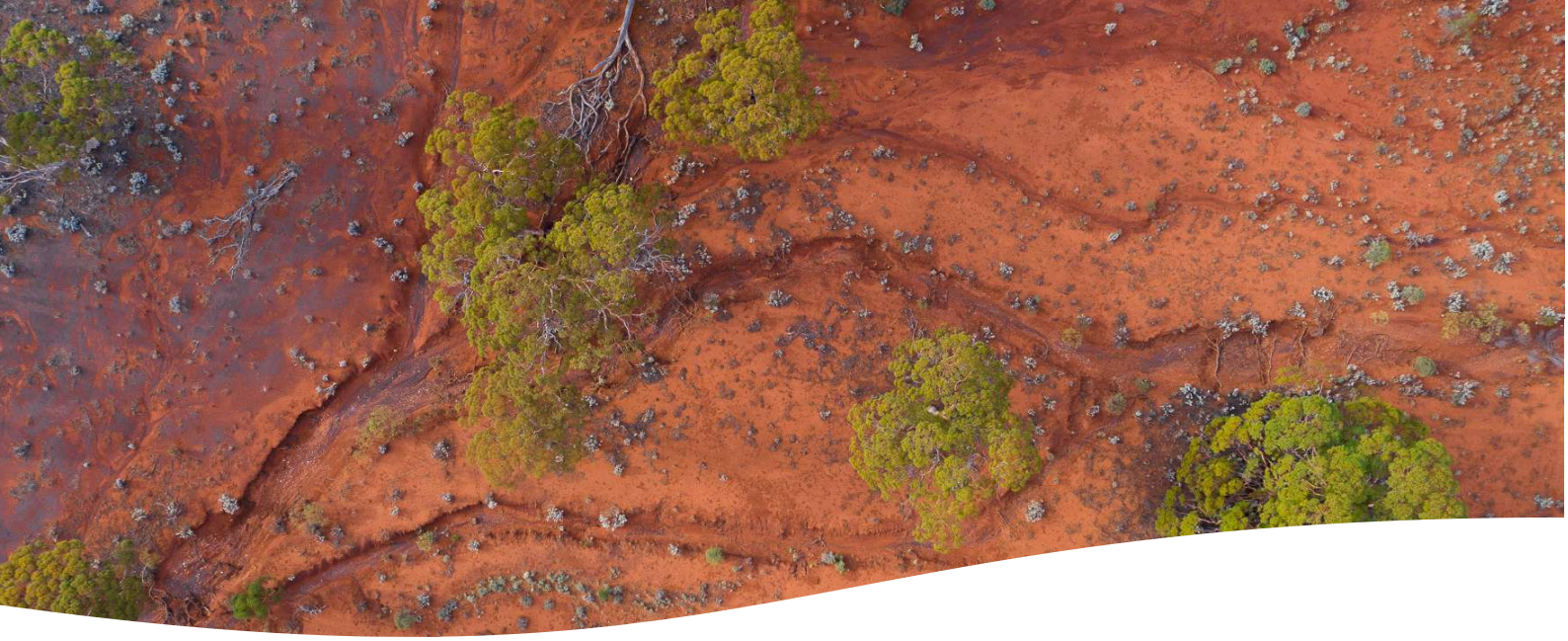

Works Approval Supporting Document for Heap Leach Trial at Mulgabbie North

Prepared for OzAurum Resources Ltd

Version: 1.1

Date: 25/08/2025

Prepared by

astill consultants

Revision Summary

Document Name	Works Approval Supporting Document for Heap Leach Trial at Mulgabbie North			
Document Number	AC25-OZLHBM-01			
Revision	**Date**	**Author**	**Reviewer**	**Comments**
0.1	2/04/25	[redacted]		Draft issued to client
1.0	30/04/25			Final submitted to DWER
1.1	25/08/25			Updated based on DWER comments (APP-0028893)

Contents

Project Overview

OzAurum Mines Pty Ltd, Line Hydrogen (Australia) Pty Ltd and BIM Metals Pty Ltd, together in a joint venture project, are proposing to commence development of a heap leach trial at the Mulgabbie North Project (the Project). A trial is proposed to allow further metallurgical research to take place and ensure Project feasibility prior to commencing a larger operation.

To allow the heap leach trial to commence, this Works Approval application is requesting approval for construction, commissioning and time-limited operations of the activity categories shown in **Table 1**. The operation will have a nominated throughput of 150,000 tonnes per annum during the trial stage.

All proposed activities are situated on M28/240 held by OzAurum Mines Pty Ltd.

Table 1: Works Approval Categories

Category	Activity	Design Capacity	Nominated Throughput
Category 5: Processing or beneficiation of metallic or non-metallic ore. Premises on which – (a) metallic or non-metallic ore is crushed, ground, milled or otherwise processed.	Crushing, agglomeration and gold recovery.	250,000 tonnes per annum	150,000 tonnes per annum.
Category 7: Vat or in situ leaching of metal. Premises on which metal is extracted from ore with a chemical solution.	Heap leach of gold bearing ore.	150,000 tonnes per annum	150,000 tonnes per annum.

Clearing of approximately 10 ha of native vegetation is required for the Project. A Native Vegetation Clearing Permit application is in the process of being submitted and then assessed, which will have provision for a larger project footprint in the future.

This document provides supporting information and attachments and should be read alongside the Works Approval application form.

Attachment 1A: Proof of Occupier Status

Department of **Energy, Mines, Industry Regulation and Safety**

GOVERNMENT OF WESTERN AUSTRALIA

eMiTS MINERAL TITLES ONLINE

MINING TENEMENT SUMMARY REPORT

MINING LEASE 28/240

Status: Live

TENEMENT SUMMARY

Area: 261.90000 HA
Mark Out : 25/11/1999 13:20:00
Received : 26/11/1999 08:45:00
Term Granted : 21 Years
Death Reason :
Death Date :
Commence : 07/01/2008
Expiry : 06/01/2029

CURRENT HOLDER DETAILS

Name and Address
OZAURUM MINES PTY LTD
OZAURUM MINES PTY LTD, PO BOX 10396, KALGOORLIE, WA, 6433

DESCRIPTION

Locality: MULGABBIE
Datum: Datum situated at GDA 51J 0441766 East 6665976 North identical to P28/959 & late P28/747
Boundary: THENCE: 1600 metres bearing 135 degrees 350 metres bearing 220 degrees 420 metres bearing 133 degrees 1100 metres bearing 220 degrees along boundary of Late Surveyed 28/38. 1270 metres bearing 315 degrees 100 metres bearing 45 degrees 600 metres bearing 315 degrees 400 metres bearing 45 degrees 200 metres bearing 315 degrees 900 metres bearing 45 degrees BACK TO DATUM Application being conversion of Prospecting Liciences 28/959 and 28/960 under Section 49 of the Act.

Area :

Type	Dealing No	Start Date	Area
Surveyed		27/05/2016	261.90000 HA
Granted		07/01/2008	251.00000 HA
Applied For		25/11/1999	251.00000 HA

SHIRE DETAILS

Shire	Shire No	Start	End	Area
KALGOORLIE-BOULDER CITY	4280	25/11/1999		184.12000 HA
MENZIES SHIRE	5390	25/11/1999		77.78000 HA

RENT STATUS

Due For Year End 06/01/2026: PAID IN FULL
Due For Year End 06/01/2027: [redacted]

EXPENDITURE STATUS

Expended Year End 06/01/2025: EXPENDED IN FULL
Current Year Commitment : [redacted]

Attachment 1B: ASIC Company Extract

ASIC
Australian Securities & Investments Commission

Forms Manager
Company Officeholders

Company: OZAURUM MINES PTY LTD ACN 645 117 111

Company details

Date company registered	14-10-2020
Company next review date	14-10-2025
Company type	Australian Proprietary Company
Company status	Registered
Home unit company	No
Superannuation trustee company	No
Non profit company	No

Registered office

UNIT 1 , 15 WILLIAMS STREET , WEST KALGOORLIE WA 6430

Principal place of business

UNIT 1 , 15 WILLIAMS STREET , WEST KALGOORLIE WA 6430

Ultimate holding company

OZAURUM RESOURCES LIMITED

ACN 643 244 544

Incorporated in AUSTRALIA

Officeholders

[redacted]

Office(s) held: Director, appointed 14-10-2020

[redacted]

Secretary, appointed 14-10-2020

[redacted]

Office(s) held: Director, appointed 14-10-2020

Company share structure

Share class	Share description	Number issued	Total amount paid	Total amount unpaid
ORD	ORDINARY	2	2.00	0.00

Members

OZAURUM RESOURCES LIMITED ACN 643 244 544 — UNIT 1 , 15 WILLIAMS STREET , WEST KALGOORLIE WA 6430

Share class	Total number held	Fully paid	Beneficially held
ORD	2	Yes	Yes

Document history

These are the documents most recently received by ASIC from this organisation.

