Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6831/2023/1
Works approval holder	Image Resources NL
ACN	063 977 579
Registered business address	Level 2, 1 Walker Avenue WEST PERTH WA 6005
DWER file number	INS-0002674
Duration	03/07/2024 to 02/072029
Date of issue	03/07/2024
Date of amendment	24/03/2025
Premises details	Atlas Project Munbinea Road NAMBUNG WA 6521 Legal description - Part of mining tenement M 70/1305 As defined by the premises maps in Schedule 1

Prescribed premises category description **(Schedule 1, *Environmental Protection Regulations 1987*)**	**Assessed production capacity**
Category 8: Mineral sands mining and processing: premises on which mineral sands ore is mined, screened, separated or otherwise processed.	3.1 million tonnes of ore per year

This amended works approval is granted to the works approval holder, subject to the attached conditions, on 24 March 2025, by:

Kang Tam
Digitally signed by Kang Tam
Date: 2025.03.24 11:14:39 +08'00'

A/MANAGER, RESOURCE INDUSTRIES
INDUSTRY REGULATION (STATEWIDE DELIVERY)
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
03/07/2024	W6831/2023/1	Works approval granted.
24/03/2025	W6831/2023/1	Amendment to modify conditions relating to noise management and monitoring, clay slimes disposal, and solar drying ponds.

Interpretation

In this works approval:

(a) the words 'including', 'includes' and 'include' in conditions mean "including but not limited to", and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:

(i) if dated, refers to that particular version; and

(ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

Construction phase

Infrastructure and equipment

1. The works approval holder must:

(a) construct the infrastructure and/or equipment;

(b) in accordance with the corresponding design and construction requirements;

(c) at the corresponding infrastructure location; and

(d) within the corresponding timeframe,

as set out in Table 1.

Table 1: Design and construction requirements

Item no.	Infrastructure or equipment	Design and construction requirements	Infrastructure location	Timeframe
1.	Feed preparation plant (FPP)	a) Broadband start-up alarms to be installed (instead of beeping/tonal alarms). b) Constructed on compacted soil or hardstand, contoured so that stormwater is directed to sediment sumps or an open pit.	As indicated in Schedule 1, Figure 1.	N/A
2.	Wet Concentrator Plant (WCP)	a) Maximum throughput of 350 tonnes per hour (tph). b) Pumps placed on the eastern side of the WCP or enclosed to attenuate noise. c) Broadband start-up alarms to be installed (instead of beeping/tonal alarms). d) Constructed on compacted soil or hardstand, contoured so that stormwater is directed to sediment sumps or the open pit.	As indicated in Schedule 1, Figure 1.	N/A
3.	Process water pond	a) Constructed with compacted soil or overburden that has been screened for PASS in accordance with condition 18. b) Constructed to a height of RL 45.5 m. c) Footprint of 0.5 hectares. d) Downstream embankment slope of 3:1. e) Minimum 3 m wide	As indicated in Schedule 1, Figure 1.	N/A

Item no.	Infrastructure or equipment	Design and construction requirements	Infrastructure location	Timeframe
		embankment crest. f) HDPE lined, anchored into the crest of the embankment.		
4.	Surface solar drying ponds	a) Constructed with compacted soil or overburden that has been screened for PASS in accordance with condition 18. b) Constructed to a depth of approximately 2.5 m. c) Minimum 2 m wide embankment crest. d) Up to 3 cells may be constructed with a combined footprint of no more than 16 ha off the mine path. e) Cells may be constructed within the footprint of the planned mine path.	Locations labelled as 'Solar Drying Cell' or 'Pit' in Schedule 1, Figure 1.	N/A
5.	Run of mine (ROM) pad	a) Constructed on compacted soil or overburden. b) Contoured so that stormwater is directed to sediment sumps or an open pit.	As indicated in Schedule 1, Figure 1.	N/A
6.	Heavy metal concentrate (HMC) stockpile pad	a) Constructed on compacted soil or overburden. b) Contoured so that stormwater is directed to sediment sumps or an open pit.	As indicated in Schedule 1, Figure 1.	N/A
7.	PASS treatment pad (for overburden and/or ore)	a) Constructed of a minimum 300mm layer of compacted crushed limestone with a sufficiently low permeability to prevent infiltration of leachate. b) Sides bunded with compacted limestone to a minimum height of at least 150mm. c) Contoured to collect and contain run-off. d) Sized sufficiently to hold the expected maximum volume of PASS material.	Within the prescribed premises as shown in Schedule 1, Figure 1.	Constructed prior to the mining of ore.

