

Permit

Environmental Protection Act 1994

Environmental authority EPML00879413

This environmental authority is issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

Environmental authority number: EPML00879413

Environmental authority takes effect on 19 January 2021

Environmental authority holder(s)

Name(s)	Registered address
NQM Gold 2 Pty Ltd	Level 3, 66 Kings Park Road WEST PERTH WA 6005 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 16: Mining gold ore	ML1575
Schedule 3 16: Mining gold ore	ML10215
Schedule 3 16: Mining gold ore	ML10246
Schedule 3 16: Mining gold ore	ML10370
Schedule 3 18: Mining lead, silver or zinc separately or in any combination	ML1575
Schedule 3 18: Mining lead, silver or zinc separately or in any combination	ML10246
Schedule 3 18: Mining lead, silver or zinc separately or	ML10215

Environmentally relevant activity/activities	Location(s)
in any combination	
Schedule 3 18: Mining lead, silver or zinc separately or in any combination	ML10370
Ancillary 08 - Chemical Storage 2: Storing 50t or more of chemicals of dangerous goods class 6, division 6.1 under subsection (1)(b)	ML1575
Ancillary 08 - Chemical Storage 2: Storing 50t or more of chemicals of dangerous goods class 6, division 6.1 under subsection (1)(b)	ML10215
Ancillary 08 - Chemical Storage 2: Storing 50t or more of chemicals of dangerous goods class 6, division 6.1 under subsection (1)(b)	ML10246
Ancillary 30 - Metal smelting and refining 1: Processing in a year (a) 1t to 100t of gold	ML1575
Ancillary 30 - Metal smelting and refining 1: Processing in a year (a) 1t to 100t of gold	ML10215
Ancillary 30 - Metal smelting and refining 1: Processing in a year (a) 1t to 100t of gold	ML10246
Ancillary 31 - Mineral processing 2: Processing, in a year, the following quantities of mineral products, other than coke (b) more than 100,000t	ML1575
Ancillary 31 - Mineral processing 2: Processing, in a year, the following quantities of mineral products, other than coke (b) more than 100,000t	ML10215
Ancillary 31 - Mineral processing 2: Processing, in a year, the following quantities of mineral products, other than coke (b) more than 100,000t	ML10246
Ancillary 60 - Waste disposal 3: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(c) (d) more than 200,000t	ML1575

Environmentally relevant activity/activities	Location(s)
Ancillary 60 - Waste disposal 3: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(c) (d) more than 200,000t	ML10215
Ancillary 60 - Waste disposal 3: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(c) (d) more than 200,000t	ML10246
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (a) scrap steel, non-putrescible waste or green waste only	ML1575
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (a) scrap steel, non-putrescible waste or green waste only	ML10215
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (a) scrap steel, non-putrescible waste or green waste only	ML10246
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (b) general waste	ML1575
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (b) general waste	ML10215
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (b) general waste	ML10246
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (c)	ML1575

Environmentally relevant activity/activities	Location(s)
category 2 regulated waste	
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (c) category 2 regulated waste	ML10215
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (c) category 2 regulated waste	ML10246
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (d) category 1 regulated waste	ML1575
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (d) category 1 regulated waste	ML10215
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (d) category 1 regulated waste	ML10246
Ancillary 63 - Sewage Treatment 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (a-ii) 21 to 100EP otherwise	ML1575
Ancillary 63 - Sewage Treatment 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (a-ii) 21 to 100EP otherwise	ML10215
Ancillary 63 - Sewage Treatment 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (a-ii) 21 to 100EP	ML10246

Environmentally relevant activity/activities	Location(s)
otherwise	
Ancillary 64 - Water treatment 3: Treating 10ML or more raw water in a day	ML1575
Ancillary 64 - Water treatment 3: Treating 10ML or more raw water in a day	ML10215
Ancillary 64 - Water treatment 3: Treating 10ML or more raw water in a day	ML10246

Additional information for applicantsEnvironmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority (EA) is issued is a restatement of the ERA as defined by legislation at the time the EA is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an EA as to the scale, intensity or manner of carrying out an ERA, the conditions prevail to the extent of the inconsistency.

An EA authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the EA specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Contaminated land

It is a requirement of the EP Act that an owner or occupier of contaminated land give written notice to the administering authority if they become aware of the following:

- the happening of an event involving a hazardous contaminant on the contaminated land (notice must be given within 24 hours); or
- a change in the condition of the contaminated land (notice must be given within 24 hours); or
- a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the contaminated land (notice must be given within 20 business days);

that is causing, or is reasonably likely to cause, serious or material environmental harm.

For further information, including the form for giving written notice, refer to the Queensland Government website www.qld.gov.au, using the search term 'duty to notify'.

Take effect

Please note that, in accordance with section 200 of the EP Act, an EA has effect:

- a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority-on the nominated day; or
- b) if the authority states a day or an event for it to take effect-on the stated day or when the stated event happens; or
- c) otherwise-on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Sustainable Planning Act 2009* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

If this EA takes effect when the additional authorisation takes effect, you must provide the administering authority written notice within 5 business days of receiving notification of the related additional authorisation taking effect.

If you have incorrectly claimed that an additional authorisation is not required, carrying out the ERA without the additional authorisation is not legal and could result in your prosecution for providing false or misleading information or operating without a valid environmental authority.

Rebecca McAuley
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Minerals Business Centre
Department of Environment and Science
Phone: 07 4222 5352
Email: ESCairns@des.qld.gov.au

Date issued: 19 January 2021

Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this environmental authority, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443)

Conditions of environmental authority

Schedule A – General

Schedule B – Air

Schedule C – Waste Management

Schedule D – Noise

Schedule E – Water

Schedule F – Biodiversity

Schedule G – Land and Rehabilitation

Schedule H – Regulated Structures

Schedule I – Definitions

Schedule J – Maps and Plans

Schedule A – General

- A1** This environmental authority authorises environmental harm referred to in the conditions. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence does not authorise environmental harm.
- A2** Contaminants with the potential to cause environmental harm must not be released directly or indirectly to the receiving environment, except as permitted under the conditions of this environmental authority.
- A3** The environmental authority holder must ensure that the activity is carried out in accordance with *Table A1* and *Schedule J – Figure 1 – Location of authorised disturbance: Dams; Figure 2 – Location of authorised disturbance: Waste rock dumps, landfills, irrigation areas and run of mine areas; Figure 3 – Location of authorised disturbance: Processing, voids, mining areas and ancillary infrastructure; and Figure 4 - Location of authorised disturbance: Powerlines-substations, seismic lines and topsoil stockpiles.*

Table A1 - Authorised disturbance ('Table A1')

Mine Domain	Mine Feature Name	Location (MGA94, Zone 55)		Maximum disturbance area (ha)
		Central Peg Coordinates		
Dams	TSF1	440890	7730335	40.4
	Scott Lode Pit	442769	7730189	19.06
	Stormwater dam	440567	7730716	4.68
	Madigan's dam	441708	7729948	1.54
	A Lode dam	443221	7730489	0.67
	Sam's dam	443375	7730601	2.26
	SL WRD Sump	441866	7731252	0.109
	Nancy dam	443508	7728461	0.348
	Vera dam	444109	7727491	1.318
Waste	Scott Lode WRD	441932	7730645	29.76
	Cindy WRD	443476	7729183	8.35
	Vera WRD	443871	7727624	3.73
	Janet A/K PAF WRD	442267	7730213	4.24
	Venue NAF WRD	443512	7727807	13.13

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Mine Domain	Mine Feature Name	Location (MGA94, Zone 55)		Maximum disturbance area (ha)
		Central Peg Coordinates		
	Venue PAF Footprint	443393	7728069	7.67
	Vera Landfill	443588	7727574	1.25
	Processing Landfill	440876	7729597	1.25
	Site Landfill	441090	7730050	2.25
	Irrigation area - Mill	441180	7729840	0.5
	Irrigation area - Vera	444210	7727921	0.5
	Anne temp WRD	442651	7729309	1.66
Run of Mine (ROM)	Vera ROM	443718	7727675	6.77
	Janet A ROM	441869	7730358	3
	Mill ROM	441074	7729560	2.46
	Lynne Boxcut ROM	445100	7726840	6.0
Processing area	Mill	441176	7729663	17.01
Ancillary Infrastructure	Exploration Core Yard	441497	7729882	1.4
	Exploration Outpost	444380	7729998	1.57
	Cindy Infrastructure	443661	7728977	4.24
	Haul Roads and Tracks	Various	Various	63.7
	Bypass Haul Road	Various	Various	4.93
	Starlight B Haul Road	Various	Various	0.93
	Lynne Haul Road	Various	Various	3.70
	Surface explosives area	443846	7729843	1.00
Voids	Nancy Pit	TBP ¹	TBP ¹	TBP ¹
	Nancy North Pit	TBP ¹	TBP ¹	TBP ¹
	Orchid Pit	444544	7727912	2.5

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Mine Domain	Mine Feature Name	Location (MGA94, Zone 55)		Maximum disturbance area (ha)
		Central Peg Coordinates		
	Janine East	442904	7728129	3.0
	Janine Northwest	442807	7728376	2.0
	Janet A Pit	442077	7730216	2.85
	Cindy Pit	443516	7728837	3.043
	Vera Pit	444057	7727739	2.97
	VNU Pit ²	443853	7727909	4.86
	Venue Pit ²	443735	7728070	6.136
	Sue Pit	442807	7728520	3.24
	Janine North Pit	443009	7728248	1.92
	Janine Extension Pit	443056	7728018	1.39
	Starlight B Pit	445601	7726994	3.00
	Anne Pits	442280	7729551	1.40
	Borrow Pit	441527	7729532	17.1
Mining Area	Vera	444246	7727865	5.35
	Vent Fans	Various	Various	0.16
	Powerlines	Various	Various	14.65
	Venue Project	443474	7728398	0.97
	Seismic Survey	Various	Various	39.95
	Lynne Powerline Stage 1 & 2	Various	Various	1.40
Exploration	Pajingo Site	Various	Various	19.50

1. TBP – To be provided prior to commencement of mining activity
2. Venue Pit and VNU pit are constructed as a single void

A4 The holder of this environmental authority must:

- a) Install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;
- b) Maintain such measures, plant and equipment in a proper and efficient condition;
- c) Operate such measures, plant and equipment in a proper and efficient manner; and
- d) Ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.

Monitoring

A5 All monitoring data, records and reports required by this environmental authority or related to environmental management of the activities must be:

- a) Carried out by an appropriately qualified person, periodically reviewed and updated as required to reflect operational or environmental changes;
- b) Kept for a period of not less than five (5) years;
- c) Provided to the administering authority in the specified format within 10 business days of a request; and
- d) Undertaken in accordance with the most recent version of any applicable standard or guideline for the activity.

A6 The following information must be recorded in relation to all monitoring required under a condition of this environmental authority:

- a) The date and time when the sample was taken;
- b) The location where the sample was taken; and
- c) Any other pertinent details of relevance to interpreting the sampling results (*i.e.* stream flow, wind conditions or any unusual observations such as odour or colouration).

A7 The environmental authority holder must implement all reasonable measures necessary to conduct monitoring required under a condition of this environmental authority.

Note: 'Reasonable measures' could include establishing and maintaining safe all-weather access to a monitoring location by upgrading roads/tracks, use of suitable automated sampling devices, developing alternative routes or utilising alternative transport.

Financial assurance

A8 Financial assurance must be lodged with the administering authority in the amount, the form and within the time required by the administering authority.

Risk management

A9 The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (ISO31000:2009), or the latest edition of an Australian standard for risk management, to the extent

relevant to environmental management, by **22 December 2016**.

Notification of emergencies, incidents and exceptions

- A10** The environmental authority holder must notify the administering authority within 24 hours of becoming aware of any emergency, incident, sample result or event which does or may contravene a condition of this environmental authority.
- A11** Within 10 business days following the initial notification of an emergency, event or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following:
- a) Results and interpretation of any samples taken and analysed;
 - b) Outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and
 - c) Proposed actions to prevent a recurrence of the emergency or incident.