Received	Number	Form	Description	Status
15-10-2021	7EBM32534	484	CHANGE TO COMPANY DETAILS	Processed and imaged
13-09-2021	7EBL30258	484	CHANGE TO COMPANY DETAILS	Processed and imaged
01-07-2021	7EBJ03761	484	CHANGE TO COMPANY DETAILS	Processed and imaged

Attachment 2: Premises Maps


442000
442100
442200
442300
442400
6665500
6665400
6665300
6665200
6665100
6665000
MB2
Process Plant
MB4
PL Pond
Heap Leach Pad
MB1
MB3
Overland conveyor
ROM
Processing Infrastructure
Mulgabbie North Works Approval for Trial Heap Leach
OzAurum Resources, Line Hydrogen and BIM Metals
0
50
100 m
GDA 2020 / MGA Zone 51
Legend
Prescribed Premises Boundary
Site Layout
Monitoring Bores
Heap Leach Pad
PL Pond
Process Plant
Overland conveyor
Pit
ROM
Pipeline corridor
Other activities
astill
consultants
Version: 1.0
Author: S.T
Date: 24/04/25

Attachment 3A: Environmental Commissioning Plan

1. Environmental Commissioning

Environmental commissioning activities will be performed for the heap leach pad to test integrity of the liner achieves a minimum permeability of 3.5 x 10^{-9} metres/second (m/s)., prior to commencing ore deposition on the pad. This will occur in a single stage once all liner earthworks have been complete and involve a series of tests which include:

- High load puncture test;
- High load permeability test; and
- High load interface shear test.

Upon successful completion of these tests, deposition of ore material on the pad can commence. If there is a failure during the tests, additional compaction work and testing will be carried out until minimum permeability is achieved.

Attachment 3B: Proposed Activities

1. Construction Activities

The following sections describe proposed construction activities. A process flowchart is shown in **Figure 1.**

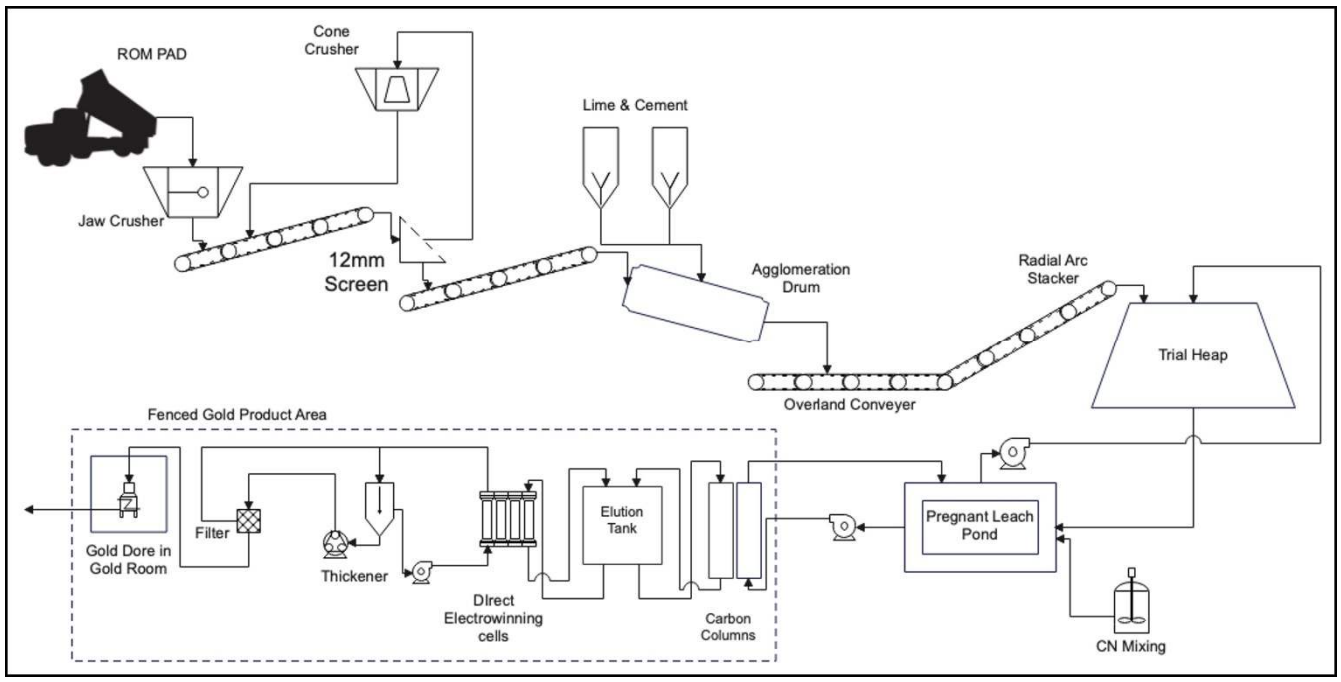

Figure 1: Process Flowchart

1.1 Crushing and Screening

Ore from the run-of-mine (ROM) pad will be loaded into a feed bin and crushed by a primary jaw crusher, followed by a secondary cone crusher. Crushed ore will then be conveyed and screened by a 12-millimetre (mm) sizing screen and oversize material recirculated for further crushing.

Crushing and screening activities will occur on the ROM pad, as shown in **Attachment 2.** An indicative design configuration of the ROM pad is provided in **Figure 2** below.

1.2 Agglomeration

Lime and cement will be added to crushed ore as it enters an agglomeration drum to assist with aggregation of fines and improve percolation. The agglomeration drum is a large, rotating drum that tumbles material to agglomerate fines into more uniform particle size distribution which helps maximise gold recovery.

Lime and cement will be stored in purpose built bulk storage silos of 100 m^3 for lime and 220 m^3 for cement. Road trains will be used to deliver and refill the silos using engineered transfer points. All storage and handling will be carried out in accordance with the *Dangerous Goods Safety Act 2004*.

Agglomeration activities will occur on the ROM pad, as shown in **Attachment 2.** An indicative design configuration of the ROM pad is provided in **Figure 2** below.