Item no.	Infrastructure or equipment	Design and construction requirements	Infrastructure location	Timeframe
8.	Pipelines containing process water, tailings, ore or saline water.	a) To be installed with: i. Secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; or ii. Flow meters and pressure sensors to allow the detection of leaks and failures.	Within the prescribed premises as shown in Schedule 1, Figure 1.	N/A
9.	Vehicle washdown, workshop and refuelling areas	a) Constructed on hardstand or compacted areas, contoured so that stormwater is directed to sediment sumps or an open pit. b) Areas of potential hydrocarbon contamination to report to an oily/water separator.	As indicated in Schedule 1, Figure 1.	N/A
10.	Earthen bund around mining area	a) Earthen bunding around the northern pit constructed to a height of 42.0 m AHD, with a perimeter drain along the eastern toe that falls to the north, as shown in Schedule 1, Figure 2. b) Constructed from soil or overburden that has been screened for PASS in accordance with condition 17. c) Compacted to minimise erosion.	Surrounding the northern mining area, as indicated in Schedule 1, Figure 2.	Constructed prior to mining or the construction of solar drying ponds north of the “initial disturbance boundary” depicted in Schedule 1, Figure 4.
11.	Air quality monitoring system	a) Establish a PM_{10} dust monitor in accordance with AS 3580.1.1 and AS 3580.9.6	In the air quality monitoring location indicated in Schedule 1, Figure 3 labelled AQM 1.	Installed prior to 1 October 2024.

2. Water cart to be available at all times and used for dust suppression during the construction works authorised in condition 1.

3. Construction areas should be compacted, graded and wet down during construction and excavation activities to prevent dust liftoff.

4. Earthworks should be minimised during High Wind conditions that cause dust lift off

when there is a risk of impacting sensitive receptors.

5. During construction and time limited operations, all mobile equipment, including heavy and light vehicles, must utilise broadband reversing alarms instead of beepers.

Compliance reporting

6. The works approval holder must within 30 calendar days of an item of infrastructure or equipment required by condition 1 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of condition 1; and

(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.

7. The Environmental Compliance Report required by condition 6, must include as a minimum the following:

(a) certification by an engineer that the items of infrastructure or component(s) thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;

(b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1; and

(c) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

Time limited operations phase

Commencement and duration

8. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1 where the Environmental Compliance Report as required by condition 6 has been submitted by the works approval holder for that item of infrastructure.

9. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 1:

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 8 for that item of infrastructure; or

(b) until such time as a licence for that item of infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986*, if one is granted before the end of the period specified in condition 9(a).

Time limited operations requirements

10. During time limited operations the works approval holder shall operate:

(a) the process water ponds such that a minimum freeboard of 1 meter is maintained at all times; and

(b) the solar drying ponds such that a minimum freeboard of 0.5 meters is maintained at all times.

11. During time limited operations the works approval holder shall:

(a) undertake inspections as detailed in Table 2;

(b) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences as soon as practicable; and

(c) maintain a record of all inspections undertaken.

Table 2: Infrastructure and equipment requirements during time limited operations

Infrastructure	Scope of inspection	Frequency
Pipelines containing environmentally hazardous substances	Visual integrity and leak assessment	Daily
Solar drying ponds	Visual integrity, leak assessment and to confirm 0.5 m freeboard is available	Daily
Process water ponds	Visual integrity, leak assessment and to confirm 1 m freeboard is available	Daily

12. During time limited operations, the works approval holder must ensure that the emission(s) specified in Table 3, are discharged only from the corresponding discharge point(s) and only at the corresponding discharge point location(s).

Table 3: Authorised discharge points

Emission	Discharge point	Discharge point location
Sand tailings	Mine voids, via cyclone stackers.	Within the pit area as shown in Schedule 1, Figure 1.
Slimes tailings	Solar drying ponds or mine voids	As indicated in Schedule 1, Figure 1.
Process water (including decant water from the tailings or solar drying ponds)	Process water ponds	Within the prescribed premises as shown in Schedule 1, Figure 1.
Dried clay slimes	Mine voids	Within the pit area as shown in Schedule 1, Figure 1.

13. During time limited operations, the works approval holder must only carry out mining and earthworks activities in each specified mining location during the corresponding authorised mining hours as set out in Table 4.

Table 4: Authorised mining hours

Mining location	Authorised mining hours
South of the “initial disturbance boundary” depicted in Schedule 1, Figure 4	Mining and earthworks can only be undertaken between: a) 0700 and 2200 Monday to Saturday, and b) 0900 to 1900 on Sundays and public holidays.
North of the “initial disturbance boundary” depicted in Schedule 1, Figure 4	At all times, no restrictions.