Complaints

- A12** The holder of this environmental authority must record all environmental complaints received about the mining activities including:
- a) Name, address and contact number of the complainant;
 - b) Time and date of complaint;
 - c) Reasons for the complaint;
 - d) Investigations undertaken;
 - e) Conclusions formed;
 - f) Actions taken to resolve the complaint;
 - g) Any abatement measures implemented; and
 - h) Person responsible for resolving the complaint.
- A13** When requested by the administering authority, the environmental authority holder must undertake specified monitoring within the timeframe nominated by the administering authority, to investigate any complaint related to the activity.

Third-party reporting

- A14** The holder of this environmental authority must:
- a) By **30 June 2017**, obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority;
 - b) Obtain further such reports at regular intervals, not exceeding three (3) yearly intervals, from the completion of the report referred to above; and
 - c) Provide each report to the administering authority within 90 days of its completion.

Exploration

- A15** All exploration activities carried out on the mining leases must comply with each of the standard conditions contained in the most recent version of the administering authority's *Eligibility Criteria and Standard Conditions for Exploration and Mineral Development Projects* (ESR/2016/1985) (ERA Standard). Where there is a discrepancy between the ERA Standard and this environmental authority, the conditions of the environmental authority apply.

END OF CONDITIONS FOR SCHEDULE A

Schedule B – Air

- B1** The release of noxious or offensive odour, dust or any other airborne contaminant resulting from the activities must not cause environmental nuisance or harm.

END OF CONDITIONS FOR SCHEDULE B

Schedule C - Waste management

- C1** All waste generated as part of the mining activities must be disposed of in a lawful manner at an off-site facility, with the exception of:
- a) Waste rock and tailings, which must be characterised, handled and disposed of in accordance with condition **C5** of this environmental authority;
 - b) Timber pallets;
 - c) General waste deposited in the active waste disposal trench;
 - d) Tyres, subject to condition **C3**.
 - e) Concrete and foundation material, demolished building materials including veranda's and demountables, scrap steel and geological waste (core trays and unwanted core).

Note: The only waste authorised to be burnt on site is explosive boxes and untreated timber pallets, for fire training purposes, so long as the burning does not cause environmental harm.

- C2** General waste must only be disposed of into the waste disposal trench of ML1575 and ML10215 and identified in Schedule J – *Figure 2 – Location of authorised disturbance: Waste rock dumps, landfills, irrigation areas and run of mine areas.*
- C3** Subject to demonstrating to the administering authority that no other use higher in the waste management hierarchy can be practicably implemented, waste tyres generated from mining activities may be disposed of on site in non acid producing waste rock dumps or underground stopes.
- C4** Regulated waste awaiting removal may be temporarily stored on site awaiting removal provided it is stored to ensure there is minimal risk of causing fire or contamination to land or waters.
- C5** All waste rock and tailings must be:
- a) *Geochemically characterised* and disposed of in a manner that minimises the potential generation and/or release of contaminants to the receiving environment;
 - b) Where the geochemical characteristics of waste rock is uncertain, this material must be treated as *potentially acid forming, saline mine drainage or neutral mine drainage* forming until demonstrated otherwise; and
 - c) Details pertaining to meeting the requirements of this condition must be recorded and retained until this environmental authority is surrendered.
- C6** *WAD cyanide* concentrations in the *tailings surface liquor* must not exceed 50mg/L.
- C7** The environmental authority holder must immediately commence cyanide destruction if WAD cyanide concentrations in the tailings surface liquor exceed 50mg/L.
- C8** Any seepage from the temporary PAF waste rock dump from Janet A and K Dump must be directed to Scott Lode Pit.
- C9** Any seepage from the temporary PAF waste rock dump Venue/VNU must be directed to the Venue/VNU pits.
- C10** All waste rock characterised as *potentially acid forming* from Janet A pit, within K dump, within Anne pits and within Scott Lode waste rock dump must be returned to Scott Lode Pit, Janet A pit and Venue/VNU pit by December 2024.

- C11** All waste rock characterised as *potentially acid forming* from Nancy, Nancy North, Janine East, Janine Northwest, Orchid, Venue/ VNU pits, Lynne underground workings, Janine North, Janine Extension, Starlight B and Sue pits must be returned to Venue/VNU pit at the completion of the mining of these pits.
- C12** Within two years of completion of mining at Starlight B and Janine Northwest pits, the pits must be backfilled with *non acid producing* material from the same lithology.
- C13** Within six months of completion of mining at Anne pits, the pits must be backfilled with *non acid producing* material from the same lithology.

Sewage Treatment

- C14** Effluent from the sewage treatment plant must comply with the release limits stated in *Table C1*.

Table C1 – Treated sewage effluent contaminant release limits ('Table C1')

Contaminant	Unit	Release limit ¹	Release limit A Lode Dam ²	Limit type	Frequency
5 day Biochemical oxygen demand (BOD) ¹	mg/L	20	30	Maximum	Monthly
Total suspended solids	mg/L	30	100	Maximum	Monthly
Nitrogen	mg/L	30	30	Maximum	Monthly
Phosphorus	mg/L	15	30	Maximum	Monthly
E-coli	Organisms/100ml	1000	1000	Maximum	Monthly
pH	pH units	6.0 – 9.0.	5.5 – 9.0	Range	Monthly

1. Measured at the end of pipe
2. Measured at the end of pipe when released to the *A Lode Dam*
3. Based on at least 5 but no more than 10 consecutive samples

- C15** Sewage effluent may only be released to the following locations:
- a) Within the nominated irrigation area identified in *Table A1* or the *A Lode Dam*; or
 - b) Other land for the purpose of dust suppression and/or fire fighting; or
 - c) Reused as part of the mining activities.
- C16** The application of sewage effluent must be carried out in a manner such that:
- a) Vegetation is not damaged;
 - b) There is no surface ponding of effluent;
 - c) There is no run-off or over spray of effluent.

- C17** Sewage effluent releases must be monitored at the frequency and for the parameters specified in *Table C1*.
- C18** The daily volume of sewage effluent release must be measured and documented.
- C19** When circumstances prevent the irrigation or beneficial reuse of treated sewage effluent such as during or following rain events, measures must be taken to store or lawfully dispose of effluent.
- C20** Sewage effluent must only be supplied to another person or organisation that has a written plan detailing how the user of the treated sewage effluent will comply with their *general environmental duty* whilst using the treated sewage effluent.

END OF CONDITIONS FOR SCHEDULE C

Schedule D – Noise

Noise limits

- D1** The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in *Table D1* to be exceeded at a sensitive place or commercial place.

Table D1 – Noise limits ('Table D1')

Noise level DB(A) measured as:	Monday to Sundays and Public Holidays		
	9am to 6pm	6pm to 10pm	10pm to 9am
(Leq,adj,T (T = 15 minutes to 1 hour) dB(A)*	BG ¹ + 5 or (40dB)	BG ¹ + 5 or (35dB)	BG ¹ + 3 or (33dB)

1. Background (BG) noise level minimum based on "E3 guideline for Noise and from Extractive Industries" for night time and evening.

Airblast overpressure nuisance

- D2** The holder of this environmental authority must ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in *Table D2* to be exceeded at a sensitive place or commercial place.

Table D2 – Blasting noise limits ('Table D2')

Blasting noise limits	Sensitive or commercial blasting noise limits place limits		
	Monday to Friday 7am to 6pm Saturday, Sunday and Public Holidays 9am – 6pm Open Cut Pits and Underground Workings	Monday to Friday 6pm to 7am Saturday, Sunday and Public Holidays 6pm – 9am Open Cut Pits	Monday to Friday 6pm to 7am Saturday, Sunday and Public Holidays 6pm – 9am Underground Workings
Air blast overpressure	115 dB (Linear) Peak for nine (9) out of ten (10) consecutive blasts initiated and not greater than 120 bB (Linear) Peak at any time	No Blasting	115 dB (Linear) Peak for nine (9) out of ten (10) consecutive blasts initiated and not greater than 120 bB (Linear) Peak at any time

Ground vibration peak particle velocity	5mm/second peak particle velocity for nine (9) out of ten (10) consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	No Blasting	5mm/second peak particle velocity for nine (9) out of ten (10) consecutive blasts and not greater than 10 mm/second peak particle velocity at any time
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Monitoring and reporting

D3 Noise monitoring and recording must include the following descriptor characteristics and matters:

- $L_{AN,T}$ (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins)
- background noise LA90
- the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels
- atmospheric conditions including temperature, relative humidity and wind speed and directions
- effects due to any extraneous factors such as traffic noise
- location, date and time of monitoring
- if the complaint concerns low frequency noise, Max $L_{pLIN,T}$ and one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range.

Note: Noise and blast monitoring as required by the administering authority in accordance with Schedule A - condition **A13**

END OF CONDITIONS FOR SCHEDULE D

Schedule E – Water

Contaminant Release to Waters

- E1** Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters except as permitted under the conditions of this environmental authority.
- E2** The release of contaminants to waters must only occur from the authorised release points in Table E1 (Contaminant Release Points) and must be monitored at the locations and frequency specified in Table E1 (Contaminant Release Points) for each quality characteristics specified in Table E3 (Contaminant Release Limit and Trigger Levels).

Table E1 (Contaminant Release Points)

Release Point	Easting (GDA94 MGA Zone 55)	Northing (GDA94 MGA Zone 55)	Contaminant Source and Location, and Description of Release Point	Monitoring Point	Frequency
RP 1	440690	7730890	Stormwater Dam	Dam Spillway	daily during release (the first sample must be taken within 2 hours of the discovery of the release)
RP 2	443844	7728860	Cindy Dam	Dam Spillway	
RP 3	441635	7730140	Madigans Dam	Dam Spillway	
RP 4	444220	7727470	Vera Sump	Dam Spillway	
RP 5	443248	7730532	A Lode Dam	Dam Spillway	
RP 6	443470	7730550	Sam's Dam	Dam Spillway	
RP 7	441839	7731255	Sump Below Scott Lode Waste Rock Dump	Dam Spillway	
RP 8	441131	7730243	Tailings Storage Facility	Dam Spillway	
RP 9	442574	7730240	Scott Lode Pit	Dam Spillway	
RP 10	443460	7728480	Nancy Dam	Dam Spillway	
RP 12	443909	7727996	Venue /VNU Pit	Dam Spillway	
RP 14	444170	7727736	Oil Water Separator at Vera Workshop	End of Pipe	
RP 15	441170	7729780	Oil Water Separator at Mill Maintenance workshop, release point is the irrigation area	End of Pipe	
RP 17	442134	7730266	Janet A Pit	Dam Spillway	
RP 18	444539	7727967	Orchid Pit	Dam Spillway	
RP 19 ¹	442930	7728202	Janine East Pit	Dam Spillway	

1. In accordance with condition E52 and E53, the holder of the environmental authority must not release from RP19 until site specific release limits have been set.

E3 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build-up of sediment in such waters.

Receiving Environment Monitoring

E4 The quality of the receiving waters must be monitored at the locations specified in Table E2 (Down Stream Monitoring Points and Reference Sites) for each quality characteristic and at the frequency stated in Table E3 (Contaminant Release Limit and Trigger Levels).

E5 If quality characteristics of the release to waters exceed any of the trigger levels specified in Table E3 (Contaminant Release Limit and Trigger Levels) during a release event at the discharge points specified in Table E1 (Contaminant Release Points) or at the downstream monitoring sites specified in Table E2 (Down Stream Monitoring Points and Reference Sites), the environmental authority holder must compare the results of the impacted site to the data from reference monitoring sites and:

- (a) if the level of contaminants at the downstream site does not exceed the reference monitoring site data, then no action is to be taken; or
- (b) if the level of contaminants at the downstream site is greater than the reference monitoring site data, complete an investigation in accordance with the ANZECC & ARM CANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:
 - (i) details of the investigations carried out; and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with E5 b (ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.

E6 Release of contaminants to waters must not result in an exceedance of contaminant limits stated in Table E3 (Contaminant Release Limit and Trigger Levels) when measured at the monitoring points specified in Table E2 (Down Stream Monitoring Points and Reference Sites) and authorised discharge points in Table E1 (Contaminant Release Limits) for each quality characteristic.