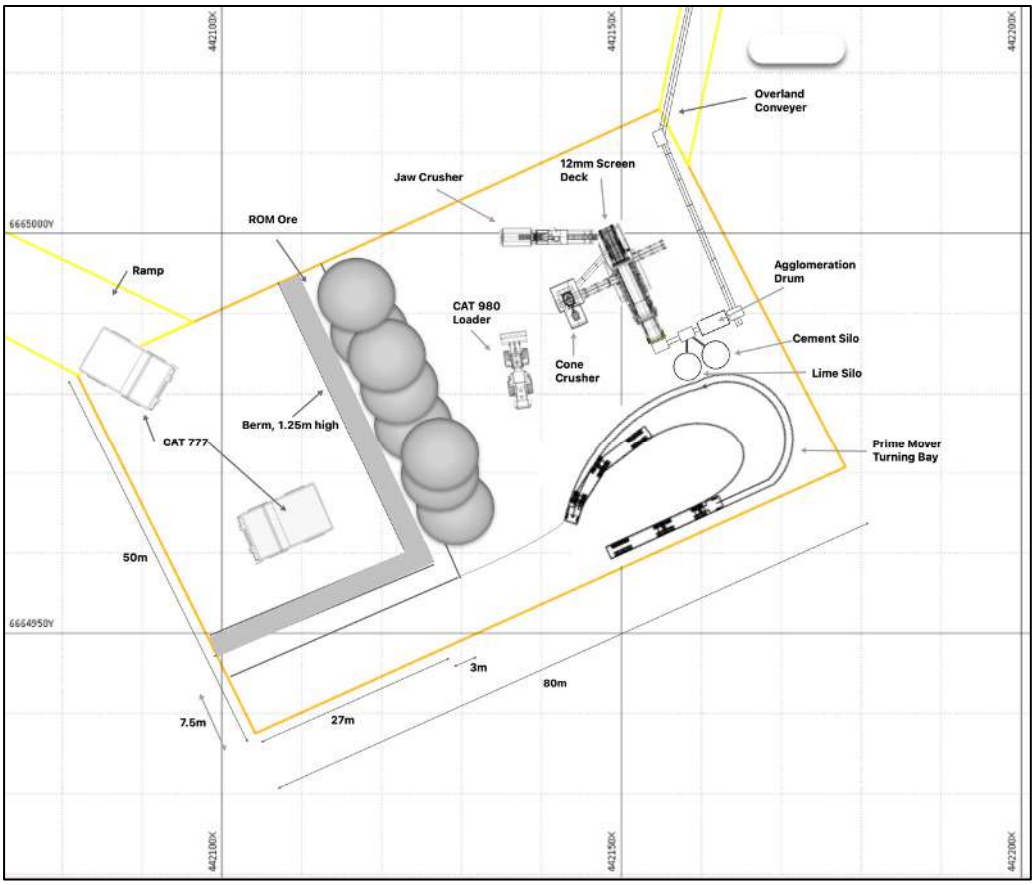

Figure 2: ROM pad indicative design configuration

1.3 Overland Conveyor

After agglomeration, an overland conveyor of approximately 335 metres (m) length will be used to transfer ore from the ROM pad to the heap leach pad, as shown in **Attachment 2.**

1.4 Heap Leach

The heap leach pad will cover an area of approximately 1 hectare (ha). To prepare the pad, the area will firstly be cleared of all vegetation and the ground assessed for any oversize or sharp material to be removed. Any dips will be filled with waste rock material. A dozer with a laser level will be used to establish ground gradient to the perimeter drains of the heap leach. The soil base will then be compacted using rollers and vibratory plates and lined with High Density Polyethylene (HDPE, 2 mm thick) to maintain a minimum permeability of 3.5×10^{-9} m/s. The liner will cover the entirety of the heap leach pad including perimeter drains and bunds. HDPE will be anchored on outside embankments of the perimeter bunds to prevent any wind damage or erosion. Above the HDPE will be a cushion layer of sand or gravel to protect the liner system and facilitate efficient drainage. A cross-section of the heap leach pad liner is provided in **Figure 4.**

Ore will be deposited on the heap leach pad from an overland conveyor, via a mobile conveyor to form a pile approximately 12 m in height resulting in a total volume of 60,000 m^3 (150,000 t).

Cyanide will be used as the primary leaching solution to extract gold with the addition of hydrochloric acid and caustic soda to modify pH. Cyanide, hydrochloric acid and caustic soda will be transported and stored on site in purpose-built tanks situated within concrete bunds. The

cyanide solution will be pumped via pipelines to the heap leach pad where it is sprayed over the ore pile using a sprinkler irrigation system.

A drain will be constructed around the perimeter of the pad to collect leachate and direct it towards the pregnant leach pond. The perimeter drain will also act as surface water management to capture runoff form the heap leach during rainfall events. A perimeter bund will surround the entire heap leach pad.

The pregnant leach (PL) pond will cover an area of approximately 0.2 ha. The base will comprise of hypernet sandwiched between a top layer of 1.5 mm HDPE textured liner and a bottom layer of 1 mm smooth HDPE liner to maintain a minimum permeability of 3.9×10^{-9} m/s, with a layer of sand between the two. A monitoring pipe will also be installed between the layers to monitor any potential leakage. The pond will be below ground with crests constructed using competent earthen material and the liner anchored within a perimeter trench. The pond will have a maximum operating level (MOL) of 10 m, including a minimum operating freeboard of 0.5 m, resulting in a capacity of 8,238 m^3. A cross-section of the PL pond is provided in **Figure 5.**

Heap leach activities will occur in the process area, as shown in **Attachment 2.** An indicative design configuration of the heap leach and processing plant is provided in **Figure 3** below.

1.5 Gold Recovery

The pregnant solution is transferred from the PL pond to the gold recovery area, where it undergoes carbon absorption to extract gold from the PLS solution. The gold is then eluted from the carbon into a higher-grade solution, which circulates from the elution tank through direct electrowinning cells. The solution is processed through a thickener and filter before being converted into gold dore. The gold recovery plant will be located within a concrete bunded area, with high-security zones, including the gold room, enclosed by a perimeter fence.

Gold recovery activities will occur in the process area, as shown in **Attachment 2.** An indicative design configuration of the heap leach and processing plant is provided in **Figure 3** below.