14. During time limited operations, when mining south of the “initial disturbance boundary” depicted in Schedule 1, Figure 4, the works approval holder must restrict operations to only the following fixed and mobile equipment between the hours of 2200 and 0700 Monday to Saturday, and prior to 0900 and after 1900 on Sundays and public holidays:

(a) the Wet Concentrator Plant (WCP);

(b) the Feed Preparation Plant (FPP);

(c) 1 Cat 980 loader (at the FPP); and

(d) 4 generator sets.

15. During time limited operations, the works approval holder must ensure that dust and noise controls are implemented in accordance with the requirements specified in Table 5.

Table 5: Dust and noise controls

Activity	Requirement
Topsoil and overburden stripping	• Water cart must be available to wet down during earthwork activities. • Must suspend topsoil and overburden stripping activities during High Wind conditions when there is a risk of dust impacting sensitive receptors.
Stockpiling	• Must utilise covers, water sprays or chemical stabilisers to minimise dust liftoff. • Must utilise bunds or wind shields to minimise dust, as required.
Mobile vehicles	• Must utilise watercart for dust suppression to minimise dust generation from roads. • Heavy vehicles must operate with a speed limit of 50km/hr on the premises. • Concentrate trucks must operate with a speed limit of 25km/hr on the access road.
General	• Must wet down and compact open, operational areas to prevent dust liftoff. • Must suspend dust generating activities during High Wind conditions when there is a risk of dust impacting sensitive receptors. • Must conduct regular inspections to ensure dust controls are effectively being implemented.

16. During time limited operations, the works approval holder must ensure that all soils are managed to prevent potential acid sulfate soils (PASS) from deteriorating groundwater quality on or surrounding the premises.

17. During time limited operations, at a minimum, potential acid sulfate soils must be managed in accordance with the requirements specified in Table 6.

Table 6: Potential acid sulfate soils controls

Activity	Requirement

PASS screening	• All overburden to be used for construction material to be tested for pH_F and pH_{FOX} prior to use in construction;
	• Testing for pH_F and pH_{FOX} must be conducted during all mine path excavation – at a minimum rate of 2 samples per hectare;
	• Soil material that shows indicators of PASS (such as a dark colour or clayey materials) must be tested in the field for pH_F and pH_{FOX};
	• Samples that return a
	  ○ pH_F less than 4.0;
	  ○ pH_{FOX} less than 3.0; or
	  ○ a difference between pH_F and pH_{FOX} of more than 3 pH units;
	must undergo a Suite 2 (CRS) analysis in accordance with the *Identification and investigation of acid sulfate soils and acidic landscapes, (DWER 2015)*

Suite 2 (CRS) analysis – to be completed in accordance with the *Identification and investigation of acid sulfate soils and acidic landscapes, (DWER 2015)*	• When a Suite 2 - Chromium Reducible Sulfur (S_{Cr}) analysis is required to be undertaken due to positive PASS screening results (as outline above), a sufficient number of soil samples must be tested such that a qualified geologist can quantify the volume of PASS that has been encountered; • Tailings must undergo a Suite 2 - Chromium Reducible Sulfur (S_{Cr}) analysis on a monthly basis; • Dried out clay fines from the solar drying ponds must undergo a Suite 2 - Chromium Reducible Sulfur (S_{Cr}) analysis prior to disposal in the open pit voids; • Soil and tailings samples with a pH_{FOX} of less than 3 and have a Chromium Reducible Sulfur (S_{Cr}) content greater than 0.01% require selective handling and neutralisation in accordance with the PASS management actions (below).
PASS overburden and ore management actions	• PASS overburden must be treated with a neutralisation agent at sufficient rates to fulfil the requirements of the PASS neutralisation validation requirements (below); • PASS overburden that has been neutralised and passed the validation requirements may be used for construction purposes; • PASS overburden that will not be used for construction purposes must be back-filled to an open pit as soon as possible; • PASS overburden that is not used in construction and cannot be immediately back-filled to an open pit must be stored on the limestone treatment pad; • PASS containing ore may be processed with a neutralisation agent; • PASS containing ore that is not immediately processed must be stored on the limestone treatment pad; • Ore that cannot be processed within 70 hours must be treated with a neutralisation agent at sufficient rates to fulfil the requirements of the PASS neutralisation validation requirements (below).
PASS tailings management actions	• PASS tailings must have additional neutralisation agent added during disposal to meet the PASS neutralisation validation requirements (below); • PASS dried out clay fines must have additional neutralisation agent added during disposal to the mine voids to meet the PASS neutralisation validation requirements (below).