Table E2 (Down Stream Monitoring Points and Reference Sites)

Monitoring point (impacted sites)	Easting (GDA 94 MGA Zone 55)	Northing (GDA 94 MGA Zone 55)	Receiving waters description	Monitoring frequency
WP2 ^	444306	7730433	Ephemeral stream	daily during release (the first sample must be taken within 2 hours of the discovery of the release)
WP3^	443534	7730448	Ephemeral stream	
WP13	441766	7733124	Ephemeral stream	
WP15	444737	7728844	Ephemeral stream	
WP16	444060	7729620	Ephemeral stream	
WP18	444694	7728269	Ephemeral stream	
WP19	444629	7728053	Ephemeral stream	
WP27	444670	7729618	Ephemeral stream	
WP28^	440936	7731148	Ephemeral stream	

Monitoring point (impacted sites)	Easting (GDA 94 MGA Zone 55)	Northing (GDA 94 MGA Zone 55)	Receiving waters description	Monitoring frequency
WP29	443875	7728646	Ephemeral stream	
WP30^	441923	7731465	Ephemeral stream	
WP31	442201.9	7730299	Ephemeral stream	
NOTE: This does not apply to tailings dams ^ indicates sample point for WAD CN				
Receiving Waters - Reference Sites ¹				
WP - C1	442490	7731468	Ephemeral stream	
WP – C2	443829	7727370	Ephemeral stream	
WP – C3	441134	7778112	Ephemeral stream	
WP - C4	442943	7730551	Ephemeral stream	

1. Reference sites must:
- (a) be from the same bio-geographic and climatic region; and
 - (b) have similar geology, soil types and topography; and
 - (c) contain a range of habitats similar to those at the test sites; and
 - (d) have a similar flow regime; and
 - (e) not be so close to the test sites that any disturbance at the test site also results in a change at the reference site

Notes:

- a) The reference / upstream monitoring point should be within 1km the release point.
- b) The downstream point should not be greater than 500m from the release point.
- c) The data from reference monitoring points must not be used where they are affected by releases from other mines.

Table E3 (Contaminant Release Limit and Trigger Levels)

Quality / Characteristic	Contaminant Trigger Level for all other Release Points in Table E1 and Monitoring Points in Table E2	Contaminant Release Limit for all other Release Points in Table E1 and Monitoring Points in Table E2	Contaminant Release Limit for RP19 ⁷
pH	6.0 (minimum)	5.0 (minimum) or 5th percentile ¹ of reference sites ¹ , whichever is higher	TBA ⁷
	7.5 (maximum)	9.0 (maximum) or 95th percentile ¹ of reference sites ¹ , whichever is lower	
Electrical Conductivity	435 (µS/cm)	1000 (µS/cm) or 95th percentile of reference, whichever is lower	TBA ⁷
Cadmium	0.0002 (mg/L)	0.01 (mg/L) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷
Sulphate	80th percentile ¹ of the reference ¹	1000 (mg/L) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷
Copper	0.0014 (mg/L)	1 (mg/L) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷

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Nickel	0.011 (mg/L)	1 (mg/L) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷
Lead	0.0034 (mg/L)	0.1 (mg/L) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷
Zinc	0.008 (mg/L)	20 (mg/L) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷
Arsenic	0.013 (mg/L)	0.5 (mg/L) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷
Mercury	0.0006 (mg/L)	0.002 (mg/L) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷
Cyanide (WAD) ³	For interpretation only	For interpretation only	TBA ⁷
Cyanide (Free)	7 (µg/L)	0.5(mg/l) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷
Silver	0.05 (µg/L)	0.1(µg/L) or 95th percentile ¹ of reference sites ¹ , whichever is lower	TBA ⁷
Total Petroleum Hydrocarbons (TPH) ⁵	-	5 (mg/L)	-
Dissolved oxygen ⁶	80th percentile of the reference ¹ (mg/L)	95th percentile of reference sites ¹ (mg/L)	-
Total nitrogen ⁶	80th percentile of the reference ¹ (mg/L as nitrogen)	95th percentile of reference sites ¹ (mg/L as nitrogen)	-
Total phosphorous ⁶	80th percentile of the reference ¹ (mg/L as phosphorous)	95th percentile of reference sites ¹ (mg/L as phosphorous)	-
Faecal Coliforms ⁶	-	100 (CFU/100mL)	-

NOTE: This does not apply to tailings dams

1. Trigger levels based on percentiles are derived using ANZECC (2000) methodology and are based on the reference sites defined in Schedule E Table E2. For the accordance of doubt if the reference dataset is not ANZECC (2000) compliant than the default limits should be used.
2. ANZECC (2000) trigger levels for aquatic ecosystems of slightly disturbed tropical Australian upland rivers. (95th percentile level of protection)
3. WAD CN is Weak Acid Dissociable Cyanide, measured as an indicator of the bio-available cyanide. WAD CN must be sampled at locations marked with ^ in Schedule E- Table E2 only.
4. Total dissolved solids
5. TPH monitored at locations RP 14, RP 15, RP 16 in Table E1 1
6. These limits will apply to the authorised release point at A Lode Dam only RP5 as specified in Table E1
7. In accordance with condition E53, the holder of the environmental authority must provide the administering authority site specific release limits that meet the requirements of Table E3. The site specific release limits must be determined in accordance with the *Technical guideline – Licensing – Wastewater release to Queensland waters (ESR/2015/1654, Version 2.00, Effective: 12 September 2016)*. The site specific release limits must be agreed to by the administering authority.

Stream Flow Monitoring

- E7** The holder of this environmental authority must install, operate and maintain a stream flow gauging station to determine and record stream flows at the locations upstream of each release point as specified in Table E4 (Contaminant Release During Flow Events) for any receiving water into which a release occurs.

- E8** Notwithstanding any other condition of this environmental authority, the release of contaminants to waters must only take place during periods of natural flow events specified as minimum flow in Table E4 (Contaminant Release During Flow Events) for the contaminant release point(s) specified in Table E1 (Contaminant Release Points).

Table E4 (Contaminant Release During Flow Events)

Receiving Water Description	Release Point	Gauging Station Description	Easting (GDA94 MGA Zone 55)	Northing (GDA94 MGA Zone 55)	Minimum Flow in Receiving Water Required for a Release Event	Flow Recording Frequency
MD2B – Molly Darling Creek	RP1 RP3 RP7 RP8	Area/ velocity/ flow module logger	442300	7734180	Depending on individual catchment this minimum flow trigger will be either the release comprising less than 5% of the natural flow or any natural flow in the receiving environment.	Continuous (minimum daily)
FM2 – Four Mile Creek	RP2 RP4 RP6 RP9 RP10 RP18 RP19	Area/ velocity/ flow module logger	449427	7730394	The volume of flow can be determined by height of water or flow. The actual flow must be a quantifiable measurement. Example: $\geq 5\text{m}^3/\text{sec}$	

- E9** At the time of release the water flow volume in the respective receiving water must be at least twenty (20) times the volume at which respective treated waste waters are released.

Stream Sediment Contaminant Levels

- E10** Sediment quality of receiving waters and reference waters must be monitored twice a year (once at the end of the wet season and once at the end of the dry season) at the monitoring locations defined in Table e6 (Receiving stream sediment monitoring locations and frequency) and for the parameters defined in Table E5 (Stream sediment trigger and contaminant levels).
- E11** If quality characteristics of the release exceed any of the trigger levels specified in Table E5 (Stream sediment trigger and contaminant levels) during a release event, the environmental authority holder must compare the results of the impact site to the data from reference monitoring sites and:
- if the level of contaminants at the downstream site does not exceed the reference monitoring site data, then no action is to be taken; and
 - if the level of contaminants at the downstream site is greater than the reference monitoring site data, complete an investigation in accordance with the ANZECC & ARMICANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:
 - details of the investigations carried out; and

(ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with E11 b (ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.

E12 The release of contaminants to water must not result in an exceedance of sediment contaminant limits stated in Table E5 (Stream sediment trigger and contaminant levels) when measured at the monitoring points specified in Table E6 (Receiving stream sediment monitoring locations and frequency) for each quality characteristic.

E13 All stream sediment sampling must be undertaken in accordance with AS 5667.12 Guidance on Sampling of Bottom Sediments of 1999.

Table E5 - Stream sediment trigger and contaminant levels

Parameter	Unit	Trigger Level	Contaminant Limit
Antimony	mg/kg	Reference value ¹ or 2 ² , whichever is higher.	25 ³ or three times the reference value ¹ , whichever is higher
Arsenic	mg/kg	Reference value ¹ or 20 ² , whichever is higher.	70 ³ or three times the reference value ¹ , whichever is higher
Barium	mg/kg	Reference value ¹ or 109 ⁴ , whichever is higher.	153 ⁴ or three times the reference value ¹ , whichever is higher
Cadmium	mg/kg	Reference value ¹ or 1.5 ³ , whichever is higher.	10 ³ or three times the reference value ² , whichever is higher
Copper	mg/kg	Reference ¹ or 65 ² , whichever is higher.	270 ³ or three times the reference value ¹ , whichever is higher
Lead	mg/kg	Reference value ¹ or 50 ² whichever is higher.	220 ³ or three times the reference value ¹ , whichever is higher
Mercury	mg/kg	Reference value ¹ or 0.15 ² whichever is higher.	1 ³ or twice the reference value ¹ , whichever is higher
Nickel	mg/kg	Reference value ¹ or 21 ² , whichever is higher.	52 ³ or three times the reference value ¹ , whichever is higher.
Silver	mg/kg	Reference value ¹ or 1 ² , whichever is higher.	3.7 ³ or three times the reference value ¹ , whichever is higher
Zinc	mg/kg	Reference value ¹ or 200 ² , whichever is higher.	410 ³ or three times the reference value ¹ , whichever is higher.

1. Reference sites are defined in Table E6.

2. ANZECC (2000) Interim Sediment Quality Guidelines – low values based on total sediments

3. ANZECC (2000) Interim Sediment Quality Guidelines – high values based on total sediments

4. Values based on site specific parameters

Table E6 - Receiving stream sediment monitoring locations and frequency

Monitoring Point	Easting (GDA 94 MGA Zone 55)	Northing (GDA 94 MGA Zone 55)	Monitoring Frequency
WP13 – RSS on creek line northern lease boundary (ML 1575)	441766	7733124	Twice Annually
WP15 - RSS on creek line eastern lease boundary (ML 1575)	444737	7728844	Twice Annually
WP16 - RSS on creek line eastern lease boundary (ML 1575)	444060	7729620	Twice Annually
WP18 - RSS on creek line south eastern lease boundary (ML 1575)	444694	7728269	Twice Annually
WP30 – on drainage line north of Scott Lode Waste Rock Dump	441923	7731465	Twice Annually
WP2 - RSS on creek line eastern lease boundary (ML 1575)	444306	7730433	Twice Annually
WP – C1 reference site	442490	7731468	Twice Annually
WP – C3 reference site	441134	7778112	Twice Annually

Receiving Environment Monitoring Program (REMP)

E14 A REMP must be developed and implemented by 30 January 2013 to monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being discharged from the site, with the aims of identifying and describing the extent of any adverse impacts to local environmental values, and monitoring any changes in the receiving water. A copy of the REMP must be provided to the administering authority prior to its implementation and due consideration given to any comments made on the REMP by the administering authority.

For the purposes of the REMP, the receiving environment is the waters within 5 km downstream of any release point.

E15 The REMP must address (but not necessarily be limited to) the following:

- Description of potentially affected receiving waters including key communities and reference water quality and sediment characteristics based on accurate and reliable monitoring data that takes into consideration any temporal variation (e.g. seasonality); and
- Description of applicable environmental values and water quality objectives to be achieved (i.e. as scheduled pursuant to the Environmental Protection (Water) Policy 2009); and
- Any relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment within which the REMP is proposed; and
- Water and sediment quality targets within the receiving environment to be achieved, and clarification of contaminant concentrations or levels indicating adverse environmental impacts during the REMP.
- Monitoring for any potential adverse environmental impacts caused by the release;
- Monitoring of stream flow and hydrology;
- Monitoring of toxicants should consider the indicators specified in Table E3 to assess the extent of the compliance of concentrations with water quality objectives and/or the ANZECC 2000 guidelines for livestock drinking water guidelines;

- h) Monitoring of the parameters as a minimum those specified in Table E3 (in addition to dissolved oxygen saturation and temperature);
- i) Monitoring biological indicators (for macroinvertebrates in accordance with the administering authorities' monitoring and sampling manual (AusRivas methodology) and metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.1 *Guidance on Sampling of Bottom Sediments*) for permanent, semi-permanent water holes and water storages;
- j) The locations of monitoring points (including the locations specified in Table E2 which are reference/upstream and downstream impacted sites for each release point);
- k) The frequency or scheduling of sampling and analysis sufficient to determine water quality objectives and to derive site specific reference values within 2 years (depending on wet season flows) in accordance with the *Queensland Water Quality Guidelines*. For ephemeral streams, this should include periods of flow irrespective of mine or other discharges;
- l) Specify sampling and analysis methods and quality assurance and control;
- m) Any historical datasets to be relied upon;
- n) Description of the statistical basis on which conclusions are drawn; and
- o) Any spatial and temporal controls to exclude potential confounding factors.