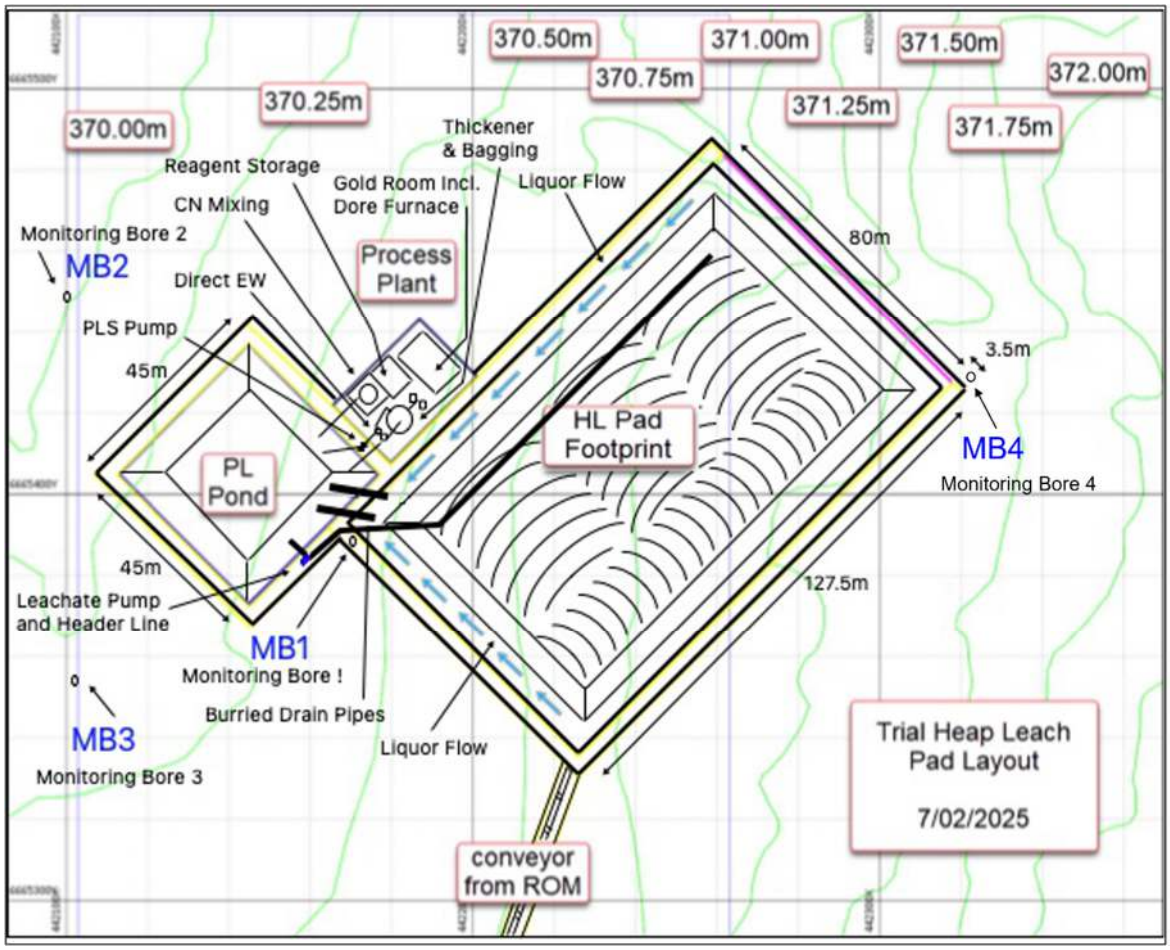

Figure 3: Heap leach and processing plant indicative design configuration

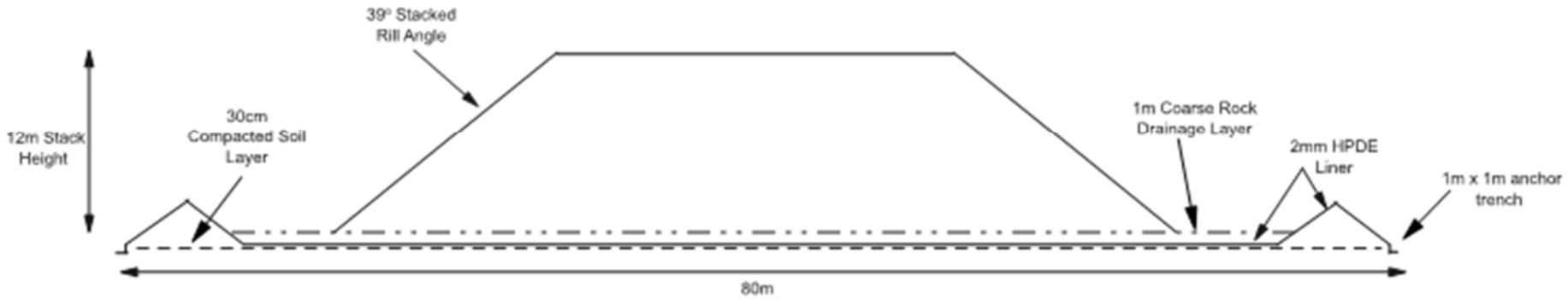

Figure 4: Cross-section of heap leach pad

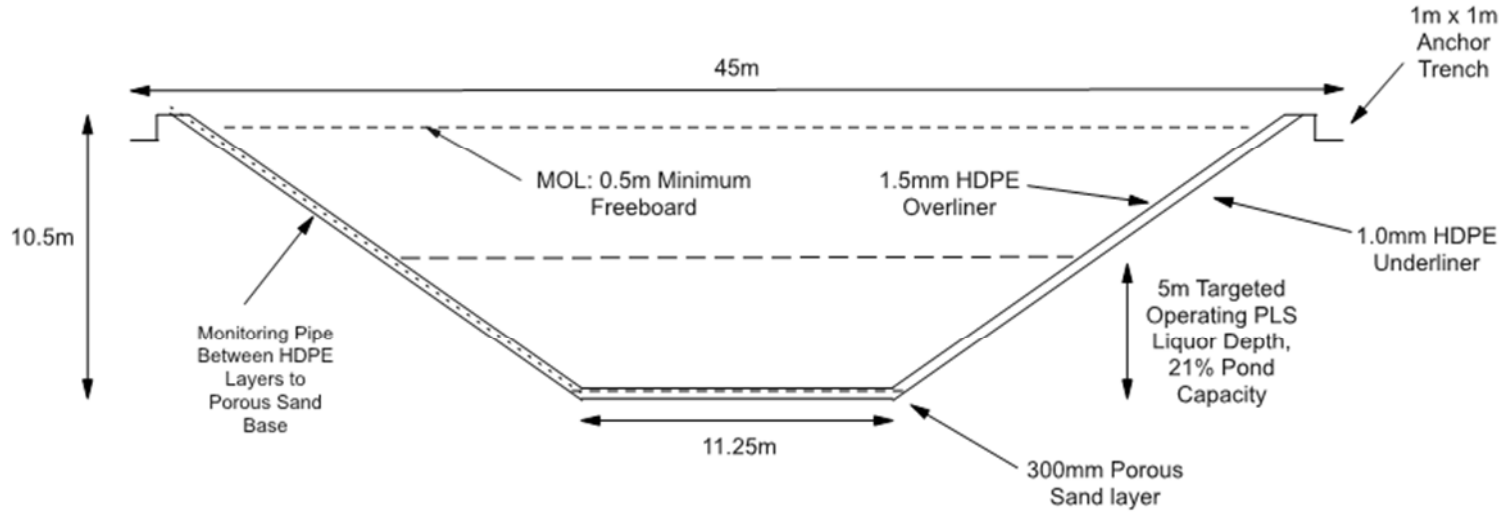

Figure 5: Cross-section of PL pond

1.6 Groundwater Monitoring Bores

Four groundwater monitoring bores will be drilled and installed in the heap leach area to monitor groundwater parameters and identify any potential seepage. Bores will be 30-40 m below ground level to ensure groundwater depth is reached. Expected coordinates of groundwater monitoring bores are provided in **Table 2** with locations shown in **Figure 3** and **Attachment 2.**

Prior to commissioning, bores will be sampled to establish a baseline groundwater quality standard physical and chemical properties.

Table 2: Coordinates of proposed groundwater monitoring bores

Bore ID	Easting	Northing
MB1	442163	6665385
MB2	442100	6665450
MB3	442100	6665350
MB4	442316	6665427

CRS: GDA 2020, Zone 51

1.7 Water Delivery Pipeline

During the trial stage, processing operations will require approximately 73 kL of water per day. Water will be sourced from an existing production bore and transported via pipeline to the process plant, approximately 1 km. The pipeline will be constructed with 50 mm PN 12.5 polyethylene pipe with Plasson joiners, installed/fitted in line with Australian Standards.

Groundwater is hypersaline and therefore considered hazardous to the environment. The pipeline will be situated within an earthen v-drain 1 m deep, with anticipated capacity of 0.25 kL per metre and therefore a total v-drain capacity of 250 kL. The 50 mm pipeline will hold 2 L per metre, resulting in a total pipeline volume of 2 kL at any one time. In addition to pipeline bunding, eight scour pits will be constructed at regular intervals/low points along the pipeline. Each scour pits will be constructed to 200 kL capacity (10 m x 10 m x 2 m). With the v-drain and scour pits installed, there will be sufficient capacity to contain any spill for a period equal to the time between routine daily inspections of pipeline integrity.

Groundwater from the production bore will also be used for dust suppression via water cart, using a standpipe. No groundwater will be discharged to the environment.

The production bore and water delivery pipeline are located south of the pit, as shown in **Attachment 2.**

2. Time Limited Operations

Time limited operations (TLO) will be required for proposed infrastructure to ensure it is operated and maintained in accordance with the operational requirements shown in **Table 3.** A TLO period is requested to be set at 180 calendar days to allow for an assessment of the Licence Application.

Table 3: Infrastructure and equipment requirements during time limited operations

Item	Site Infrastructure and Equipment	Operational Requirements
1.	Ore crushing and screening circuit	• Dust suppression via water carts to be used on crushing circuit as required.
2.	Pregnant leach pond	• Maintain a minimum operating freeboard of 0.5 m. • Daily visual inspection of freeboard and pond integrity.
3.	Groundwater monitoring bores: • MB1 • MB2 • MB3 • MB4	• Monthly monitoring including standing water level (mbgl), pH, electrical conductivity and weak acid dissociable cyanide (CN_{WAD}) (mg/L).
4.	Water delivery pipeline	• Daily visual inspection of pipeline integrity.