Activity	Requirement
PASS neutralisation validation	The following performance criteria must be met to confirm effective treatment of PASS: • the samples have a pH_{FOX} of at least 5, to indicate that there is neutralising capacity greater than existing plus potential acidity of the soil; • soil pH_F must be in the range 6.0 to 8.5; • the neutralising material must appear well blended with the soil; • excess neutralising agent must remain within the soil until all acid generation reactions are complete and the soil has no further capacity to generate acidity. • measurements of TPA should be less than the limits of reporting. • if soils fail the above validation, additional neutralisation needs to be applied until results comply with performance criteria.
Process water neutralisation	• If the pH of the process water falls below 4, a neutralisation agent must be added to increase the pH.

Monitoring during time limited operations

18. The works approval holder must ensure that:

(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;

(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;

(c) all noise measurements are carried out in accordance with Part 3 of the Environmental Protection (Noise) Regulations 1997 (as applicable);

(d) all ambient air monitoring is sited in accordance with AS 3580.1.1;

(e) all PM_{10} dust samples are collected and analysed in accordance with AS 3580.9.6; and

(f) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured, unless indicated otherwise in the relevant table.

19. The works approval holder must undertake process monitoring in accordance with the specifications of Table 7.

Table 7: Process monitoring

Process description	Parameter	Units	Frequency
Mining activities	Volume of ore mined	m^3	Monthly
	Volume of overburden removed		
	Volume of PASS handled		
Processing of ore	Volume of ore processed	m^3	Monthly
	Volume of HMC produced		
Sand tailings	Volume and location of tailings deposition	m^3	Monthly
	PASS sampling in accordance with Table 6	Various	

Process description	Parameter	Units	Frequency
	Estimated volume of PASS tailings generated	m^3	
Slimes tailings	Volume of slimes tailings discharged to SDPs	m^3	Monthly
	Volume of slimes tailings discharged to mine voids	m^3	
	pH[1]	-	
Dried clay slimes	PASS sampling in accordance with Table 6	Various	Prior to disposal in the pit
	Estimated volume of PASS clay slimes	m^3	If detected
Process water	Volume of water discharged to the process water pond	m^3	Monthly
	pH[1]	-	Monthly, or weekly if pH is less than 4
	Electrical conductivity[1]	µS/cm	
	Total titratable acidity (TTA) [1]	mg/L	
	Total alkalinity (TAlk) [1]		

Note 1: In field, non-NATA accredited analysis permitted.

20. The works approval holder must undertake monitoring of ambient groundwater quality in accordance with the specifications of Table 8.

Table 8: Ambient groundwater monitoring requirements

Monitoring point	Parameter	Unit	Frequency
Groundwater monitoring bores: I01B I03B I04B I06B I08B	Standing water level	mbgl	Monthly
	pH[1]	-	
	Electrical conductivity[1]	µS/cm	
	Total titratable acidity[1]	mg/L	
	Total alkalinity[1]		
	Major ions: bicarbonate, calcium, chloride, magnesium, potassium, sodium, sulfate, total dissolved solids	mg/L	Once during time-limited operations
	Metals and metalloids: aluminum, arsenic, cadmium, chromium, cobalt, iron, manganese, mercury, nickel, selenium, thallium, uranium, zinc		
	Radium-226 Radium-228	Bq/L	

Note 1: In field, non-NATA accredited analysis permitted.

21. The works approval holder must monitor dust emissions during time limited operations between 1 October and 31 May in accordance with Table 9.

Table 9: Dust monitoring during time limited operations

Monitoring point	Parameter	Unit	Frequency	Sampling duration	Method
AQM 1 (high-volume sampler)	PM_{10}	$\mu g/m^3$	At least once every 6 days	24 hours	AS/NZS 3580.9.6
	Dust composition analysis of dust deposited on the filter paper	$\mu g/m^3$	At least twice during time-limited operations, after the commencement of the mining of ore.	24 hours – one filter paper	AS/NZS 3580.9.15

Compliance reporting

22. The works approval holder must submit to the CEO a report on the time limited operations within 30 calendar days of the completion date of time limited operations or 30 calendar days before the expiration of the works approval, whichever is the sooner.

