

Permit

Environmental Protection Act 1994

Environmental authority EPML02840015

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

Environmental authority number: EPML02840015

Environmental authority takes effect on 3 February 2020

Environmental authority holder(s)

Name(s)	Registered address
ROUND OAK MINERALS PTY LIMITED	Level 32 10 Eagle Street BRISBANE CITY QLD 4000 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 17: Mining copper ore Schedule 3 18: Mining lead, silver or zinc separately or in any combination Ancillary 08 - Chemical Storage 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c) Ancillary 15 - Fuel burning Using fuel burning equipment that is capable of burning at least 500kg of fuel in an hour	ML90241

Schedule 3 16: Mining gold ore Schedule 3 19: Mining metal ore, other than a metal ore mentioned in items 11, 12, 14, 15, 16, 17 or 18 Schedule 3 14: Mining iron ore Ancillary 63 - Sewage Treatment 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (a-i) 21 to 100EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme Ancillary 33 - Crushing, milling, grinding or screening Crushing, grinding, milling or screening more than 5000t of material in a year	
---	--

Additional information for applicants

Environmentally 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.

Kate Rutherford
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: 03 February 2020

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)

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 – Map 1 Location of authorised disturbance*.

Table A1 - Authorised disturbance ('Table A1')

Name of disturbance area	Maximum area of disturbance (ha)	Mining Lease	Purpose
Run-of-mine (ROM) pad	3.5	ML90241	Temporary storage, crushing and handling of ore.
Road train loading area	1	ML90241	Loading of ore for transport off-site.
North Pit	1.5	ML90241	Mining of ore and site water management. Note: The North pit is a regulated dam with minimum hydraulic performance criteria detailed in <i>Table H1</i> of this environmental authority.
South pit	6	ML90241	Mining of ore and site water management. Note: The North pit is a regulated dam with minimum hydraulic performance criteria detailed in <i>Table H1</i> of this environmental authority.
Waste rock dump (WRD)	23	ML90241	Storage and disposal of waste rock.
ROM pad dam	0.6	ML90241	Water management for stormwater runoff from the ROM pad area.
WRD dam	4	ML90241	Water management for stormwater runoff from the WRD area.
Diversion drain	0.5	ML90241	Water management to prevent stormwater runoff entering mine workings.
Topsoil stockpiles	2.5	ML90241	Storage of topsoil for site rehabilitation works.
Access Road, Haul Roads and tracks	20.5	ML90241	Site access.
Light Infrastructure Area: including Administration buildings, Fuel storage, Power facility and Workshop area.	2.5	ML90241	Site administration, Fuel storage and power generation, Maintenance and storage.
Sewage treatment facility	0.5	ML90241	Treatment of sewage.
Explosives magazine	0.5	ML90241	Storage of explosives.

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 Except where specified in another condition of this environmental authority, 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;
- b) Kept for a period of not less than five years; and
- c) Provided to the administering authority in the specified format within 10 business days of a request.

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).

Financial assurance

A7 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

A8 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 5 October 2016.

Notification of emergencies, incidents and exceptions

A9 The holder of this environmental authority must notify the administering authority by written notification within 24 hours, after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this environmental authority.

- A10** Within 10 business days following the initial notification of an emergency 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

- A11** The holder of this environmental authority must record all environmental complaints received about the mining activities including:
- a) Name, address and contact number for 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.
- A12** The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority within 10 business days of completion of the investigation, or no later than 10 business days after the end of the timeframe nominated by the administering authority to undertake the investigation.

Third-party reporting

- A13** The holder of this environmental authority must:
- a) Within one (1) year of the commencement of this environmental authority, 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.

- A14** Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority, the holder of this environmental authority must:
- a) Comply with the amended or changed standard, policy or guideline within two years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures referred to in Schedule I, the time specified in that condition; and
 - b) Until compliance with the amended or changed standard, policy or guideline is achieved, continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.

Exploration

- A15** All exploration activities carried out on the mining lease must comply with each of the standard environmental conditions contained in the latest version of the *Eligibility criteria and standard conditions for exploration and mineral development projects*.