Attachment 5: Other Approvals and Consultation

1. Environmental Protection Act 1986 – Part IV

The Project is not considered to have a significant environmental impact and therefore has not been referred to the Environmental Protection Authority (EPA) for assessment under Part IV of the *Environmental Protection Act 1986*.

2. Environmental Protection Act – Part V

A Native Vegetation Clearing Permit application is in the process of being submitted and then assessed, which will have provision for a larger project footprint in the future.

3. Mining Act 1978

A Mining Proposal and Mine Closure Plan are being prepared for submission in conjunction with this Works Approval application.

4. Rights in Water and Irrigation Act 1914

A Groundwater Licence (GWL211650(1)) exists for the Project, authorising an annual water entitlement of 450,000 kL.

5. Other Interested Parties

Other interested parties considered in this application include Line Hydrogen (Australia) Pty Ltd and BIM Metals Pty Ltd.

Attachment 6A: Emissions and Discharges

1. Seepage

Potential seepage of process water/leachate may occur from the heap leach pad and the PL pond; however, it is in the constituent's best interest to ensure minimal seepage occurs as this will mean loss of pregnant/gold-bearing liquor. During the trial stage, materials characterisation testwork of ore and waste rock will be carried out to further understand material characteristics. Studies at the neighbouring Carosue Dam operation have identified waste rock and low-grade ore to be non-acid forming (NAF) due to low total sulphur values (<0.3%). The soil base of the heap leach pad will be compacted and lined with HDPE (2 mm) to maintain a minimum permeability of 3.5×10^{-9} m/s. The base of the PL pond will comprise of hypernet sandwiched between a top layer of 1.5 mm HDPE textured liner and a bottom layer of 1 mm smooth HDPE liner to maintain a minimum permeability of 3.9×10^{-9} m/s.

Natural groundwater in the area is hypersaline with total dissolved solids (TDS) more than 150,000 mg/L and depth around 40 metres below ground level (mbgl). There are no beneficial users of groundwater in the area outside usage in mine processing.

Although the risk of seepage is considered low, Works Approval holders will carry out groundwater monitoring at four proposed monitoring bores (MB1, MB2, MB3 and MB4), as shown in **Attachment 2.** Monitoring will include monthly testing for standing water level (mbgl), pH, electrical conductivity and weak acid dissociable cyanide (CN_{WAD}) (mg/L).

2. Contaminated Stormwater

Potential contaminated stormwater may occur from the heap leach pad and PL pond; however, it is in the Works Approval holders best interest to ensure minimal stormwater runoff occurs as this will mean loss of pregnant/gold-bearing liquor. A drain will be excavated around the perimeter of the heap leach pad to capture process liquor from the heap leach as well as any stormwater runoff and direct it to the PL pond. The PL pond will maintain a minimum operating freeboard of 0.5 m and be subject to daily visual inspections of freeboard availability and pond integrity.

There is low risk of contaminated stormwater impacting the surrounding environment.

3. Dust

Dust is generated from clearing activities, heavy machinery movement, crushing and screening and unsealed roads. Excessive dust can increase local ambient atmospheric particulate levels and potentially impact surrounding vegetation. Dust suppression will be carried out via water cart, particularly on the ROM pad during crushing and screening. There is also a significant buffer of more than 50 km to the nearest sensitive receptor.

4. Noise

Noise is generated from clearing activities, heavy machinery movement, crushing and screening and processing operations. Noise is expected to be minimal and not exceed regulated limits. There is also a significant buffer of more than 50 km to the nearest sensitive receptor. Considering the low risk of noise, no regulatory imposed controls are needed.

Attachment 7: Siting and Location

1. Project Location

The Project is situated approximately 110 km north-east of the Kalgoorlie-Boulder in the Goldfields region of WA, straddling the border between Kalgoorlie-Boulder and Menzies local government areas. It is located approximately 2 km east of Northern Star's well established Carosue Dam operation, who's facilities will support the Mulgabbie North Project.

The prescribed premises boundary is situated on M28/240 which overlies Pinjin pastoral lease and has been previously disturbed by grazing and mining exploration activities.

The nearest environmentally sensitive areas are Goongarrie National Park (R35637), located 60 km west and Queen Victoria Spring Nature Reserve (R30491), located 70 km east. There are no public drinking water source areas within 100 km of the Project. Lake Rebecca, a large inland salt lake, is situated approximately 6 km east. A map of the Project location is provided in **Figure 6.**

2. Climate

The Project is situated within the Goldfields region of WA, experiencing an arid to semi-arid climate with hot, dry summers and cool, wet winters (Cowan, 2001). The nearest Bureau of Meteorology (BOM) weather station is located 110 km south-west at Kalgoorlie-Boulder Airport (Station ID 012038) (BOM, 2025).

The area experiences average maximum temperature of 33.7˚C, and average minimum temperature of 5.1˚C. Annual average rainfall is 265.2 mm, with a mean of 39.2 days of rain per year (≥1 mm). Rainfall is highest in February at 31.8 mm and lowest in September at 13.4 mm. Mean monthly rainfall and temperature are shown in **Figure 7** (BOM, 2025).

The rainfall intensity-frequency-duration (IFD) chart pertaining to the Project area is presented in **Figure 8.** Based on the IFD chart, a 1:100-year annual exceedance probability, 72-hour storm event can be expected to generate approximately 193 mm of rainfall (BOM, 2025).