23. The works approval holder must ensure the report required by condition 22 includes the following:

(a) a summary of the time limited operations, including timeframes and amount of material processed;

(b) a summary of all monitoring results obtained during time limited operations under conditions 19, 20 and 21;

(c) a summary of the environmental performance of all infrastructure as constructed or installed;

(d) a review of performance and compliance against the conditions of the works approval; and

(e) where the manufacturer's design specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting (general)

24. The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:

(a) the name and contact details of the complainant, (if provided);

(b) the time and date of the complaint;

(c) the complete details of the complaint and any other concerns or other issues raised; and

(d) the complete details and dates of any action taken by the works approval holder to investigate or respond to any complaint.

25. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with condition 1;

(b) any maintenance of infrastructure that is performed in the course of complying with conditions 10-17;

(c) monitoring programmes undertaken in accordance with conditions 19, 20 and 21; and

(d) complaints received under condition 24.

26. The books specified under condition 25 must:

(a) be legible;

(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;

(c) be retained by the works approval holder for the duration of the works approval; and

(d) be available to be produced to an inspector or the CEO as required.

Definitions

In this works approval, the terms in Table 10 have the meanings defined.

Table 10: Definitions

Term	Definition
annual period	a 12 month period commencing from 1 July until 30 June of the immediately following year.
AS 3580.1.1	means the Australian Standard AS 3580.1.1 *Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment*
AS 3580.9.6	means the most recent version and the relevant parts of the Australian Standard AS 3580.9.6 *Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM10 high volume sampler with size selective inlet – Gravimetric method*
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters*
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
CRS and S_{Cr}	Chromium reducible sulphur
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V Division 3 of the EP Act.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.
environmentally hazardous materials	means material (either solid or liquid) which, if discharged into the environment from or within the premises, may cause pollution or environmental harm.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).

Term	Definition
Freeboard	the distance between the maximum water surface elevation and the top of the retaining banks or structures at their lowest point.
High Wind conditions	means wind conditions rating 7 or greater on the Beaufort Windforce Scale (i.e. wind speeds 50 km/h or greater).
HMC	Heavy Metal Concentrate.
monthly period	means a one-month period commencing from first day of a month until first day of the immediately following month.
PASS	Potential Acid Sulfate Soils.
pH_F	soil pH measured in the field.
pH_{FOX}	measure of soil pH after rapid oxidation with hydrogen peroxide.
PM_{10}	total particulate matter with a diameter of less than or equal to 10 µm.
premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
ROM	Run of Mine.
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
TPA	total potential acidity.
waste	has the same meaning given to that term under the EP Act.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (Figure 1).

