legislation, standards, guidelines and operational requirements. It is intended that as much rehabilitation as possible will be undertaken progressively during the life of the mine. This will allow

rehabilitation methods to be tested and refined to determine the most suitable and successful method for final rehabilitation.

Data management and environmental standards are managed and stored within the Project *Environmental Management System* (relevant EMS documents provided in **Appendix A2**).

12 REVISED MINE CLOSURE PLAN

A summary of modifications from the previous version of this MCP is provided in Table 29.

Table 29: Summary of modifications from previous version

Section	Change
Cover	Update to Project stage & tenements
Checklist	Updated
1.3	Additional tenements
1.6.1	Updated disturbance areas
1.6.3.2	Management of PAF material anticipated from the Southwark Open Pit.
4.4.3	Waste characterisation from Southwark where PAF material is anticipated.
4.4.4	Waste characterisation from Southwark where PAF material is anticipated.
4.7.1	Materials for rehabilitations show sufficient NAF material to encapsulate any PAF.
Table 12	Risk 5 – New treatment added Risk 16 – New risk pathway and treatment added. Change to residual risk Risk 18 – New risk pathway and treatment added. Change to inherent & residual risk
Table 13	PAF material management a priority action.

12.1 DMIRS Request for Information (RFI)

An RFI on the MCP Reg ID 101557 was received in February 2022 and the responses are provided in **Appendix K**.

A second RFI was received 28 March 2022 and responses are provided in **Appendix K**.

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14 APPENDICES