E16 A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with conditions **E15** must be prepared and submitted in writing to the administering authority by 1 May 2015 and thereafter every 12 months. This should include an assessment of reference water quality, any assimilative capacity for those contaminants monitored and the suitability of current discharge limits to protect downstream environment values.

Monitoring of Water Storage Quality

- E17** Water storages stated in Table E7 (Water Storage Monitoring) must be monitored for the water quality characteristics specified in Table E8 (Onsite Water Storage Contaminant Limits) at the monitoring locations and at the monitoring frequency specified in Table E7 (Water Storage Monitoring).
- E18** In the event that waters storages defined in Table E7 (Water Storage Monitoring) exceed the contaminant limits defined in Table E8 (Onsite Water Storage Contaminant Limits), the holder of the environmental authority must implement measures to prevent access to waters by all livestock and minimise access by native fauna.

Table E7 (Water Storage Monitoring)

Water Storage Description	Central Peg Coordinates Easting (GDA94 MGA Zone 55)	Central Peg Coordinates Northing (GDA94 MGA Zone 55)	Monitoring Location	Frequency of Monitoring
Stormwater Dam	440567	7730716	440418; 7730687	Quarterly
Madigans Dam	441708	7729948	444621; 7730090	Quarterly
Vera Dam	444109	7727491	444164; 7727501	Quarterly
A Lode Dam	443221	7730489	443231; 7730449	Quarterly
Sam's Dam	443375	7730601	443460; 7730576	Quarterly
Sump Below Scott Lode Waste Rock Dump	441866	7731252	441861; 7731241	Quarterly

Table E8 (Onsite Water Storage Contaminant Limits)

Parameter	Unit	Test Value	Contaminant Limit
pH	pH unit	Range	Greater than 5.5, less than 9 ³
EC	µS/cm	Maximum	5970 ¹
Sulphate	mg/L	Maximum	1000 ¹
TDS ⁴	mg/L	Maximum	4000
Arsenic	mg/L	Maximum	0.5 ¹
Cadmium	mg/L	Maximum	0.01 ¹
Copper	mg/L	Maximum	1 ¹
Lead	mg/L	Maximum	0.1 ¹
Mercury	mg/L	Maximum	0.002 ¹
Nickel	mg/L	Maximum	1 ¹
Zinc	mg/L	Maximum	20 ¹
WAD Cyanide	mg/L	Maximum	0.2 ¹
Faecal coliforms ⁵	CFU/100ml	Maximum	100 ¹
Nitrite ⁵	mg/L	Maximum	30 ¹

1. Contaminant limit based on ANZECC (2000) stock water quality guidelines. Note: Analysis for total metal concentrations.
2. Contaminant limit based on the Australia Governments draft Sodium Cyanide Assessment Report (September 2009).
3. This range was proposed by NQM Environmental Management Plan May 2010, provided by NQM Gold
4. Total dissolved solids.
5. These limits will apply to water stored in A Lode Dam only RP5 as specified in Table E1.

Groundwater

- E19** Groundwater quality and level must be monitored at the locations and frequencies defined in Table E9 (Groundwater Monitoring Locations and Frequency) for parameters identified in Table E10 (Groundwater contaminant and trigger limits).
- E20** Groundwaters from bores identified in Table E9 (Groundwater Monitoring Locations and Frequency), must not exceed any of the contaminant limits defined in Table E10 (Groundwater contaminant and trigger limits).
- E21** The holder of this environmental authority must develop and submit a groundwater monitoring program to the administering authority within twelve (12) months from the date of issue of this environmental authority.
- E22** The groundwater monitoring program required in Condition **E21** must include:
- a) proposed groundwater monitoring bore locations;
 - b) justification of the proposed groundwater monitoring locations, including, but not limited to;
 - (i) providing a sufficient number of background/reference monitoring sites, that are unaffected by the mining activities authorised under this environmental authority to allow scientifically justifiable conclusions on the level of impact from the mining activities;
 - (ii) base flow assessment of all water courses affected by mining activities; and
 - (iii) sufficient number of monitoring bores to enable early detection of any potential groundwater contamination.
 - c) monitoring of groundwater that includes sufficient number of monitoring bores which provides sufficient spatial coverage to enable scientifically justifiable conclusions in relation to potential environmental impacts from mining activities;
 - d) monitoring of physical and chemical parameters, to enable scientifically justifiable conclusions in relation to potential environmental impacts from mining activities;
 - e) the development of baseline groundwater information, including quality, groundwater flow direction and rate and hydraulic conductivity. In addition, consideration must be given to how these parameters may change during the life of the mining project.
 - f) characterisation of the potential impacts to the local groundwater system arising from mining activities;
 - g) representative groundwater samples for the aquifers being sampled;
 - h) bore construction details; and
 - i) include a conceptual groundwater model.

j) monitoring of groundwater levels to detect any impacts from the activity.

- E23** The groundwater monitoring program developed in accordance with Condition **E21** must be independently certified by an appropriately qualified person as meeting the requirements of Condition **E22** (above).
- E24** The groundwater monitoring program developed in accordance with Condition **E21** must be implemented.
- E25** The groundwater monitoring program must be reviewed and updated by an appropriately qualified person by **1 May 2019**, and every three years thereafter to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with the conditions of this environmental authority and that environmental harm to groundwaters is prevented or minimised.
- E26** A report detailing the review in condition **E25** must be provided to the administering authority within 30 days of the completion of the review. The report must comment on monitoring program design and recommended any necessary or desirable changes to monitoring locations, parameters, triggers and contaminant limits as contained in this environmental authority. Such recommendations should be provided with scientific justification.
- E27** Groundwater monitoring bores must be constructed and operated in accordance with methods prescribed in the latest edition of the Agriculture and Resource Management Council of Australia and New Zealand manual titled *Minimum Construction Requirements for Water Bores in Australia*.
- E28** Annual groundwater monitoring reports analysing groundwater chemistry and hydro-geological status of all groundwater bores and groundwater conditions must be prepared and provided on request.
- E29** Groundwater levels must be monitored and groundwater level fluctuations in excess of 2m per year, (not resulting from the pumping of licensed bores) must be reported to the administering authority within 14 days following completion of monitoring.

Table E9 - Groundwater monitoring locations and frequency

Monitoring Point	Location (MGA94 – Zone 55)		Aquifer	Surface RL (m) ¹	Depth (m)	Screen(s) (m)	Monitoring Frequency	
	Easting	Northing					Standing Water Level	Ground water Quality
Reference Bores ²								
Tertiary Sediments and Molly Darling Sandstone								
7D	441729.85	7732119.534	Sandstone	281.821	32.3	13-32.2	Monthly ²	Monthly ²
PW65 ⁵	429576	7741047	Sandstone (Britannia Borefield)	330	84	60 - 84		
MB19	441789.818	7733195.396	Andesite	270.705	71	56-68		
Vera-Nancy Volcanics								
MB7	445931	7726641	Volcanics	TBA	40.0	28.0	Monthly ²	Monthly ²
MB18	444653	7728265	Andesite	283.522	64	58-64		
MB20	441156.521	7728115.809	Sandstone	348.848	56	44-56		
JA02 ^A	441847.8	7730283	Volcanics	350.860	124	61-79	Every 12 hours	Monthly ²
LYN01	444399	7727211	Volcanics	288.53	35	29-35	Monthly ²	
LYN06	444635	7725405	Volcanics	299.72	119.5	107.5- 119.5	Monthly ²	
LYN08	444440	7726630	Volcanics	292.43	56	50-56	Monthly ²	Monthly ²
Compliance Bores								
Tertiary Sediments and Molly Darling Sandstone								
13S*	440956	7730789	Tertiary Sediments	322	11	5-10	Quarterly	N/A
4D TSF	440102.365	7730670.568	Volcanics	312.940	55	30-55		Quarterly
5D	440493.558	7730962.118	Volcanics	316.057	65	30-65		
6D	440809.309	7731116.984	Sandstone	317.040	60	30-60		
8D ⁵	440517.861	7730813.836	Saprolite (70 Mile Range Group)	318.573	60	36-56.9		
10D	441906.379	7731449.712	Volcanics	293.310	42	19-42		
MB9S	441990.938	7731192.892	Molly Darling Sandstone	306.549	15	7-15		
MB9D	441986.962	7731194.020	Molly Darling Sandstone	306.373	60	41-60		

Monitoring Point	Location (MGA94 – Zone 55)		Aquifer	Surface RL (m) ¹	Depth (m)	Screen(s) (m)	Monitoring Frequency	
	Easting	Northing					Standing Water Level	Ground water Quality
MB23 ⁴	441408.251	7730908.766	Tertiary Sediments	301.313	20	19-20		
MB24 ⁴	440817.914	7729845.709	Tertiary Sediments	341.411	20	19-20		
JMB0026	444041.02	7728727.02	Tertiary Sediments	289.82	70	62-68		
Vera-Nancy Volcanics								
MB2	442455.79	7730119.37	Pajingo volcanics (minor quartz)	318.215	140	75-140	Quarterly	Quarterly
MB4D SLP	443109.365	7730384.162	Volcanics and Molly Darling Sandstone	294.189	98	86-98		
MB5	442222.95	7730153.39	Andesite	336.73	94	82-88		
MB14	443275.206	7729954.865	Andesite	324.123	92.5	80-92.5		
MB15	442960.973	7730035.223	Andesite	305.456	50	38.5-50		
MB25	444580.699	7728062.021	Andesite	285.582	60	52-58		
JA05	442120.900	7730305.000	Andesite	337.730	23	8-23		
JMB0027	444646.42	7728252.41	Vera- Nancy Volcanics	281.9	17	12-15		
JAN10	442964	7728234	Volcanics	352.201	68	62-68		
VEN09	443817	7728187	Volcanics	311	138.8	126.8- 138.8	Monthly ²	Monthly ²
LYN02	445246	7727055	Volcanics	279.16	77	65-77		
LYN03	445257	7727028	Weathered Volcanics	283	47.5	41.5-47.5		
Doongara Foundation								
LYN07	445764	7724800	Clay	267.09	106.5	94.5-106.5	Monthly ²	Monthly ²
Observation Bores								
Vera-Nancy Volcanics								
JA01 ^{6,A}	441921.295	7730272.612	Volcanics	350.965	96.5	78 – 90.5	Every 12 hours	Quarterly

Monitoring Point	Location (MGA94 – Zone 55)		Aquifer	Surface RL (m) ¹	Depth (m)	Screen(s) (m)	Monitoring Frequency	
	Easting	Northing					Standing Water Level	Ground water Quality
Cainozoic Basalt								
LYN05	445412	7725007	Basalt	274.98	86	56-86	Monthly ²	Monthly ²

1. RL measurement to be taken from top of bore casing
2. Will revert to a monitoring frequency of quarterly after 24 months of data collection.
4. Location to be confirmed when installed.
5. Subject to meeting bore construction requirements.
6. The purpose of this bore is early detection of seepage from Janet A Pit. Only SWL, field parameters, major ions and total cyanide are required to be measured. Water level measurement to be taken from top of bore casing. A pump back system must be fitted if seepage from Janet A Pit is detected.
- A. Standing water level must be measured every 12 hours using digital loggers in these bores.
- *. Measure standing water level only.