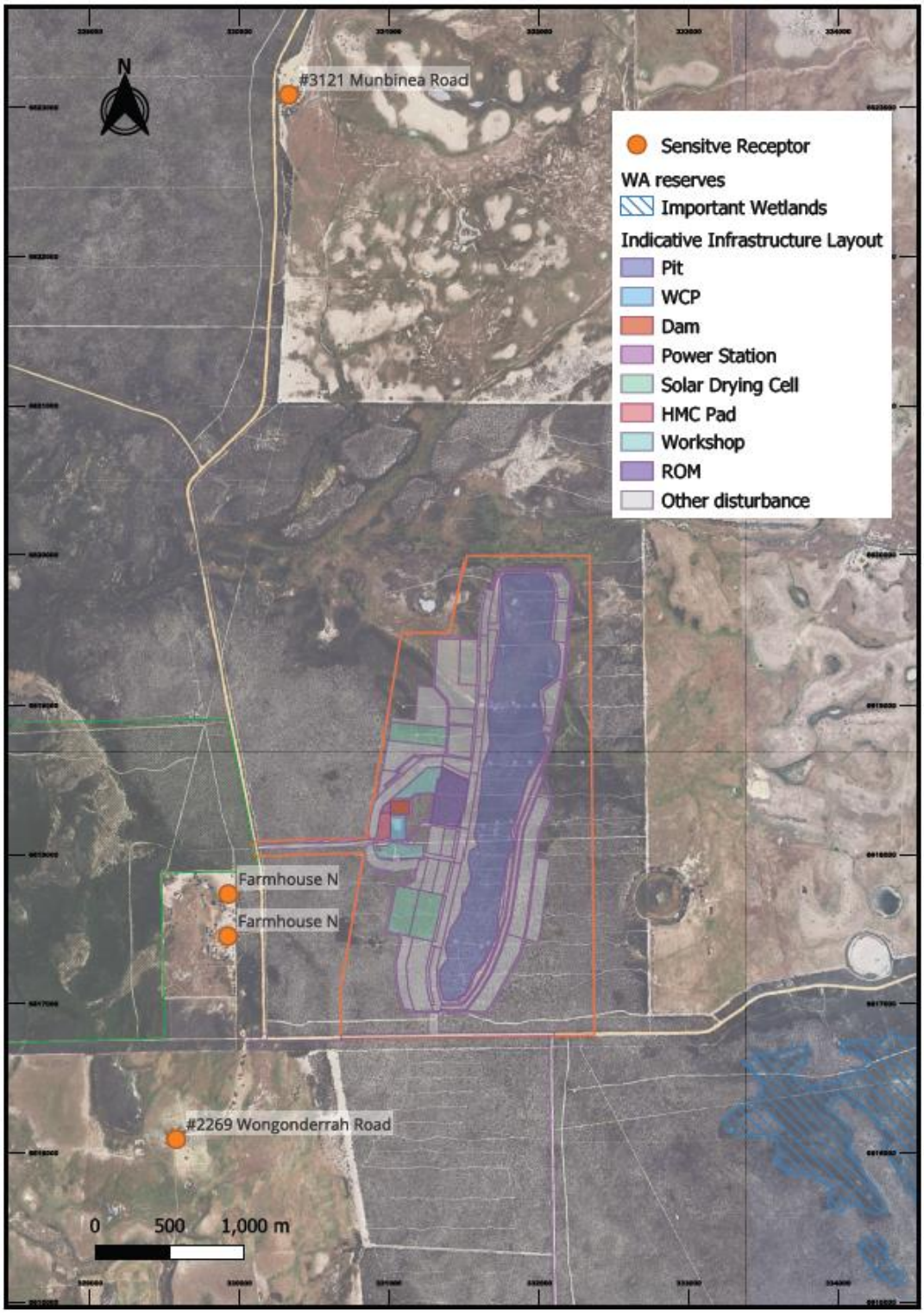

Figure 1: Map of the boundary of the prescribed premises with indicative location of key infrastructure