END OF CONDITIONS FOR SCHEDULE A

Schedule B – Air

- B1** The activities must not cause an exceedance of the air quality objectives specified in *Table B1* beyond the boundaries of any mining lease/s listed on this environmental authority.

Table B1 - Air quality objectives ('Table B1')

Contaminant	Measurement period	Air Quality Objective
Dust Deposition		
Arsenic and its compounds as arsenic ³	Annual average over the calendar year	Must not exceed background concentration ⁴
Cadmium and its compounds as cadmium ³		
Copper and its compounds as copper ³		
Lead and its compounds as lead ³		250 µg/m ² /day
Dust deposition (total insoluble matter) ¹		120 mg/m ² /day

- ¹ The dust deposition limit is calculated over a nominal month as per AS/NZS3580.10.1 of 2003 (or more recent editions) unless an appropriately qualified person recommends and justifies an alternative frequency.
- ³ Metal analysis is to be carried out in accordance with a methodology, sufficient to produce representative results capable of comparison against the respective trigger values.
- ⁴ The background concentration must be determined in accordance with condition B2 of this environmental authority and include sufficient background dust deposition monitoring locations that are not potentially impacted by the mining activities.

- B2** Prior to commencing the mining activity, the environmental authority holder must ensure that an air quality monitoring program is developed and implemented by an appropriately qualified person that is capable of determining compliance with condition B1 of this environmental authority.

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) Treated sewage effluent, which may only be released via sub-surface infiltration trench and must be undertaken in accordance with condition C2 of this environmental authority; and
 - b) Waste rock, which must be characterised, handled and disposed of in accordance with condition C3 of this environmental authority.
- C2** The only contaminant permitted to be released to land is treated sewage effluent released in accordance with condition C1 (a) and the release limits specified in *Table C1*.

Table C1 - Contaminant release limits to land ('Table C1')

Contaminant	Unit	Release Limit	Limit Type	Frequency
5 day Biochemical oxygen demand (BOD) ₁	mg/L	20	Maximum	Monthly
Total suspended solids	mg/L	30	Maximum	Monthly
Nitrogen	mg/L	30	Maximum	Monthly
Phosphorus	mg/L	15	Maximum	Monthly
E-coli	Organisms/100ml	1000	Maximum	Monthly
pH	pH units	6.0-9.0	Range	Monthly

- C3** All potentially acid forming waste rock must be:
- (a) Identified and disposed of in a manner that minimises the potential generation and/or release of contaminants to the receiving environment;
 - (b) Where the characteristics of waste rock in regards to acid producing potential is uncertain, this material must be treated as potentially acid 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.

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')

Sensitive place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and public holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
L _{Aeq, adj, 15 mins}	CV = 50 AV = 5	CV = 45 AV = 5	CV = 40 AV = 0	CV = 45 AV = 5	CV = 40 AV = 5	CV = 35 AV = 0
L _{A1, adj, 15 mins}	CV = 55 AV = 10	CV = 50 AV = 10	CV = 45 AV = 5	CV = 50 AV = 10	CV = 45 AV = 10	CV = 40 AV = 5

Notes:

- CV: Critical Value, AV: Adjustment Value
- To calculate noise limits;
If $bg \leq (CV-AV)$: Noise limit = $bg + AV$
If $(CV-AV) < bg \leq CV$: Noise limit = CV
If $bg > CV$: Noise limit = $bg+0$
- In the event that measured bg ($L_{A90, adj, 15 mins}$) is less than 30 dB(A), then 30 dB(A) can be substituted for the measured background level.
- Bg = background noise level ($L_{A90, adj, 15 mins}$) measured over 3 – 5 days at the nearest sensitive receptor.
- If the project is unable to meet the noise limits as calculated above alternative limits may be calculated using the process outlined in the 'Planning for Noise Control' guideline.

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	
	7am to 6pm	6pm to 7am
Airblast overpressure	115 dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time	No blasting
Ground vibration peak particle velocity	5mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	No blasting

Monitoring and reporting

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

- a) $L_{AN,T}$ (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins)
- b) background noise LA90
- c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels
- d) atmospheric conditions including temperature, relative humidity and wind speed and directions
- e) effects due to any extraneous factors such as traffic noise
- f) location, date and time of monitoring
- g) 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.