Table E10 - Groundwater contaminant and trigger limits

Quality Characteristic	Units	Contaminant trigger level	Contaminant limit
Electrical Conductivity	($\mu\text{S}/\text{cm}$)	435 or 80 th percentile of reference ^{4,5}	N/A
pH (pH Unit)	pH Units	6.0 (minimum) or 20 th percentile of reference ^{4,5} 7.0 (maximum) or 80 th percentile of reference ^{4,5}	5.0 (minimum) ¹ or 5th percentile of reference sites ² , whichever is higher 9.0 (maximum) ¹ or 95th percentile of reference sites ² , whichever is lower
Hardness	mg/L	For interpretation purposes only	
Sulphate (SO_4^{2-})	mg/L	80 th percentile of the reference ⁴	1000 (mg/L) ¹ or 95th percentile of reference sites ² , whichever is lower
Arsenic	mg/L	0.013 (mg/L) ³ or 80 th percentile of reference ^{4,5}	0.5 (mg/L) ¹ as total metals and 95th percentile of reference sites ² as dissolved metals
Cadmium	mg/L	0.0002 (mg/L) ³ or 80 th percentile of reference ^{4,5}	0.01 (mg/L) ¹ as total metals and 95th percentile of reference sites ² as dissolved metals
Copper	mg/L	0.0014 (mg/L) ³ or 80 th percentile of reference ^{4,5}	1 (mg/L) ¹ as total metals and 95th percentile of reference sites ² as dissolved metals
Chromium	mg/L	0.001 (mg/L) ³ or 80 th percentile of reference ^{4,5}	1 (mg/L) ¹ as total metals and 95th percentile of reference sites ² as dissolved metals
Lead	mg/L	0.0034 (mg/L) ³ or 80 th percentile of reference ^{4,5}	0.1 (mg/L) ¹ as total metals and 95th percentile of reference sites ² as dissolved metals
Mercury	mg/L	0.0006 (mg/L) ³ or 80 th percentile of reference ^{4,5}	0.002 (mg/L) ¹ as total metals and 95th percentile of reference sites ² as dissolved metals
Molybdenum	mg/L	80 th percentile of the reference ⁴	0.15 (mg/L) ¹ as total metals and 95th percentile of reference sites ²
Nickel	mg/L	0.011 (mg/L) ³ or 80 th percentile of reference ^{4,5}	1 (mg/L) ¹ as total metals and 95th percentile of reference sites ² as dissolved metals
Selenium	mg/L	0.011 (mg/L) ³ or 80 th percentile of reference ^{4,5}	0.02 (mg/L) ¹ as total metals and 95th percentile of reference sites ² as dissolved metals
Zinc	mg/L	0.008 (mg/L) ³ or 80 th percentile of reference ^{4,5}	20 (mg/L) ¹ as total metals and 95th percentile of reference sites ² as dissolved metals
Cyanide (WAD)	mg/L	For interpretation only	For interpretation only
Cyanide (Free)		7 ($\mu\text{g}/\text{L}$) ³ or 80 th percentile of reference ^{4,5}	0.5(mg/L) ¹ or 95th percentile of reference sites ² , whichever is lower
Total nitrogen ⁶	mg/L as nitrogen	80 th percentile of the reference ⁴	95% of reference site ²

Quality Characteristic	Units	Contaminant trigger level	Contaminant limit
Total phosphorous ⁶	mg/L as phosphorous	80 th percentile of the reference ⁴	95% of reference site ²

1. These limits taken from the Pajingo Gold Mine Environmental Management Plan May 2010 provided by NQM Gold.
2. where 95th percentile of reference is exceeded and the reference site also exceeds the value during the same event, the value of the reference site during the same event applies as the groundwater contaminant limit.
3. ANZECC (2000) trigger levels for aquatic ecosystems of slightly disturbed tropical Australian upland rivers (95% level of protection).
4. Trigger levels based on percentiles are derived using ANZECC (2000) methodology and are based on the reference sites defined in Schedule E Table E9.
5. 80th percentile of reference values apply only when sufficient monitoring data is available (see footnote 4).
6. This analysis is only required for monitoring bores installed directly down gradient of A Lode Dam.

E30 If quality characteristics of the groundwater monitoring exceed any of the trigger levels specified in Table E10 (Groundwater contaminant and trigger limits) the environmental authority holder must compare the results of the impact site to the data from reference monitoring sites and:

- (a) if the level of contaminants at the downstream site does not exceed the reference monitoring site data, then no action is to be taken; or
- (b) if the level of contaminants at the downstream site is greater than the reference monitoring site data, complete an investigation in accordance with the ANZECC & ARM CANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:
 - (i) details of the investigations carried out; and
 - (ii) actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **E30 b (ii)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.*

Water General

E31 All determinations of water quality must be:

- a) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements;
- b) made in accordance with methods prescribed in the latest edition of the administering authority's monitoring and sampling manual;
- c) collected from the monitoring locations identified within this environmental authority, within 12 hours of each other where possible; and
- d) carried out on representative samples.
- e) laboratory testing must be undertaken using a laboratory accredited (e.g. NATA) for the method of analysis being used.

Water release events

E32 For any water release event the authority holder must notify the administering authority as soon as possible (no later than six (6) hours of having commenced releasing mine affected water to the receiving environment) and provide the following information:

- (a) release commencement date/time;
- (b) expected release cessation date/time;

- (c) release point/s;
- (d) release volume (estimated);
- (e) receiving water/s including the natural flow rate; and
- (f) any details (including available data) regarding likely impacts on the receiving water(s).
- (g) notification of persons who may be affected by the event has occurred/is being undertaken.

Note: Notification to the administering authority must be addressed to the Manager and Project Manager of the local administering authority via phone, e-mail or facsimile.

E33 The authority holder must notify the administering authority as soon as possible (within twenty-four (24) hours) of the cessation of a water release event and then within 28 days provide the following information in writing:

- (a) release cessation date/time;
- (b) the reason for the release;
- (c) the location of the release;
- (d) natural flow volume in receiving water;
- (e) an estimate of the volume of water released;
- (f) all water quality monitoring results;
- (g) details regarding the compliance of the release with the conditions of this environmental authority (i.e. contamination limits);
- (h) any general observations;
- (i) all calculations;
- (j) any other matters pertinent to the water release event.

E34 The release of contaminants directly or indirectly to waters:

- (a) must not produce any visible discolouration of receiving waters; nor
- (b) must not produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.

Annual Water Monitoring Reporting

E35 The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority on request:

- (a) the date on which the sample was taken;
- (b) the time at which the sample was taken;
- (c) the monitoring point at which the sample was taken;
- (d) the measured or estimated daily quantity of the contaminants released from all release points;
- (e) the release flow rate at the time of sampling for each release point;
- (f) the results of all monitoring and details of any exceedances with the conditions of this environmental authority; and

- (g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

Water Management Plan

- E36** The holder of the environmental authority must implement a Water Management Plan that provides for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity and to ensure compliance with the conditions of this environmental authority.
- E37** The Water Management Plan must be developed in accordance with Administering Authority Guideline for Preparing a Water Management Plan 2009 or any updates that become available from time to time and must include at least the following components:
- (a) Contaminant Source Study;
 - (b) Site Water Balance and Model;
 - (c) Water Management System;
 - (d) Saline and Metalliferous Drainage Prevention and Management Measures;
 - (e) Acid Rock Drainage Prevention and Management Measures (if applicable);
 - (f) Emergency and Contingency Planning;
 - (g) Monitoring and Review.
- E38** Each year the holder of the environmental authority must undertake a review of the Water Management Plan prior to the wet season (and no later than 1 November) and a further review following the wet season (i.e. by 1 May the following year) to ensure that proper and effective *measures, practices or procedures are in place so that the mine is operated in accordance with the conditions of this environmental authority and that environmental harm is prevented or minimised.*
- E39** A copy of the Water Management Plan and/or a review of the Water Management Plan must be provided to the administering authority on request.

Saline, acid rock and metalliferous drainage

- E40** The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline, acid rock and/or metalliferous drainage.

Stormwater, Sediment and Erosion controls

- E41** An Erosion and Sediment Control Plan must be developed and certified by an appropriately qualified person and implemented for all stages of the mining activities on the site to prevent or minimise erosion and the release of sediment to receiving waters and the contamination of storm water.
- E42** The Erosion and Sediment Control Plan must be included in each subsequent Plans of Operations and provide for at least the following stormwater management functions:
- (a) Prevent or minimise the contamination of stormwater;
 - (b) diverting uncontaminated stormwater run-off around areas disturbed by mining activities or where contaminants or wastes are stored or handled;

- (c) contaminated stormwater runoff, incident rainfall and leachate is collected; and treated, reused, or released in accordance with the conditions of this environmental authority;
- (d) roofing or minimising the size of areas where contaminants or wastes are stored or handled;
- (e) using alternate materials and or processes (such as dry absorbents) to clean up spills that will minimise the generation of contaminated waters, and;
- (f) erosion and sediment control structures are placed to minimise erosion of disturbed areas and prevent the contamination of any waters.
- (g) Procedures to ensure that erosion and sediment control structures are maintained and adequate storage is available in sediment dams in accordance with design criteria.
- (h) training of staff that will be responsible for maintenance and operations of sediment and erosion control structures.

- E43** Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment and contamination of storm water.
- E44** The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas from which contaminants can be released into any receiving waters.
- E45** Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to minimise the release of wastes, contaminants or materials to any storm water drainage system or receiving waters.

Water Reuse

- E46** Water at the mine site may be piped, trucked or transferred for the purpose of supplying livestock water to directly adjoining properties or a third party.
- E47** Water used to supply livestock drinking in accordance with **E46** must:
- (a) meet the quality limits specified in Schedule E - *Table E8* (Onsite Water Storage Contaminant Limits); and
 - (b) comply with all other conditions of this approval.
- E48** Water to be used for livestock watering purposes under condition **E46**, must be contained within a storage facility (tank or dam) such that it is not directly or indirectly released to the receiving environment.
- E49** The volume and quality of water supplied under condition **E46** must be monitored and recorded. The quality parameters must include at a minimum, those listed in Schedule E - *Table E8* (Onsite Water Storage Contaminant Limits).
- E50** If the responsibility of water from the mine site (the water) is given or transferred to another person in accordance with this environmental authority:
- (a) The responsibility of the water must only be given or transferred in accordance with a written agreement (the third party agreement);

- (b) The written agreement must require the recipient of the water not to use that water in a manner which would contravene a government standard, legalisation or policy or a condition of this environmental authority;
- (c) The agreement must highlight that the use of contaminated water for stock must not be used in contravention of any food safety standards; and
- (d) Include in the third party agreement a commitment from the person utilising the water to use water in such a way as to prevent environmental harm or public health incidences and specifically make the persons aware of the General Environmental Duty (GED) under section 319 of the *Environmental Protection Act 1994*, environmental sustainability of the water disposal and protection of environmental values and waters.

E51 A copy of the third party agreement referred to in condition **E50** must be provided to the administering authority upon request.

Janine East Pit

E52 The holder of the environmental authority must not release from RP19 until site specific release limits in accordance with condition **E53** have been set.

E53 By **5 April 2020**, the holder of the environmental authority must provide the administering authority site specific release limits that meet the requirements of Table E3. The site specific release limits must be determined in accordance with the *Technical guideline – Licensing – Wastewater release to Queensland waters (ESR/2015/1654, Version 2.00, Effective: 12 September 2016)*.

E54 The mining activities must not cause environmental harm to any groundwater dependent ecosystems.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – Biodiversity**Biodiversity offsets**

- F1** Significant residual impacts to prescribed environmental matters, other than if the impacts were authorised by an existing authority issued before the commencement of the *Environmental Offsets Act 2014*, are not authorised under this environmental authority or the *Environmental Offsets Act 2014*.
- F2** Records demonstrating that each impact to a prescribed environmental matter did not, or is not likely to, result in a significant residual impact to that matter must be:
- a) Completed by an appropriately qualified person; and
 - b) Kept for the life of the environmental authority.