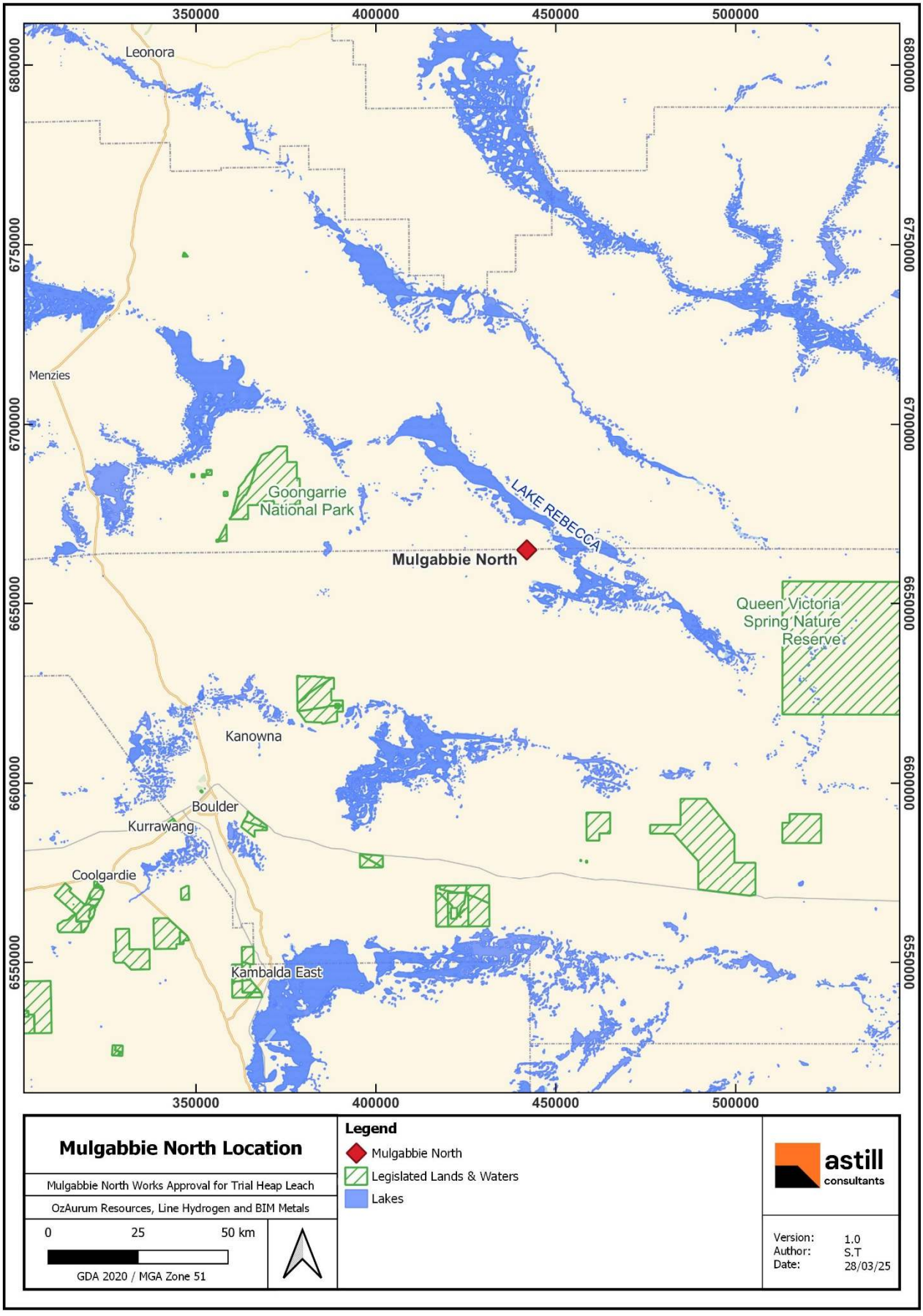

Figure 6: Project location

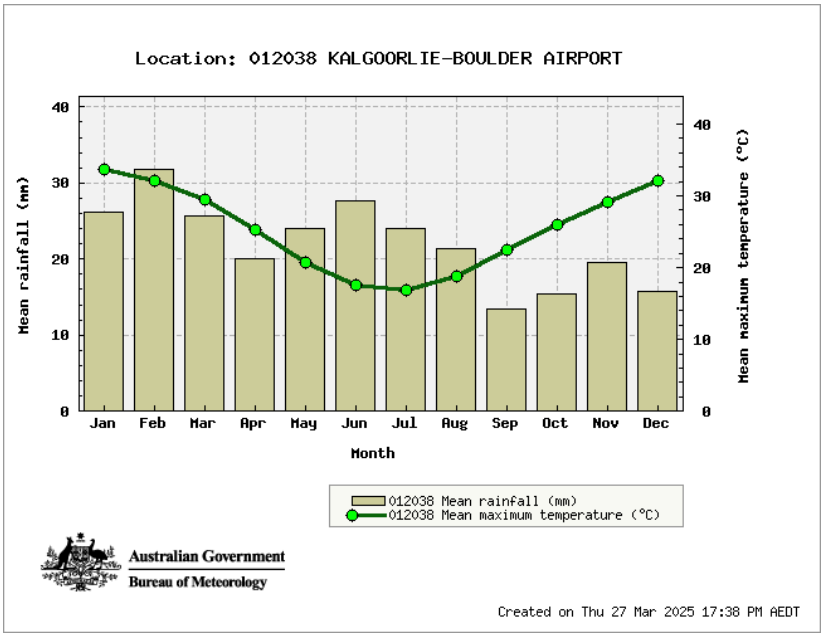

Figure 7: Mean rainfall and maximum temperature for years 1939-2025

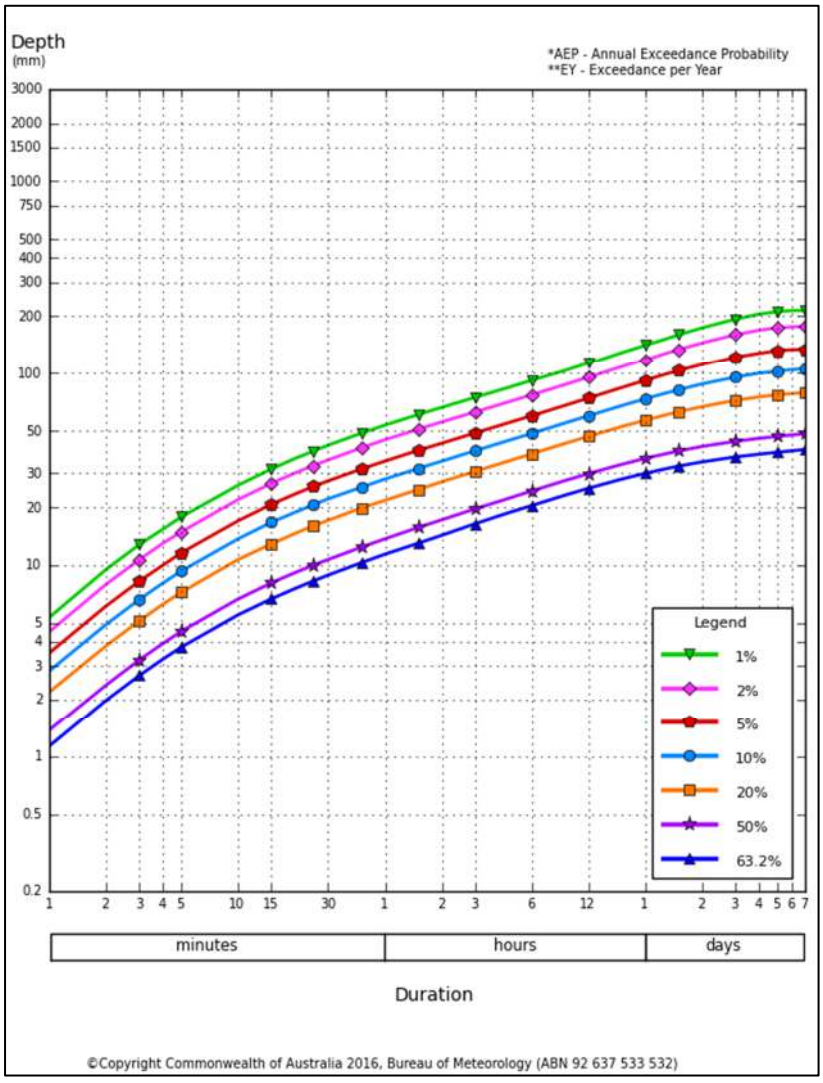

Figure 8: Project rainfall IFD chart

3. Flora and Vegetation

The Project lies within the Eremaean botanical province, mainly in the Austin botanical district (Beard, 1976). Lake Ballard/Lake Rebecca form a major vegetation divide with characteristic *Acacia aneura* (mulga) low woodlands associated with red loams over siliceous hardpan to the north and low woodlands of mixed mulga and *Casuarina obesa* (black oak) and *Eucalyptus* species on alkaline and calcareous soils to the south. Spinifex hummock grassland with eucalypt overstory on sand plain is common. Halophytic vegetation occurs throughout the region on palaeo-drainage systems, breakaways and on some stony and alluvial plains. Highly saline soils support *Atriplex* (saltbush), *Maireana* (bluebush) and *Tecticornia* (samphire) shrublands, while less saline soils support eucalypt or mulga with saltbush or bluebush understoreys.

There are two vegetation associations (Beard, 1976) within the prescribed premises boundary. Both vegetation associations have more than 99% of it's pre-European extent remaining:

- 20 – Low woodland; mulga mixed with *Casuarina obesa* and *Eucalyptus* species; and
- 529 – Succulent steppe with open low woodland; mulga and sheoak over salt bush.

Two flora and vegetation surveys have been carried out over the Project area by Alexander Holm & Associates (2019; 2020), both involving a desktop assessment and reconnaissance vegetation and flora survey over the prescribed premises boundary and surrounds. Six vegetation types were identified within the prescribed premises boundary as described in **Table 4** and shown in **Figure 9.**

The area has been disturbed by recent and historic mining activity and is within a pastoral lease and has been grazed. Vehicle tracks, cut lines and pastoral fences cross the area. Land units supporting chenopod vegetation, preferentially grazed by livestock, are mostly degraded and few areas are in good condition (Alexander Holm & Associates 2019; 2020).

There are no identified threatened ecological communities (TECs) or listed priority ecological communities (PECs) in the area (Alexander Holm & Associates 2019; 2020).