END OF CONDITIONS FOR SCHEDULE D

Schedule E – Water

Contaminant release

- E1** Contaminants must not be released to receiving waters unless there are natural flows in the receiving water of at least twenty times the volume of the release.
- E2** Contaminants may only be released to receiving waters from a location specified in *Table E1* and must not exceed any release limit specified in *Table E2*.

Table E1 – Authorised contaminant release points ('Table E1')

Release point	Location		Release source	Monitoring Point	Receiving waters description
	Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)			
RP01	379862	7742050	North Pit (Mine water dam)	Pit	Drainage of unnamed tributary
RP02	380153	7741260	South Pit	Pit	Drainage of unnamed tributary
RP03	380007	7741120	WRD Dam	Dam Spillway	Drainage of unnamed tributary
RP04	380309	7741040	ROM Dam	Dam Spillway	Drainage of unnamed tributary

- E3** Contaminated water released from a release point specified in *Table E1* must be monitored at the release point for all contaminants and at the frequency specified in *Table E2*.

Table E2 – Contaminant release limits ('Table E2')

Contaminant	Release limit ^{1, 2}	Monitoring frequency
pH (pH units)	6.0 or 20 th percentile ³ of reference site ⁴ value, whichever is lower	- One sample must be taken within 2 hours of any release event commencing; and - For release events with duration of greater than twenty-four hours, samples must be taken daily for one week and once a week thereafter until the release event ceases.
	7.5 or 80 th percentile ³ of reference site ⁴ value, whichever is higher	
EC (µs/cm)	1,500 or 20 times the 80 th percentile ³ of reference site value ⁴ , whichever is higher	
Turbidity (NTU)	20 x 80 th percentile of reference site value ³	
Sulfate	1,000 or 20 x 80 th percentile ³ of reference site ⁴ concentration, whichever is higher	
Fluoride	2 or 20 x 80 th percentile ³ of reference site ⁴ concentration, whichever is higher	
Arsenic	0.14 or 20 x 80 th percentile ³ of reference site ⁴ concentration, whichever is higher	
Barium	20 x 80 th percentile ³ of reference site ⁴ concentration	
Bismuth	20 x 80 th percentile ³ of reference site ⁴ concentration	
Chromium	0.02 or 20 x 80 th percentile ³ of reference site ⁴ concentration, whichever is higher	
Cobalt	0.056 or 20 x 80 th percentile ³ of reference site ⁴ concentration, whichever is higher	
Copper	0.028 or 20 x 80 th percentile ³ of reference site ⁴ concentration, whichever is higher	
Molybdenum	0.15 or 20 x 80 th percentile ³ of reference site ⁴ concentration, whichever is higher	

Nickel	0.22 or 20 x 80 th or percentile ³ of reference site ⁴ concentration, whichever is higher
Selenium	0.22 or 20 x 80 th percentile ³ of reference site ⁴ concentration, whichever is higher
Uranium	0.4 or 20 x 80 th percentile ³ of reference site ⁴ concentration, whichever is higher

¹ All metals and metalloids must be measured as both 'total' (from analysis of an unfiltered sample) and 'dissolved' (from analysis of a field filtered sample).

² Measured and reported in mg/L unless specified otherwise.

³ The relevant reference site is specified in *Table E3*.

⁴ Site-specific trigger levels and water quality objectives for water quality (20th, 80th and 95th percentile of reference site concentration) must be calculated in accordance with QWQG (2009) and ANZECC (2000) methodology if sufficient monitoring data is available. The environmental authority holder must maintain a database documenting all relevant water quality monitoring data and calculation of percentiles adopted as water quality trigger levels and water quality objectives.

E4 The environmental authority holder must notify the administering authority within twenty-four hours of any contaminant release commencing or ceasing.

Surface waters

E5 The quality of receiving waters must be monitored at the locations specified in *Table E3*, for the contaminants and at the frequency specified in *Table E4*.