END OF CONDITIONS FOR SCHEDULE F

Schedule G – Land and Rehabilitation

- G1** The environmental authority holder must rehabilitate all land disturbed by the mining activities in a manner that ensures rehabilitated areas achieve the following rehabilitation objectives:
- a) Safe for humans and wildlife;
 - b) Non-polluting;
 - c) Stable;
 - d) Able to sustain an agreed post-mining land-use;
 - e) Revegetated with species endemic to the area with no declared pest species; and
 - f) Compliant with all conditions of this environmental authority.
- G2** A Final Land Use Rehabilitation Plan ('FLURP') that describes how the rehabilitation objectives in condition G1 will be achieved must be developed, documented and implemented for all stages of the mining activity by **30 June 2017**. The FLURP must at minimum include:
- a) Schematic representation of the proposed final land form inclusive of site drainage features;
 - b) Details of proposed slope design and erosion and sediment controls;
 - c) Proposed cover designs for encapsulation of waste material, including performance criteria;
 - d) Proposed re-vegetation methods inclusive of plant species selection, propagation methods and establishment of suitable plant growth medium (*i.e.* top soil);
 - e) Materials balance for all rehabilitation requirements including available top soil and material suitable for encapsulating waste in accordance with the proposed encapsulation methodology;
 - f) Geotechnical, geochemical and hydrological studies necessary to demonstrate likely success of proposed rehabilitation methodology to achieve the required rehabilitation outcomes;
 - g) An investigation of proposed residual voids including potential for generation/mobilisation of contaminants, potential pathways for release of contaminants to waters (including groundwater) and a long-term void water balance model; and
 - h) A rehabilitation monitoring program sufficient to identify if required rehabilitation outcomes have been achieved.
- G3** Rehabilitation in accordance with condition **G2** must commence progressively in accordance with the plan of operations.
- G4** Residual voids (including open pits and underground workings) must not cause any serious or material environmental harm, other than the environmental harm constituted by the existence of the residual void itself, subject to any other condition within this environmental authority.
- G5** All explosives, flammable or corrosive substances, hazardous chemicals, toxic substances, gases and dangerous goods must be stored and handled in accordance with:
- a) The current Australian Standard where applicable; or
 - b) Where no relevant Australian Standard exists, store such materials within an on-site containment system sufficient to prevent release to the receiving environment.
- G6** Minimise the potential for contamination of land by hazardous contaminants

END OF CONDITIONS FOR SCHEDULE G

Schedule H – Regulated Structures

- H1** The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* at the following times:
- a) Prior to the construction of the structure, if it is not an existing structure; or
 - b) If it is an existing structure, by **27 January 2017**; or
 - c) Prior to any change in its purpose or the nature of its stored contents.
- H2** A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.
- H3** Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*.

Design and construction of a regulated structure

- H4** Conditions **H5** to **H9** inclusive do not apply to existing structures.
- H5** All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*.
- H6** Construction of a regulated structure is prohibited unless the environmental authority holder has submitted to the administering authority and 28 days have elapsed, the following:
- a) a consequence category assessment report, as required by condition **H2**, and
 - b) the suitably qualified and experienced person certified design and design plan; and
 - c) the associated suitably qualified and experienced person certified operating procedures.
- H7** Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan in the form set out in the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*, and must be recorded in the Regulated Structures register.
- H8** Regulated structures must:
- a) be designed and constructed in accordance with and conform to the requirements of the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*;
 - b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of:
 - i) floodwaters from entering the regulated structure from any watercourse or drainage line; and
 - ii) wall failure due to erosion by floodwaters arising from any watercourse or drainage line.

- H9** Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority within 10 days of the completion of construction of the regulated structure, and state that:
- a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure;
 - b) construction of the regulated structure is in accordance with the design plan.

Operation of a regulated structure

- H10** Operation of a regulated structure must not commence unless the environmental authority holder has submitted to the administering authority:
- a) One paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition **H7**, and
 - b) A set of 'as constructed' drawings and specifications, and
 - c) Certification of those 'as constructed drawings and specifications' in accordance with condition H9, and
 - d) Where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the design storage allowance (DSA) volume across the system, a copy of the certified system design plan;
 - e) A statement that confirms:
 - i. The requirements of this authority relating to the construction of the regulated structure have been met;
 - ii. The details required under this authority, have been entered into a Register of Regulated Structures; and
 - iii. There is a current operational plan for the regulated structures.
- H11** For existing structures that are regulated structures:
- a) where the existing structure that is a regulated structure is managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the environmental authority holder must submit to the administering authority within three (3) months of the commencement of this condition a copy of the certified system design plan including that structure; and
 - b) There must be a current operational plan for the existing structures.
- H12** Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in a manner that is consistent with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.

Mandatory reporting level

- H13** Conditions **H14** to **H17** inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
- H14** The Mandatory Reporting Level (the MRL) specified in *Table H1* must be marked on a regulated structure in such a way that during routine inspections of that structure, it is clearly observable.
- H15** The environmental authority holder must, as soon as practical and within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated structure reaches the MRL.
- H16** The environmental authority holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated structure.
- H17** The environmental authority holder must record any changes to the MRL in *Table H1* and in the Register of Regulated Structures.

Design storage allowance

- H18** The environmental authority holder must assess the performance of each regulated structure or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated structure or linked containment system taken prior to 1 July of each year.
- H19** By 1 November of each year, storage capacity must be available in each regulated structure (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the structure (or network of linked containment systems), as specified in *Table H1*.
- H20** The environmental authority holder must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated structure (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.
- H21** The environmental authority holder must, immediately on becoming aware that a regulated structure (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated structure or linked containment systems.

Annual inspection report

- H22** Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
- H23** At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include recommended actions, if applicable, to ensure the integrity of the regulated structure.
- H24** The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*.

H25 The environmental authority holder must within 20 business days of receipt of the annual inspection report, provide to the administering authority:

- a) The recommendations section of the annual inspection report; and
- b) If applicable, any details of any actions being taken in response to those recommendations.

Transfer arrangements

H26 The environmental authority holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.

Decommissioning and rehabilitation

H27 Regulated structures and structures must not be abandoned but must be decommissioned and rehabilitated to achieve compliance with conditions **G1** and **G2** of this environmental authority.

Transitional Arrangements

H28 All existing structures that have not been assessed in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* must be assessed and certified in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* by 27 January 2017.

Hydraulic performance of regulated structures

H29 Each regulated structure authorised by this environmental authority as specified in *Schedule A – Table A1*, must meet the hydraulic performance criteria listed in *Table H1* for that structure.

Table H1 – Hydraulic performance criteria ('Table H1')

Name of Regulated Structure	Consequence Category	Spillway Capacity		Design Storage Allowance (DSA)		Mandatory Reporting Level (MRL)		Purpose of structure
		Design Criteria	mAHD	Design Criteria	mAHD	Design Criteria	mAHD	
Tailings Storage Facility	High	1:1000	1312m RL	1:100 3 month wet season plus process inputs for the 3 month wet season	1.05m below spillway	1:100 72 hour storm	0.34m below spillway	The permanent containment of tailings from extraction and processing of gold and silver
Scott Lode Pit	High	1:1000	1256.2m RL	1:100 3 month wet season plus process inputs for the 3 month wet season	1.54m below spillway	1:100 72 hour storm	0.49m below spillway	The permanent containment of tailings from extraction and processing of gold and silver

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Name of Regulated Structure	Consequence Category	Spillway Capacity		Design Storage Allowance (DSA)		Mandatory Reporting Level (MRL)		Purpose of structure
		Design Criteria	mAHD	Design Criteria	mAHD	Design Criteria	mAHD	
Scott Lode Pit (5m downstream raise)	High	TBD	TBD	TBD	TBD	TBD	TBD	The permanent containment of tailings from extraction and processing of gold and silver
Nancy Dam	Significant	1:100 To 1:1000	1256.026m RL	1:20 3 month wet season plus process inputs for the 3 month wet season	TBD	1:100 72 hour storm	TBD	The settling of sediment from underground dewatering process
Janet A Pit	Significant	1:1000	1284.8m RL	1:100 3 month wet season plus process inputs for the 3 month wet season	1.05m below spillway	0.5metres below spillway	0.34m below spillway	The permanent containment of tailings and PAF waste rock
Venue Pit ¹	Not hazardous	TBD	1220m RL	TBD	TBD	TBD	TBD	Catchment Venue pit and upper VNU pit (waters transferred to Nancy dam)
VNU Pit ¹	Not hazardous	TBD	Underground emergency egress	TBD	TBD	TBD	TBD	Prevention of rainfall to underground

Notes:

TBD- To be determined based on the risk classification and the final certified design plans.

1- Venue Pit and VNU Pit are constructed as a single void

H30 The hydraulic performance criteria specified in *Table H1* are the minimum mandatory performance requirements; regulated structures must be managed in a manner that ensures compliance with all conditions of this environmental authority.

END OF CONDITIONS FOR SCHEDULE H

Schedule I - Definitions

Definitions

Key terms and/or phrases used in this document are defined in this section. Where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

Word / Phrase	Definition
Acceptance criteria	Means the measures by which actions implemented are deemed to be complete. The acceptance criteria indicate the success of the decommissioning and rehabilitation outcomes or remediation of areas which have been significantly disturbed by the mining activities. Acceptance criteria may include information regarding: a) Stability of final land forms in terms of settlement, erosion, weathering, pondage and drainage; b) Control of geochemical and contaminant transport processes; c) Quality of runoff waters and potential impact on receiving environment; d) Vegetation establishment, survival and succession; e) Vegetation productivity, sustained growth and structure development; f) Fauna colonisation and habitat development; g) Ecosystem processes such as soil development and nutrient cycling, and the recolonisation of specific fauna groups such as collembola, mites and termites which are involved in these processes; h) Microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration; i) Effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development; j) Resilience of vegetation to disease, insect attack, drought and fire; k) Vegetation water use and effects on ground water levels and catchment yields.
Acid rock drainage	Means any contaminated discharge emanating from a mining activity formed through a series of chemical and/or biological reactions.

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Administering authority	Is the agency that administers the environmental authority provisions under the <i>Environmental Protection Act 1994</i> .
Ambient (or total) noise	At a place, means the level of noise at the place from all sources (near and far), measured as the Leq for an appropriate time interval.
Annual exceedance probability or AEP	The probability that at least one event in excess of a particular magnitude will occur in any given year.
Appropriately qualified person	Means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature.
Assessed or assessment	By a suitably qualified and experienced person in relation to a consequence assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment: a) exactly what has been assessed and the precise nature of that determination; b) the relevant legislative, regulatory and technical criteria on which the assessment has been based; c) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and d) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.
Associated works	In relation to a dam, means: a) Operations of any kind and all things constructed, erected or installed for that dam; and b) Any land used for those operations.
Authority	Means an environmental authority or a development approval.
Background	Means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.

Certification	Means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by this Manual, including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).
Certifying, certify or certified	By an appropriately qualified and experienced person in relation to a design plan or an annual report regarding dams/structures, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time: a) exactly what is being certified and the precise nature of that certification b) the relevant legislative, regulatory and technical criteria on which the certification has been based c) the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts d) the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

Chemical	Means: a) An agricultural chemical product or veterinary chemical product within the meaning of the <i>Agricultural and Veterinary Chemicals Code Act 1994</i> (Commonwealth); or b) A dangerous good under the dangerous goods code; or c) A lead hazardous substance within the meaning of the <i>Workplace Health and Safety Regulation 1997</i>; or d) A drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth; or e) Any substance used as, or intended for use as – i. A pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or ii. A surface active agent, including, for example, soap or related detergent; or iii. A paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or iv. A fertiliser for agricultural, horticultural or garden use; or f) A substance used for, or intended for use for – i. Mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or ii. Manufacture of plastic or synthetic rubber.
Commercial place	Means a workplace used as an office or for business or commercial purposes, which is not part of the mining activity and does not include employees' accommodation or public roads.
Construction or constructed	In relation to a regulated structure includes building a new regulated structure and lifting or otherwise modifying an existing regulated structure, but does not include investigations and testing necessary for the purpose of preparing a design plan.
Consequence	In relation to a structure as defined, means the potential for environmental harm resulting from the collapse or failure of the structure to perform its primary purpose of containing, diverting or controlling flowable substances.

Consequence category	Means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> .
Dam	Means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works .
Dam crest volume	Means the volume of material (liquids and/or solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (e.g. via spillway).
Design plan	Is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.
Design storage allowance or DSA	Means an available volume, estimated in accordance with the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> published by the administering authority, must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that Manual.
Designer	For the purposes of a regulated dam, means the certifier of the design plan for the regulated dam.
EC	Means Electrical Conductivity.
Environmental authority holder	Means the holder of this environmental authority or any other works conducted by another entity on the approved leases.
Environmental offset	Has the meaning in section 7 of the <i>Environmental offsets Act 2014</i> .
Flowable substance	Means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.
Foreseeable future	Is the period used for assessing the total risk of an event occurring. Permanent structures and ecological sustainability should be expected to still exist at the end of a 150 year foreseeable future with an acceptable risk of failure before that time.