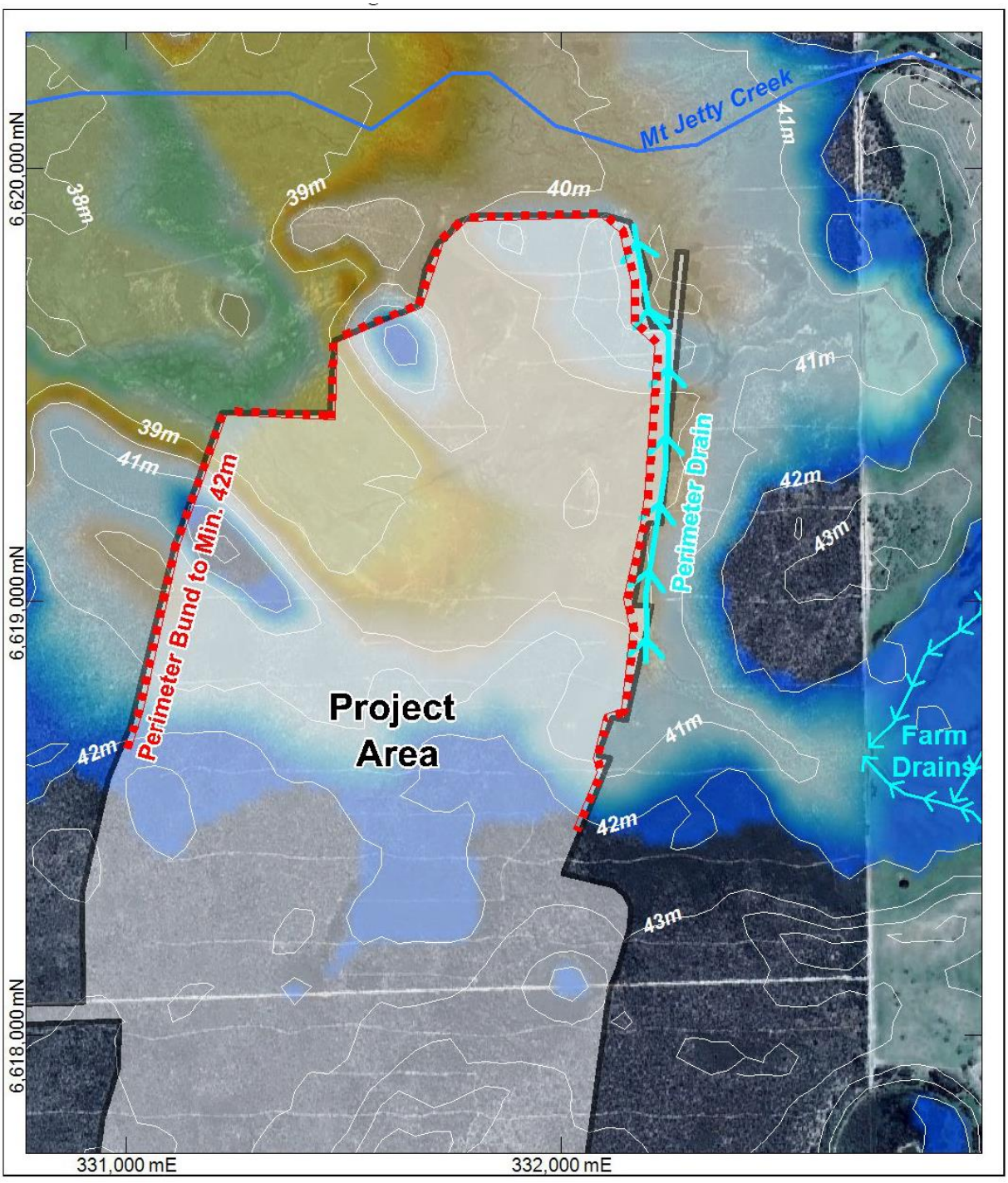

Figure 2: Map depicting the approximate lay out of the earthen bund around the mining area with a perimeter drain

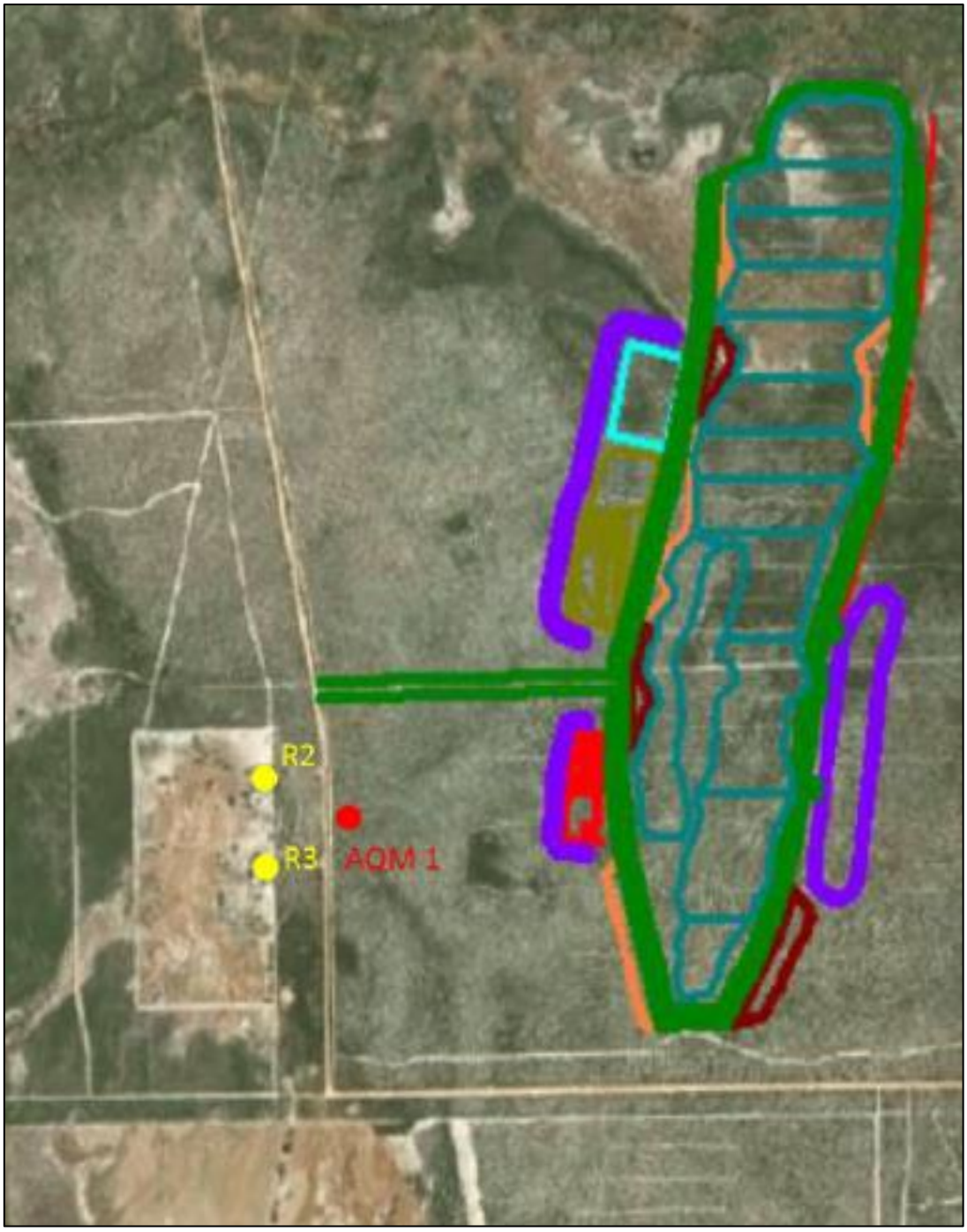

Figure 3: Map depicting the approximate location (AQM 1) for the placement of the air quality monitor