No significant or threatened flora taxa were found within the prescribed premises during surveys and no Declared Weeds or Weeds of National Significance were recorded (Alexander Holm & Associates 2019; 2020).

It is unlikely that the Project will have a significant impact on flora and vegetation. A Native Vegetation Clearing Permit application is in the process of being submitted and then assessed, which will have provision for a larger project footprint in the future.

Table 4: Land units and vegetation types

Land Unit	Land Form & Soil Type	Vegetation Community
2a. Low lateritic rises 	Gentle low rises with slopes to 2%, relief up to 2–3 m, common to very abundant (20->90%) surface mantles of fine and medium gravel of laterite with occasional calcrete and quartz. Sandy loams to 30 cm occasionally highly calcareous at surface and overlaying calcrete. Run-off source zones, nil to slight vulnerability to erosion.	"Calcareous casuarina acacia shrubland" Very sparse to open mid-height shrubland (PFC 10-25%) dominated by *Eremophila forrestii, E. scoparia, Dodonaea obulate, Senna artemisioides* subsp. *filifolia* and *Acacia colletioides* with sparse overstorey of *Acacia incurvaneura* or isolated *Casuarina pauper*.
2b. Low rises on basalt 	Gently rounded hills, rises and gentle slopes to 7%, relief to 5 m, many to abundant mantles (20 –90%) fine to coarse gravels of dolerite, ironstone, shale, quartz and calcrete. Often with abundant cryptogams. Shallow calcareous sandy loams over calcrete. Run-off source zones to lower parts of the landscape occasionally via shallow incised drainage channels. Nil to slight vulnerability to erosion	"Greenstone hill mixed shrubland" Very sparse to open (PFC 10–20%) mixed height shrublands dominated by *Dodonaea lobulata*, Senna artemisioides subsp. *filifolia, Acacia burkittii, Ptilotus obovatus* or less frequently, *Maireana sedifolia* and *Atriplex nummularia* subsp. *spathulata* with isolated to very sparse overstorey of *Casuarina pauper* and occasionally *Acacia incurvaneura, Grevillea nematophylla* subsp. *nematophylla* and/or *Alectryon oleifolius*.
4b. Plains supporting acacia shrublands on hardpan 	Gently inclined plains (slopes <1.5%); mostly few to common (2-20%) mantles of ironstone fine to coarse gravel, calcrete nodules and quartz fragments, often abundant cryptogams. Non-calcareous sandy loams over ferruginous hardpan at >30 cm. Broad transfer zones receiving water from upper units and shedding onto lower parts of landscape. Not vulnerable to erosion.	"Hardpan plain mulga shrubland" Open tall acacia shrublands (PFC 15 - 30%) dominated by *Acacia incurvaneura. A. ayersiana, A. burkittii, A. ramulosa* and very sparse lower shrubs including *Dodonaea rigida, D. lobulata* and *Ptilotus obovatus* with overstoreys of isolated *Casuarina pauper* or *Eucalyptus oleosa* subsp. *oleosa*.

5a. Alluvial plains supporting chenopod shrublands 	Near level to gently sloping (slopes <1-1%) plains with very few to common surface mantles (<2–20%) of fine and medium gravels of quartz, ironstone and calcrete nodules. Common to abundant cryptogams. Sandy clay loam often calcareous especially at depth. Subject to occasional shallow sheet flow, occasionally more concentrated. Stripped soils surfaces common. Moderate vulnerability to erosion.	"Plain mixed halophyte shrubland" Very sparse to open, often degraded (PFC 5–30%) chenopod shrublands dominated by *Maireana sedifolia M. georgei, M. pyramidata, Atriplex vesicaria, Ptilotus obovatus* and others or in poor condition dominated by *Senna artemisioides* subsp. *filifolia, Eremophila scorparia, Dodonaea lobulata, Acacia burkittii* and *A. hemiteles* with isolated, occasionally clumped overstorey of *Acacia incurvaneura, Casuarina pauper, Eucalyptus brachycorys* or *E. lesouefii*.
5b. Alluvial plains supporting chenopod shrublands and salmon gums 	Gently sloping plains (slopes 1%) with very few to few mantles (<2-10%) of fine to coarse gravels of ironstone, basalt and quartz fragments. Deep sandy clay loam gradational to light clay or deep light clay often calcareous. Subject to shallow sheet flow, occasionally more concentrated. Stripped soil surfaces common. Moderate vulnerability to erosion.	"Plain eucalypt chenopod shrubland" Open, often degraded, chenopod shrublands (PFC 20-30%) dominated by *Atriplex vesicaria, A. bunburyana, A. nummularia* or *Maireana pyrimidata*, and in poor condition dominated by *Senna artemisioides* subsp. *petiolaris, Eremophila scorparia, Acacia hemiteles* with very sparse *Eucalyptus salmonophloia, E. salubris* overstorey and mid-dense groves of *E. salubris*.
6. Drainage tracts 	Gently sloping (1%) drainage tracts 50–200 m wide with occasional minor channels, mostly without surface mantles, and abundant litter trains. Sandy clay loam to sandy clay greater than 30 cm. Slight to moderate vulnerability to water erosion.	"Drainage tract acacia shrubland" Open to mid-close (PFC: 20–60%), tall acacia shrubland and occasional thickets dominated by *Acacia incurvaneura. A. ayersiana* and *A. burkittii* with isolated *Eucalyptus oleosa* subsp. *oleosa, Brachychiton gregorii* or *Casuarina pauper* or less commonly *Bursaria occidentalis. Senna artemisioides* ssp. *filifolia, Grevillea nematophylla* subsp. *nematophylla* and *Teucrium teucriiflorum*.