Groundwater dependent ecosystem (GDE)	Means ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services. For the purposes of the environmental authority, groundwater dependent ecosystems do not include those mapped as “unknown”.
Hazard	In relation to a dam as defined, means the potential for environmental harm resulting from the collapse or failure of the dam to perform its primary purpose of containing, diverting or controlling flowable substances.
Hazard category	Means a category, either low significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> .
Hazardous waste	Means any substance, whether liquid, solid or gaseous, that tends to destroy life or impair or endanger health.
Holder	Means: a) Where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or b) Where this document is a development approval, any person who is the registered operator for that development approval.
Hydraulic performance	Means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> .
Infrastructure	Means water storage dams, roads and tracks, buildings and other structures built for the purpose of mining activities.
Land	In the 'land schedule' of this document means land excluding waters and the atmosphere.
Land capability	As defined in the <i>Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland (DME 1995)</i> .
Land suitability	As defined in the <i>Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland (DME 1995)</i> .

Land use	Term to describe the selected post mining use of the land, which is planned to occur after the cessation of mining operations.
Levee	Means an embankment that only provides for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of water or flowable substances at any other times.
Low hazard dam	Means any dam that is not a high or significant hazard category as assessed using the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> .
Mandatory reporting level or MRL	Means a warning and reporting level determined in accordance with the criteria in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> published by the administering authority.
Manual	Means the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> published by the administering authority.
Measures	Includes any measures to prevent or minimise environmental impacts of the activity such as bunds, silt fences, diversion drains, capping, and containment systems.
Metaliferous mine drainage	Means any waters, contaminated with metals / metalloids or other contaminants as a result of the mining activities.

Mineral	Means a substance which normally occurs naturally as part of the earth's crust or is dissolved or suspended in water within or upon the earth's crust and includes a substance which may be extracted from such a substance, and includes— a) clay if mined for use for its ceramic properties, kaolin and bentonite; b) foundry sand; c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil there from; d) limestone if mined for use for its chemical properties; e) marble; f) mineral oil or gas extracted or produced from shale or coal by in situ processes; g) peat; h) salt including brine; i) shale from which mineral oil may be extracted or produced; j) silica, including silica sand, if mined for use for its chemical properties; k) rock mined in block or slab form for building or monumental purposes; but does not include— l) living matter; m) petroleum within the meaning of the <i>Petroleum Act 1923</i>; n) soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form; o) water.
Modification or modifying	See definition of 'construction'
Natural flow	Natural flow is defined as a flow event caused as a result of a local rainfall event, within a defined catchment area, and measured within the same receiving waters.
Non-acid producing (NAP)	Rock that when exposed to an oxidising environment will not produce acid solutions. Compare with "ore or waste rock characterised as having acid forming potential.

Neutral mine drainage	Has the same meaning as metalliferous mine drainage.
Offensive	Means causing reasonable offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive, other than trivial harm.
Operational plan	For a dam means a document that amongst other things sets out procedures and criteria to be used for operating a dam during a particular time period. The operational plan as defined herein may form part of a plan of operations or plan otherwise required in legislation.
Ore or waste rock characterised as having acid forming potential	Means any rock with either a Net Acid Producing Potential of greater than 5 kg of H ₂ SO ₄ /tonne or a Net Acid Generation oxidation pH of less than 4.5 (pH unit).
Oxide ore	Means fully oxidised rock which has no acid forming potential.
Peak particle velocity (ppv)	Means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mms).
Potentially acid forming (PAF)	Means ore or waste rock characterised as having acid forming potential.
Protected area	Means: • A protected area under the <i>Nature Conservation Act 1992</i>; or • A marine park under the <i>Marine Parks Act 1992</i>; or • A World Heritage Area.
Prescribed environmental matters	Has the meaning in section 10 of the <i>Environmental Offsets Act 2014</i> , limited to the matters of State environmental significant listed in Schedule 2 of the <i>Environmental Offsets Regulation 2014</i> .
Progressive rehabilitation	Means rehabilitation (defined below) undertaken progressively OR a staged approach to rehabilitation as mining operations are ongoing.
Receiving environment	In relation to an activity that causes or may cause environmental harm, means the part of the environment to which the harm is, or may be, caused. The receiving environment includes (but is not limited to): a) a watercourse or surface waters b) groundwater

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Receiving waters	Has the same meaning as receiving environment.
Reference site (or analogue site)	May reflect the original location, adjacent area or another area where rehabilitation success has been completed for a similar biodiversity. Details of the reference site may be as photographs, computer generated images and vegetation models etc.
Regulated dam	Means any dam in the significant or high consequence category as assessed using the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> published by the administering authority.
Regulated structure	Includes land-based containment structures, levees, bunds and voids, but not a tank or container designed and constructed to an Australian Standard that deals with strength and structural integrity.
Rehabilitation	Means the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.
Representative	Means a sample set which covers the variance in monitoring or other data either due to natural changes or operational phases of the mining activities.
Residual void	Means an open pit resulting from the removal of ore and/or waste rock which will remain following the cessation of all mining activities and completion of rehabilitation processes.
Saline mine drainage	Means the movement of waters, contaminated with salt(s), as a result of the mining activity.
Self-sustaining	Means an area of land which has been rehabilitated and has maintained the required acceptance criteria without human intervention for a period nominated by the administering authority.

Sensitive place	Means: a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises, or b) a motel, hotel or hostel, or c) an educational institution, or d) a medical centre or hospital, or e) a protected area under the <i>Nature Conservation Act 1992</i>, the <i>Marine Parks Act 1992</i> or a World Heritage Area, or f) a public park or gardens.
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Significant disturbance	Includes land; (a) if it is contaminated land; or (b) it has been disturbed and human intervention is needed to rehabilitate it; i. to a state required under the relevant environmental authority; or ii. if the environmental authority does not require the land to be rehabilitated to a particular state - to its state immediately before the disturbance. Some examples of disturbed land include: - areas where soil has been compacted, removed, covered, exposed or stockpiled; - areas where vegetation has been removed or destroyed to an extent where the land has been made susceptible to erosion; (vegetation & topsoil) - areas where land use suitability or capability has been diminished; - areas within a watercourse, waterway, wetland or lake where mining activities occur; - areas submerged by tailings or hazardous contaminant storage and dam walls in all cases; - areas under temporary infrastructure. Temporary infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after mining activities have ceased; or - areas where land has been contaminated and a suitability statement has not been issued. However, the following areas are not included: - areas off lease (e.g. roads or tracks which provide access to the mining lease); - areas previously significantly disturbed which have achieved the rehabilitation outcomes; - by agreement with the EPA, areas previously significantly disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions); - areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner. The agreement to leave permanent infrastructure must be recorded in the Landowner Agreement and lodged with the EPA; - disturbances that pre-existed the grant of the tenure unless those areas are disturbed during the term of the tenure.
Significant residual impact	Has the meaning in section 8 of the <i>Environmental Offsets Act 2014</i>.

Spillway	Means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges from the dam, normally under flood conditions or in anticipation of flood conditions.
Stable	Means land form dimensions are or will be stable within tolerable limits now and in the foreseeable future. Stability includes consideration of geotechnical stability, settlement and consolidation allowances, bearing capacity (trafficability), erosion resistance and geochemical stability with respect to seepage, leachate and related contaminant generation.
Structure	Means any dam or levee
Suitably qualified and experienced person	In relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the <i>Professional Engineers Act 2002</i>, and has demonstrated competency and relevant experience: • For regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design. • For regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments. <i>Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.</i>
System design plan	Means a plan that manages an integrated containment system that shares the required DSA and/or ESS volume across the integrated containment system.
Tolerable limits	Means that a range of values could be accepted to achieve an overall environmental management objective (e.g. A range of settlement of a tailing capping could still meet the objective of draining the cap quickly, preventing pondage and limiting infiltration and percolation). Tolerable limits may be specified: • By agreement between the proponent and the chief executive as an interim arrangement, • By insertion of conditions as agreed above into this Environmental Authority, or By direction by the chief executive and insertion in this Environmental Authority as necessary.
Trivial harm	Means environmental harm which is not material or serious environmental harm and will not cause actual or potential loss or damage to property of an amount of, or amounts totalling more than \$5,000.

Void	Means any constructed, open excavation in the ground.
Watercourse	Has the same meaning given in the <i>Water Act 2000</i> .
Waters	Includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater or any part thereof.
Water release event	Means release of any waters that are or may be contaminated by the mining activity.
Water year	Means the 12-month period from 1 July to 30 June.
Wet season	Means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.

END OF SCHEDULE I

Schedule J – Maps and Plans

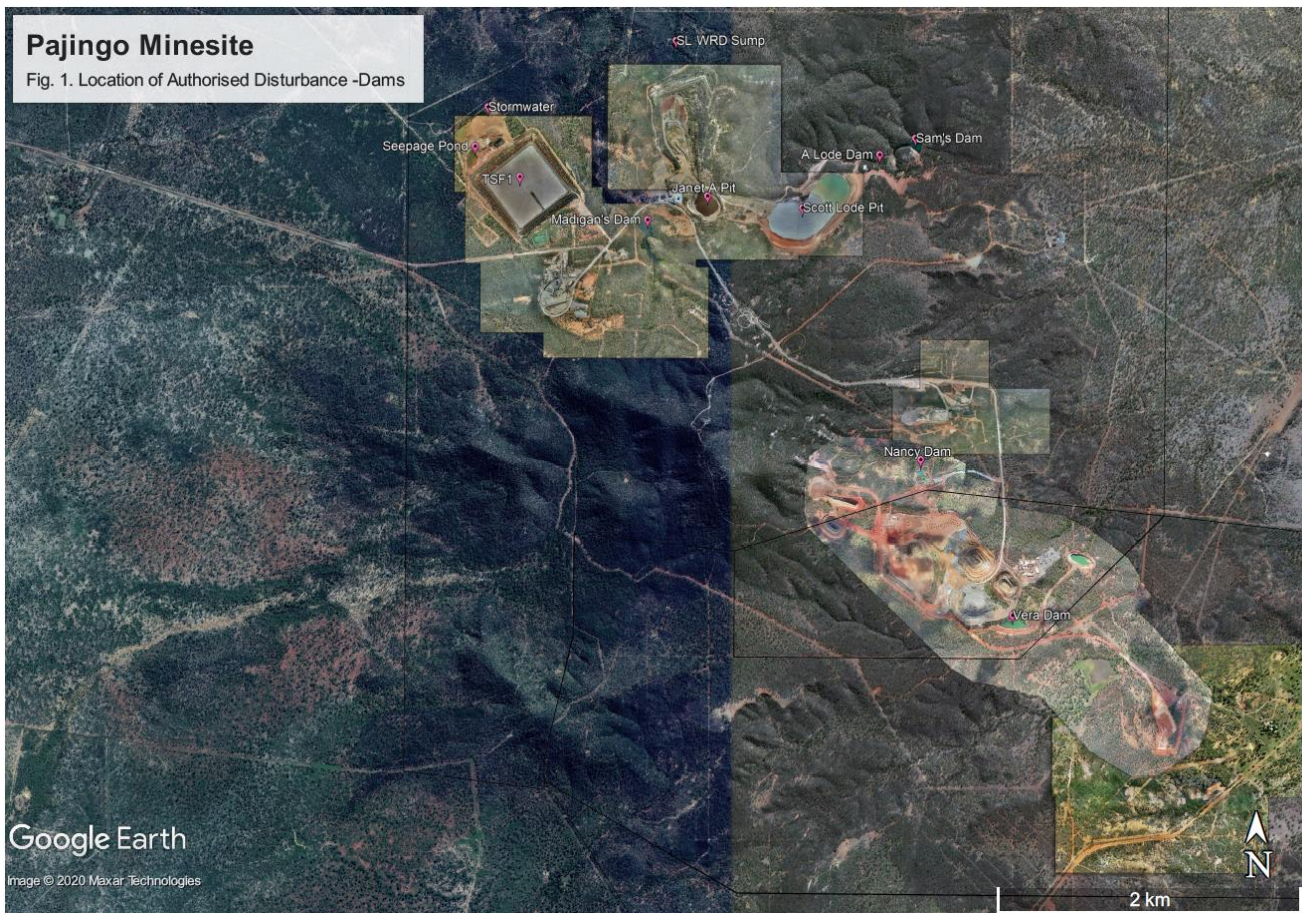


Figure 1: Location of authorised disturbance: Dams.