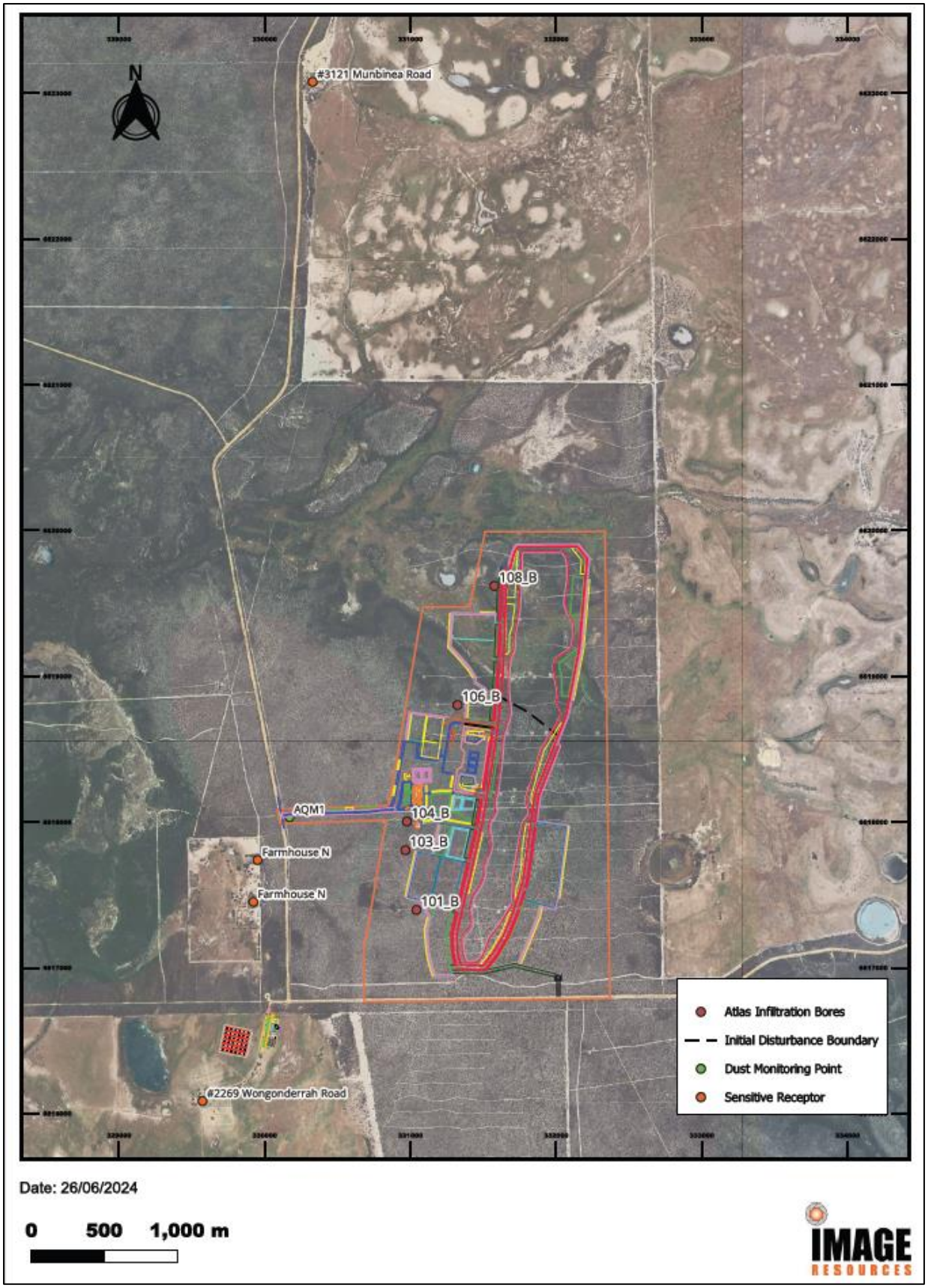

Figure 4: Map depicting groundwater monitoring bore locations and initial mining disturbance boundary