Table E3 - Receiving waters reference and compliance monitoring sites ('Table E3')

Monitoring sites	Monitoring site description and purpose	Location	
		Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)
Reference sites			
BASW09	Drainage feature outside and northeast of disturbance footprint catchment	377540	7738673
BASW05	Drainage feature southwest and outside of disturbance footprint catchment	380736	7742273
Compliance sites			
BASW01	Watercourse at Mining Lease west boundary	378513	7743286
BASW04	Watercourse downstream of North Pit	379491	7742440
BASW08	Drainage feature at the top of catchment (Mining Lease entry)	380776	7740396
BASW11	Drainage feature upstream of junction with watercourse	379884	7743040

Table E4 - Receiving waters trigger levels and quality objectives ('Table E4')

Contaminant	Water quality ^{1, 3}		Sediment quality ^{7, 4}		Monitoring frequency
	Trigger levels	Water quality objectives	Trigger levels ²	Sediment quality objectives ²	
pH (pH units)	6.0 (minimum)	5.0 (minimum)	Not applicable		- For water quality: a) At least daily during release events, the first sample must be taken within two hours of the release event commencing; and b) At least once every three months (if surface water is present). - For sediment quality, at least twice per year, once at the end of the wet season and once at the end of the dry season.
	7.5 (maximum)	9.0 (maximum)	Not applicable		
Electrical conductivity (µS/cm)	500 or 80 th percentile ⁶ of reference site ⁵ , whichever is higher	1,000 or 95 th percentile ⁶ of reference site ⁵ , whichever is lower	Not applicable		
Turbidity (NTU)	80 th percentile ⁶ of reference site ⁵	25 or 95 th percentile ⁶ of reference site ⁵ , whichever is lower	Not applicable		
Sulfate	80 th percentile ⁶ of reference site ⁵	1,000 or 95 th percentile ⁶ of reference site ⁵ , whichever is lower	Not applicable		
Fluoride	80 th percentile ⁶ of reference site ⁵	2 or 95 th percentile ⁶ of reference site ⁵ , whichever is lower	Not applicable		
Arsenic	0.007 or 80 th percentile ⁶ of reference site ⁵ , whichever is higher	0.5 (total) or 95 th percentile ⁶ of reference site ⁵ (dissolved), whichever is lower	20 or two times the reference site ⁵ value, whichever is higher	70 or two times the reference site ⁵ value, whichever is lower	
Barium	80 th percentile of reference site ⁵	95 th percentile ⁶ of reference site ⁵ (dissolved)	Two times the reference site ⁵ value	Three times the reference site ⁵ value	
Bismuth	80 th percentile ⁶ of reference site ⁵	95 th percentile ⁶ of reference site ⁵ (dissolved)	Two times the reference site ⁵ value	Three times the reference site ⁵ value	
Cobalt	0.0028 or 80 th percentile ⁶ of reference site ⁵ , whichever is higher	1 (total) or 95 th percentile ⁶ of reference site ⁵ (dissolved), whichever is lower	Two times the reference site ⁵ value	Three times the reference site ⁵ value	
Chromium	0.001 or 80 th percentile ⁶ of reference site ⁵ , whichever is higher	1 (total) or 95 th percentile ⁶ of reference site ⁵ (dissolved), whichever is lower	80 or two times the reference site ⁵ value, whichever is higher	370 or two times the reference site ⁵ value, whichever is lower	
Copper	0.0014 or 80 th percentile ⁶ of reference site ⁵ , whichever is higher	1 or (total) or 95 th percentile ⁶ of reference site ⁵ (dissolved), whichever is lower	65 or two times the reference site ⁵ value, whichever is higher	270 or two times the reference site ⁵ value, whichever is lower	
Molybdenum	0.034 or 80 th percentile ⁶ of reference site ⁵ , whichever is higher	0.15 (total) and 95 th percentile ⁶ of reference site ⁵ (dissolved), whichever is lower	Two times the reference site ⁵ value	Three times the reference site ⁵ value	
Nickel	0.011 or 80 th percentile ⁶ of reference site ⁵ , whichever is higher	1 (total) or 95 th percentile ⁶ of reference site ⁵ (dissolved), whichever is lower	21 or two times the reference site ⁵ value, whichever is higher	52 or two times the reference site ⁵ value, whichever is lower	
Selenium	0.011 or 80 th percentile ⁶ of reference site ⁵ , whichever is higher	0.02 (total) and 95 th percentile ⁶ of reference site ⁵ (dissolved), whichever is lower	Two times the reference site ⁵ value	Three times the reference site ⁵ value	