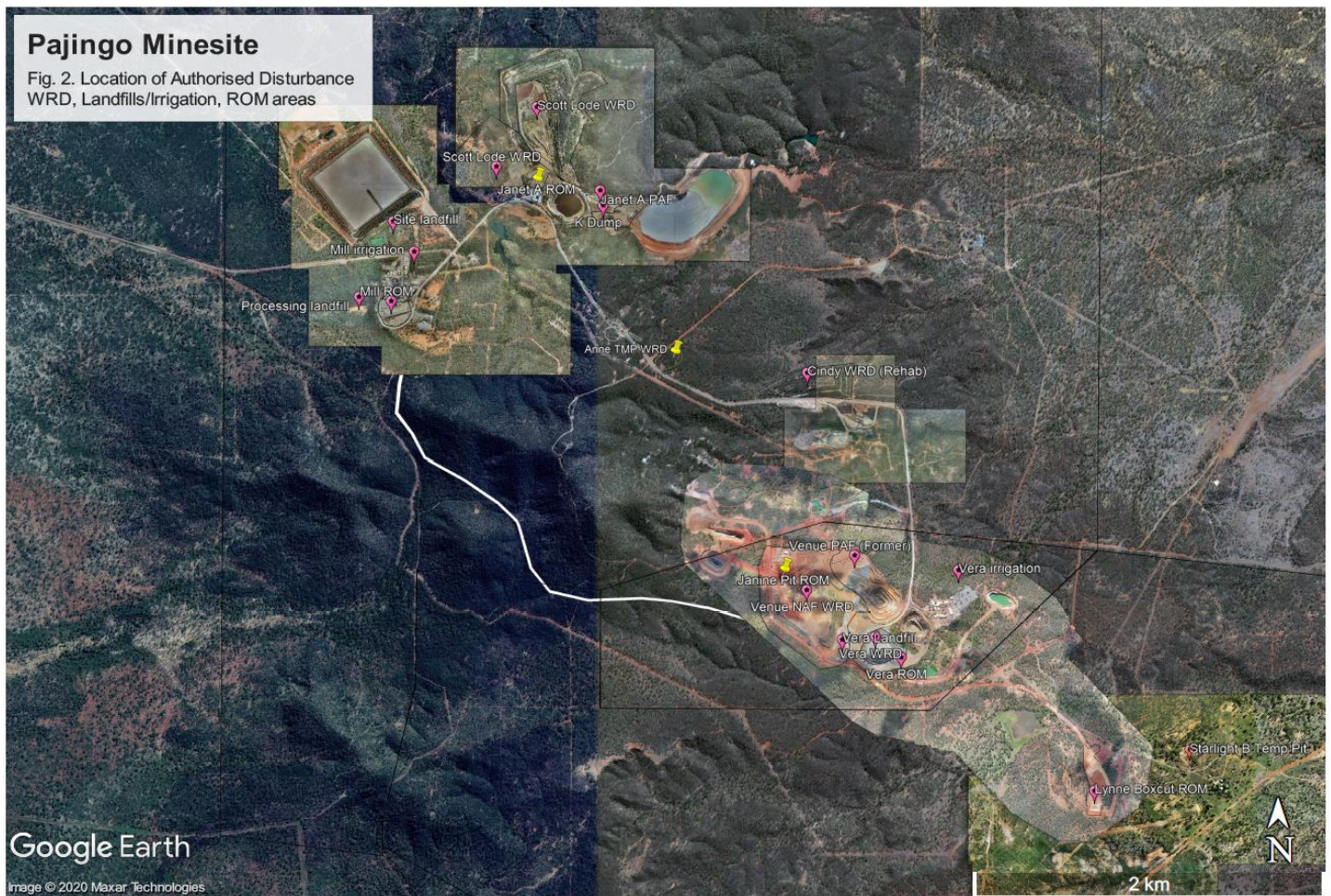


Figure 2 – Location of authorised disturbance: Waste rock dumps, landfills, irrigation areas and run of mine areas

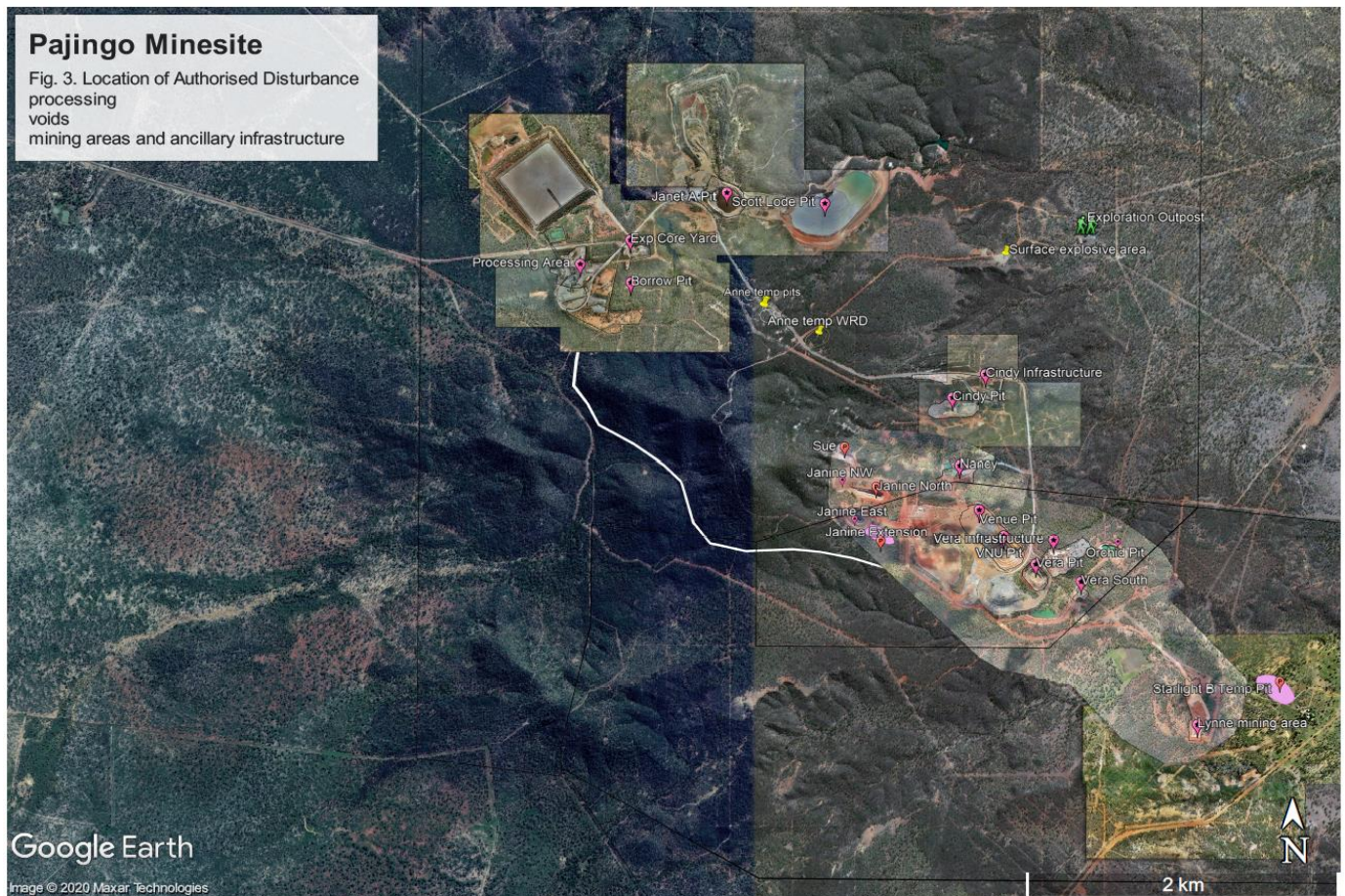


Figure 3 – Location of authorised disturbance: Processing, voids, mining areas and ancillary infrastructure.

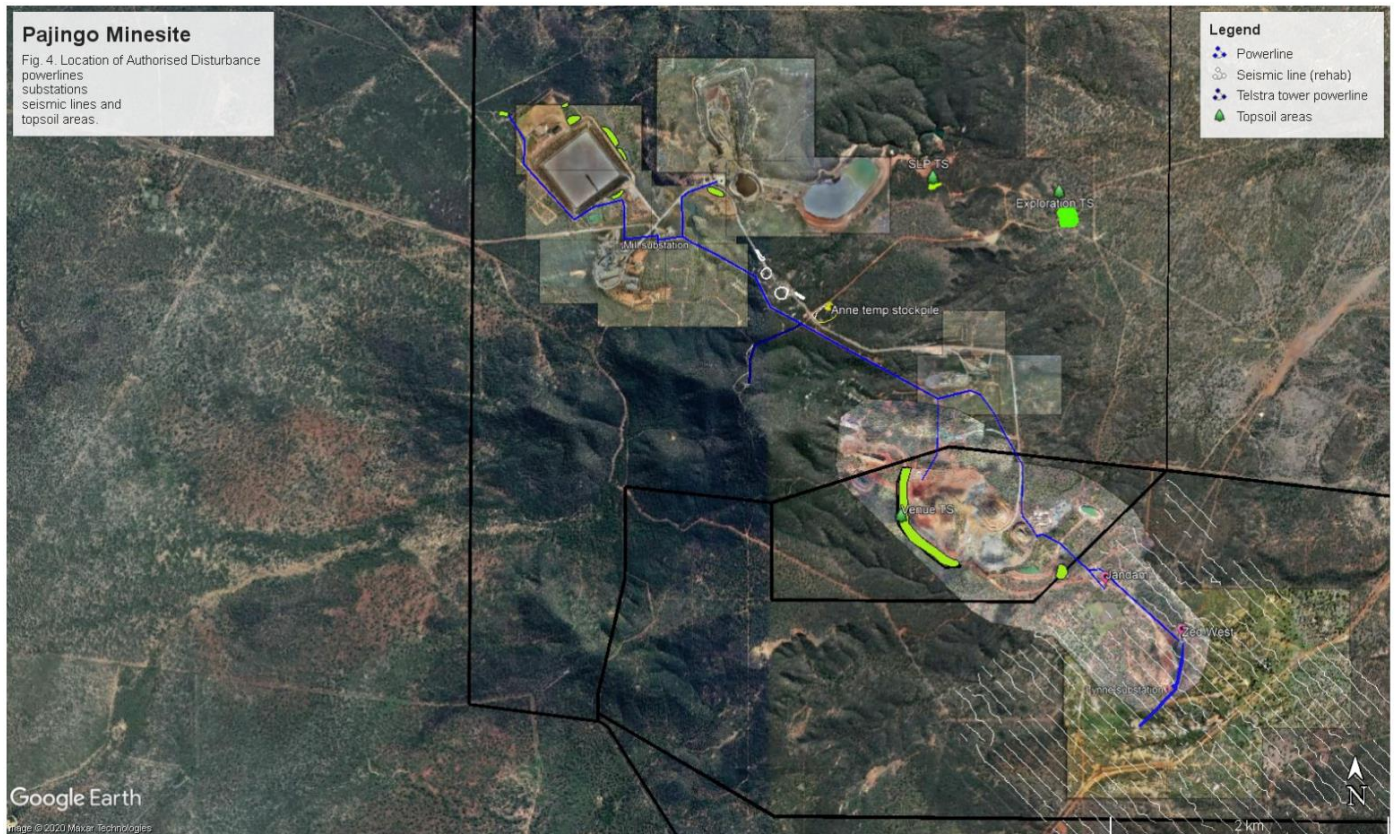


Figure 4 – Location of authorised disturbance: Powerlines-substations, seismic lines and topsoil stockpiles.

END OF SCHEDULE J

END OF ENVIRONMENTAL AUTHORITY