(PFC): Projected foliar cover

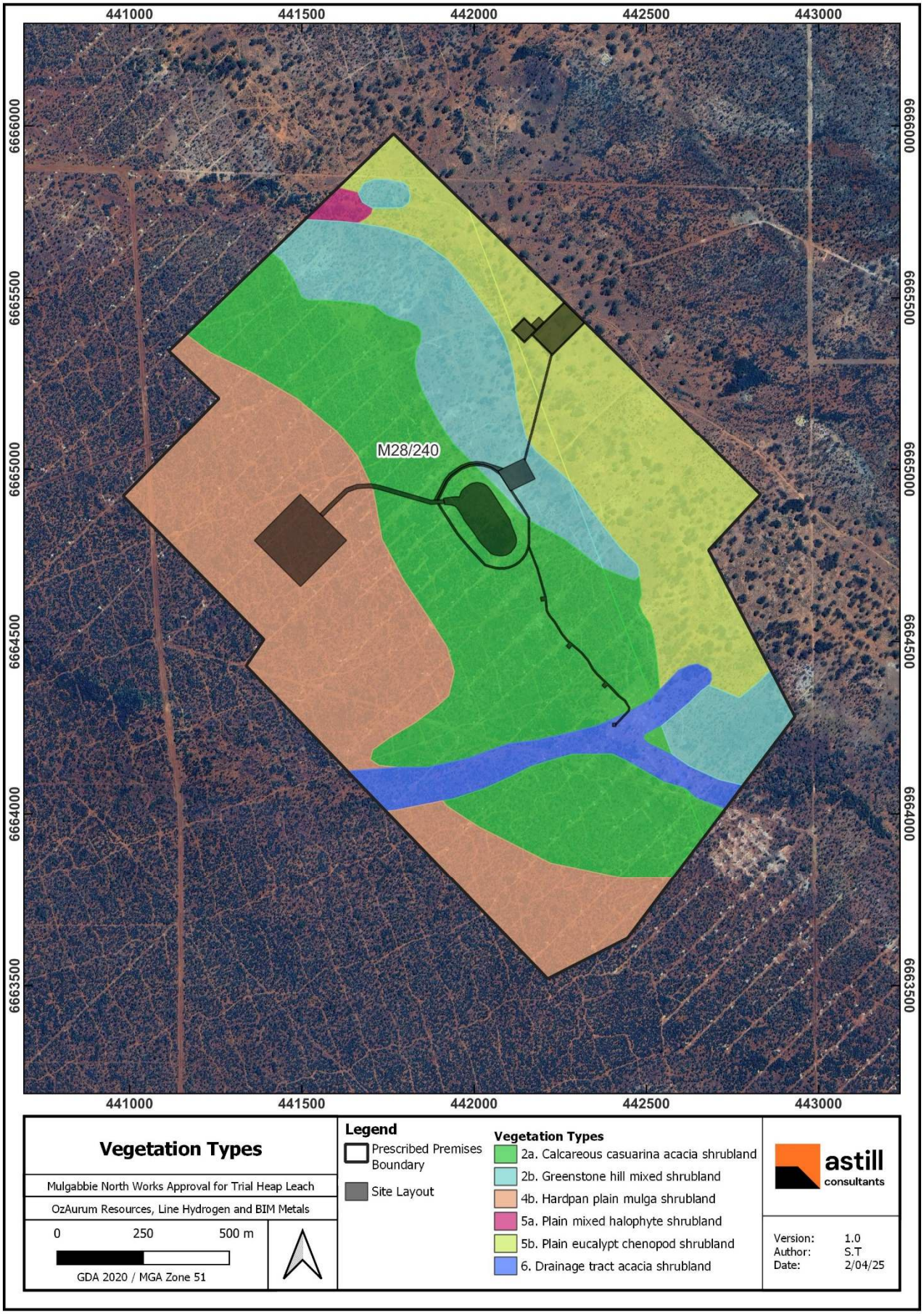

Figure 9: Vegetation types

4. Fauna

Two fauna surveys were conducted over the study area by Bamford Consulting Ecologists (2019; 2020), both involving a desktop assessment and field survey over the prescribed premises boundary and surrounds. During the field survey, ecologists traversed the area both in vehicle and on foot. This enabled environmental descriptions to be prepared and some opportunistic observations on fauna to be made. A targeted search was undertaken for Malleefowl *(Leipoa ocellata),* by searching for nest mounds, foraging signs, tracks and direct observations.

Several Malleefowl *(Leipoa ocellata)* nesting mounds were observed during field surveys within the prescribed premises boundary and throughout the broader area. The species is clearly resident in the area but ecologists believe the density of mounds is low when compared to other areas. There are five known malleefowl mounds within the prescribed premises boundary (Bamford Consulting Ecologists, 2019; 2020).

A Native Vegetation Clearing Permit application is in the process of being submitted and then assessed, which will have provision for a larger project footprint in the future.

5. Surface Water

The East Murchison subregion topography is undulating with occasional ranges of low hills and extensive areas of elevated red desert sand plains. This region is characterised by its internal drainage and salt lake system associated with the occluded palaeodrainage systems (Cowan, 2001). The region is typified by north-westerly trending saline lake drainage systems which flow parallel to and cross the stratigraphy.

The Mulgabbie North Project is situated within the Lake Rebecca surface water catchment, with predominantly easterly drainage towards Lake Rebecca, located approximately 6 km away. Lake Rebecca is a large inland salt lake. There are no permanent rivers or major drainage lines in the area. Flood water runoff occurs as sheet flow concentrated in very shallow and broad lines of drainage over deposits of gravel, sand and silt. A minor sheet drainage line exists in the southern area of the prescribed premises boundary, but flow occurs only after major rainfall events.

It is unlikely that proposed activities will impact local or regional hydrology.

6. Groundwater

Groundwater occurs throughout the region within sparse fractures in basement rocks, within the weathering profile, and in alluvial sediments. Groundwater recharge occurs from major, but infrequent, rainfall events, mainly on drainage divides. Groundwater is in hydraulic continuity and flows from drainage divides towards palaeodrainages and then south-easterly toward the Nullarbor Plain.

Groundwater is mainly saline to hypersaline, ranging from 500 mg/L TDS in elevated areas, to as much as 300,000 mg/L TDS in palaeochannels and fractured and weathered bedrock. Sodium chloride (NaCl) is the major dissolved solid, with proportions of major ions in saline groundwater close to the proportions in seawater. The pH values in fractured and weathered bedrock range from 3.6 to 8.6, and 4.6 to 8.1 in palaeochannels (Kern, 1996).

Groundwater recharge is low due to a high average annual potential evaporation of 2,665 mm and an average rainfall of about 260 mm. Recharge, when it occurs, follows prolonged winter wet periods and very rare flood events following ex-tropical cyclone depressions (Pennington Scott, 2024).

Local groundwater at Mulgabbie North is hypersaline with TDS more than 150,000 mg/L and depth around 20 metres below ground level (mbgl). There are no beneficial users of groundwater in the area outside usage in mine processing. Groundwater from a production bore and pit dewatering will be used for processing and heap leach activities at Mulgabbie North and no groundwater will be discharged to the environment.

7. Aboriginal Heritage

A search of the Department of Planning, Lands and Heritage (DPLH) Aboriginal Cultural Heritage Inquiry System (ACHIS) has identified no Aboriginal heritage sites within the prescribed premises boundary.

Several Aboriginal heritage surveys have been carried out over the Project area by Native Title Party 'Nyalpa Pirniku' and Aboriginal knowledge holders. The constituents engaged specialist Ethnographer Daniel de Gand to undertake a review of previous Aboriginal heritage surveys as well as carry out a field survey of the area. The survey indicated that there are no Aboriginal heritage sites within the prescribed premises boundary (Daniel de Gand, 2025).

There is a low risk that proposed activities will impact any areas of Aboriginal significance.

Attachment 10: Fee Calculation

1. Cost of Works

Details regarding the projected cost associated with the construction and establishment of proposed works are included in **Table 5.** The works are expected to cost [redacted] in total. This includes all estimated costs (inclusive of GST) associated with the construction and establishment of the premises infrastructure.

Table 5: Projected cost of works

Activity	Estimated Cost
Clearing & earthworks	[redacted]
Plant infrastructure	
Pipelines and flow metres	
Construction	
TOTAL	

In accordance with Schedule 3 of the *Environmental Protection Regulations 1987*, this is estimated to be 205 fee units. Based on the last published fee unit value of [redacted] (Industry Regulation licensing fees | Western Australian Government), a fee of [redacted] is expected. This will be validated when the application is submitted.

References

Alexander Holm & Associates. (2019). Environmental Assessment: Proposed Seismic Survey Area. Prepared for Saracen Gold Mines. Dated February 2019.

Alexander Holm & Associates. (2020). Environmental Assessment: Relief Hill Survey Area. Prepared for Saracen Gold Mines. Dated February 2020.

Bamford Consulting Ecologists. (2019). Saracen Carosue Project. Fauna Assessment of Proposed Exploration Drilling Program. Dated February 2019.

Bamford Consulting Ecologists. (2020). Saracen Relief Hill Project. Fauna Assessment. Dated February 2020.

Beard J. S. (1976). Vegetation Survey of Western Australia – Sheet 6. Murchison. Nedlands, Western Australia, University of Western Australia Press.

BOM (Bureau of Meteorology). (2025). Climate Summary Statistics for Kalgoorlie-Boulder. Australian Government. March 2025.

Cowan, M. (2001). A Biodiversity Audit of Western Australia's 53 Biogeographical Region in 2001; Murchison 1 (MUR1 – East Murchison subregion), Department of Conservation and Land Management, August 2001.

Daniel de Gand. (2025). Report on the Aboriginal Heritage Assessment of the Mulgabbie North Project Area near Lake Rebecca in the Eastern Goldfields in Western Australia. Prepared for OzAurum Mines Pty Ltd and Line Hydrogen Pty Ltd. Dated January 2025.

Kern A. M. (1996). Hydrogeology of the Kurnalpi 1:250,000 sheet – Explanatory Notes. Geological Survey of Western Australia. Department of Minerals and Energy.

Pennington Scot. (2024). Qena Project – Carosue Dam Operation Water Investigations. Prepared for Northern Star Resources Limited. Dated 17 January 2024.