Uranium	0.02 or 80 th percentile ⁶ of reference site ⁵ , whichever is higher	0.2 (total) or 95 th percentile ⁶ of reference site ⁵ (dissolved), whichever is lower	Two times the reference site ⁵ value, whichever is higher	Three times the reference site ⁵ value, whichever is lower
Major cations	For interpretation only		Not applicable	
Major anions	For interpretation only		Not applicable	
Total hardness	For interpretation only		Not applicable	
Total organic carbon	Not applicable		For interpretation only	

¹ For water quality, all metals and metalloids must be measured as both 'total' (from analysis of an unfiltered sample) and 'dissolved' (from analysis of a field filtered sample). All trigger levels are based on dissolved metal concentrations; for water quality objectives, the relevant method is specified in brackets for each contaminant where applicable.

² Analysis for metals/metalloids concentrations in sediment must be conducted on the <2mm fraction of the sample and measured as a dilute acid extractable concentration in a manner consistent with the *Revision of the ANZECC/ARMCANZ Sediment Quality Guidelines*, CSIRO (May 2013).

³ Measured and reported in mg/L unless specified otherwise.

⁴ Measured and reported in mg/kg dry weight.

⁵ The relevant reference site is specified in *Table E3*.

⁶ Site-specific trigger levels and water quality objectives for water quality (80th and 95th percentile of reference site concentration) must be calculated in accordance with QWQG (2009) and ANZECC (2000) methodology if sufficient monitoring data is available. The environmental authority holder must maintain a database documenting all relevant water quality monitoring data and calculation of percentiles adopted as water quality trigger levels and water quality objectives.

⁷ For sediment quality, compliance site monitoring results are to be compared:

- Directly to the guideline values from the *Revision of the ANZECC/ARMCANZ Sediment Quality Guidelines*, CSIRO (May 2013), if insufficient reference site monitoring data is available; or
- The relevant reference site monitoring data, which must be normalised to account for any difference in particle size distribution (*i.e.* conduct a fractionated sediment analysis based on comparing the metals concentrations of the <63µm sediment fraction with the >63µm to <2mm sediment fraction).

E6 The contaminant concentrations measured in receiving waters including any compliance site specified in *Table E3* must not exceed a water quality objective or sediment quality objective specified in *Table E4*.

E7 If a contaminant concentration measured at a compliance site specified in *Table E3* exceeds any trigger level specified in *Table E4*, the environmental authority holder must compare this result to the applicable reference site; and

- If the contaminant concentration measured at the compliance site is equal to or less than the contaminant concentration measured at the applicable reference site, no further action is required for this event; or
- If the contaminant concentration measured at the compliance site is greater than the contaminant concentration measured at the applicable reference site:
 - Notify the administering authority within twenty-four hours of becoming aware of the trigger level exceedance; and
 - Undertake further sampling of potentially impacted receiving waters for all contaminants specified in *Table E4*; and

- iii. Complete an investigation into the potential for environmental harm to occur in accordance with ANZECC (2000) methodology, within three months of identifying this exceedance or the alternative timeframe specified by the administering authority; and
- iv. Within one week of completing the investigation, provide a written report to the administering authority detailing all pertinent aspects of the investigation (such as objectives, applied methodology, investigation outcomes, assumptions relied upon and justification for any assertions made) and any actions undertaken and/or proposed to prevent or minimise environmental harm.

Note: Where a contaminant trigger level exceedance has occurred and is under investigation in accordance with condition E7, no further reporting is required for subsequent exceedance events of that contaminant during the course of the investigation.

Groundwater

- E8** The holder of this environmental authority must not release contaminants to groundwater.
- E9** The extraction of groundwater must not cause environmental harm to any groundwater dependent ecosystems.
- E10** Groundwater quality and levels must be monitored:
- a) at the locations specified in *Table E5 (Groundwater monitoring bore locations)*; and
 - b) at the frequencies specified in *Table E5 (Groundwater monitoring bore locations)*; and
 - c) for the quality characteristics identified in *Table E6 (Groundwater Quality Objectives)*.

Table E5 - Groundwater monitoring bore locations ('Table E5')

Monitoring Point	Location (GDA94 – Zone 54)		Surface RL (m) ¹	Total Depth (mbgl ²)	Screened interval (mbgl)	Monitoring Frequency	
	Easting	Northing				Standing water level	Groundwater quality
Compliance bores							
BAWB05	380948	7740252	377.32	102	35-102	Monthly	3 monthly
Bore E	380022	7738827	334.23	85	28-83		
BAWB01	380432	7742097	352.68	104	20-101	Monthly	3 monthly
BAWB02	379480	7742395	310.59	104	96-102		
BAWB03	379834	7741692	329.50	104	50-102		
BAWB04	380043	7742054	329.14	100	94-100		
BAWB07	379849	7741936	328.74	127	18-146		
BAWBR1	380292	7740939	334.49	14	5-6		
BAWBR2	379912	7741279	322.98	14	2-3		
BAWBR3	379991	7741485	326.02	14	3-4		
Seepage monitoring bores							
Seepage Bore 1a	380084	7741046	336.819	6	1-5	Monthly	3 monthly

Seepage Bore 1b	380084	7741048	336.487	16	5-15		
Seepage Bore 2a	380025	7741117	331.218	6	1-5		
Seepage Bore 2b	380023	7741116	331.342	16	5-15		
Seepage Bore 3a	379985	7741133	332.189	6	1-5		
Seepage Bore 3b	379986	7741135	331.962	16	5-15		
Seepage Bore 4a	380711	7740798	355.061	6	1-5		
Seepage Bore 4b	380711	7740800	355.111	16	5-15		

Notes:

1. RL must be measured to the nearest 5cm from the top of the bore casing.
2. Metres below ground level

Table E6 – Groundwater quality objectives ('Table E6')

Contaminant ¹	Units	Limit type	Bore(s)	Limit A ³	Limit B ⁴
pH	pH	Range	BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	-	7.0-8.5
Electrical conductivity (EC)	µS/cm	Maximum	BAWB01, BAWB02, BAWB07	1260	1365
			BAWB03, BAWB04, BAWB05, BAWBR1, BAWBR2, BAWBR3, Bore E	950	1010
Sulfate	mg/L	Maximum	BAWB01, BAWB03, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	65	73
			BAWB02	190	200
			BAWB04	16	21
Fluoride	mg/L	Maximum	BAWB02, BAWB03, BAWB04, BAWB05, BAWBR1, BAWBR2, BAWBR3	0.8	0.9
			BAWB01, BAWB07, Bore E	1.6	1.7
Arsenic	mg/L	Maximum	BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	-	0.013 ²
Barium	mg/L	Maximum	BAWB01, BAWB02, BAWB03, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	0.140	0.170
			BAWB04	0.400	0.420
			BAWB05	0.2	0.3
Bismuth	mg/L	Maximum	BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	-	0.0007 ⁵
Cobalt	mg/L	Maximum	BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	-	0.0014 ⁵

Environmental authority EPML02840015

			BAWB01	-	0.0028
Chromium	mg/L	Maximum	BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	-	0.001 ²
Copper	mg/L	Maximum	BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	0.003	0.008
Molybdenum	mg/L	Maximum	BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	-	0.034 ²
Nickel	mg/L	Maximum	BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	-	0.011 ²
Selenium	mg/L	Maximum	BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	-	0.011 ²
Uranium	mg/L	Maximum	BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	0.006	0.007
Major cations			BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	For interpretation only	
Major anions			BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	For interpretation only	
Total Hardness			BAWB01, BAWB02, BAWB03, BAWB04, BAWB05, BAWB07, BAWBR1, BAWBR2, BAWBR3, Bore E	For interpretation only	

Notes:

1. All metals and metalloids must be measured as 'dissolved' (from analysis of a field filtered sample)
2. Contaminant limit based on ANZECC (2000), Table 3.4.1, 95% aquatic species protection level for slightly to moderately disturbed ecosystem.
3. Derived from site-specific values, based off dissolved concentration of metals (80th percentiles).
4. Derived from site-specific values, based off dissolved concentration of metals (95th percentiles).
5. Based off ANZECC (2000) low reliability metals and metalloids, Section 8.3.7.1

E11 Groundwater measured from any compliance bore specified in **Table E5** must not exceed the corresponding Limit A specified in **Table E6** on any five consecutive sampling occasions.

E12 Groundwater measured from any compliance bore specified in **Table E5** must not exceed the corresponding Limit B specified in **Table E6** on any three consecutive sampling occasions.

E13 If groundwater measured from any compliance bore specified in **Table E5** exceeds the corresponding Limit B specified in **Table E6** on any one sampling occasion the environmental authority holder must resample the groundwater within the compliance bore for all exceeding parameters within ten business days of receipt of results.

Bore construction and maintenance and decommissioning

E14 The construction, maintenance and decommissioning of groundwater monitoring bores must be undertaken in a manner that:

- a) prevents contaminants entering the groundwater; and
- b) ensures the integrity of the bores to obtain representative groundwater samples from the target aquifer; and
- c) maintains the hydrogeological environment within the aquifer.

E15 A bore drill log must be kept for each reference, compliance and observation groundwater monitoring bore which includes:

- a) bore identification reference and geographic coordinate location;
- b) specific construction information including but not limited to depth of bore, depth and length of casing, depth and length of screening and bore sealing details;
- c) standing groundwater level and water quality parameters including physical parameters and results of laboratory analysis for the possible trigger parameters;
- d) lithological data and stratigraphic interpretation by an appropriately qualified person to identify important features associated with groundwater monitoring; and
- e) target aquifer formation of the bore.

Groundwater Management Program

E16 A Groundwater Management Program must be developed, documented and implemented by appropriately qualified persons.

E17 The Groundwater Management Program required by Condition E16 must:

- a) identify potential sources of contamination to groundwater from the activity; and
- b) ensure that all potential groundwater impacts due to the activity are identified, monitored and mitigated; and
- c) document sampling and monitoring methodology; and
- d) ensure that adequate groundwater monitoring and data analysis is undertaken to achieve the following objectives:
 - i. detect any impacts to groundwater levels due to the activity;
 - ii. detect any impacts to groundwater quality due to the activity;
 - iii. determine compliance with condition E11 and E12; and
 - iv. determine trends in groundwater quality; and
- e) include an appropriate quality assurance and quality control program; and
- f) include a conceptual groundwater model; and
- g) include a review process to identify improvements to the program that includes addresses any comments provided by the administering authority.

E18 The Groundwater Management Program must be reviewed on an annual basis by an appropriately qualified person to determine if it continues to meet the requirements stated in condition E17.

- E19** Monitoring and sampling must be carried out in accordance with written procedures and must address the requirements of the latest version of the following documents unless otherwise approved by the administering authority:
- a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual – Environmental Protection (Water) Policy;
 - b) for groundwater, Groundwater Sampling and Analysis – A Field Guide (2009:27 GeoCat#6890.1) and Australian Standard AS/NZS 5667.11:1998 Water Quality – Sampling – Guidance on sampling of groundwaters;
 - c) for subterranean aquatic fauna, the Guideline for the Environmental Assessment of Subterranean Aquatic Fauna.

Receiving environment monitoring program

- E20** The environmental authority holder must develop, document and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to environmental values of receiving waters by 5 October 2016. The REMP must include at minimum:
- a) Monitoring the effects of the mining activities on the receiving environment periodically under natural flow conditions and while contaminants are being released (if applicable);
 - b) Encompass the waters of Leichardt River and connected or surrounding waterways within 10km downstream of the mining activities;
 - c) Identification of all environmental values of receiving waters;
 - d) An assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current environmental authority conditions to protect downstream environmental values; and
 - e) Application of biological monitoring if required to determine whether the mining activities are being conducted in a manner that enhances or protects the environmental values of receiving waters;
- E21** A report outlining the findings of the REMP that addresses all requirements specified under condition E20, including all monitoring results and any interpretations or assumptions relied upon, must be completed annually.

Water management

- E22** A Water Management Plan must be developed by an appropriately qualified person, documented and implemented for all stages of the mining activity.

Erosion and sediment control

- E23** An Erosion and Sediment Control Plan must be developed, documented and implemented by an appropriately qualified person for all stages of the mining activities to minimise erosion and the release of sediment to receiving waters.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – Biodiversity

Biodiversity offsets

- F1** Impacts to prescribed environmental matters, other than by low impact activities, are only authorised to occur if the impacts do not exceed the maximum extent of impact specified for that prescribed environmental matter specified in *Table F1 – Authorised impacts to prescribed environmental matters*.
- F2** An environmental offset made under the *Environmental Offsets Act 2014* must be delivered for each impact specified in *Table F1 – Authorised impacts to prescribed environmental matters* as requiring an environmental offset.
- F3** A notice of election must be provided to the administering authority no less than three months before the proposed commencement of the prescribed activities.

Table F1 – Authorised impacts to prescribed environmental matters ('Table F1')

Prescribed environmental matter	Location of prescribed environmental matter (GDA94 – Zone 54)	Maximum extent of impact	Environmental offset required
Protected wildlife habitat			
Habitat for an animal that is vulnerable wildlife – Purple-necked rock wallaby <i>Petrogale purpuricollis</i>	379910 E, 7740390 N	5 ha	Yes

- F4** Prior to the commencement of any impacts to a prescribed environmental matter for which an offset is required by condition F2, the authority holder must enter into an Agreed Delivery Arrangement with the administering authority

END OF CONDITIONS FOR SCHEDULE F

Schedule G – Land and Rehabilitation

- G1** The environmental authority holder must rehabilitate all significantly disturbed land caused 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 a post-mining land-use agreed to by the administering authority and any underlying landholders;
 - e) Revegetated with species endemic to the area with no declared pest species; and
 - f) Compliant with all conditions of this environmental authority.
- G2** Two years from commencement of mining¹ the environmental authority holder must develop and document a Post Mine Land-use Plan ('PMLUP') that describes how the rehabilitation objectives in condition G1 will be achieved. The PMLUP 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.
- Note:** Commencement of mining is taken to be the date that extraction of material from the pit commences.
- G3** Rehabilitation 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.

END OF CONDITIONS FOR SCHEDULE G

Schedule H – Regulated Dams

- 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 (EM635)* at the following times:
- a) prior to the design and construction of the structure, if it is not an existing structure; or
 - b) if it is an existing structure, prior to the adoption of this schedule; 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 (EM635)*.

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 (EM635)*.
- H6** Construction of a regulated structure is prohibited unless the holder has submitted a consequence category assessment report and certification to the administering authority has been certified by a suitably qualified and experienced person for the design and design plan and the associated operating procedures in compliance with the relevant condition of this authority.
- 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 (EM635)*, and must be recorded in the Regulated Dams/Levees 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 (EM635)*;
 - 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 dam from any watercourse or drainage line; and
 - ii) possible 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 on 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, except for an existing structure, is prohibited unless:
- a) the holder has submitted to the administering authority:
 - i) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition H8, and
 - ii) a set of 'as constructed' drawings and specifications, and
 - iii) certification of those 'as constructed drawings and specifications' in accordance with condition H9, and
 - iv) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan.
 - v) the requirements of this authority relating to the construction of the regulated structure have been met;
 - vi) the holder has entered the details required under this authority, into a Register of Regulated Dams; and
 - vii) there is a current operational plan for the regulated structures.
- H11** 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

- H12** Conditions H14 to H17 inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
- H13** The Mandatory Reporting Level (the MRL) specified in *Table H1* must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.
- H14** The 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 dam reaches the MRL.
- H15** The holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.
- H16** The holder must record any changes to the MRL in the Register of Regulated Structures.

Design storage allowance

- H17** The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.
- H18** By 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the dam (or network of linked containment systems), as specified in *Table H1*.
- H19** The holder must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated dam (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.
- H20** The holder must, immediately on becoming aware that a regulated dam (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 dam or linked containment systems.

Annual inspection report

- H21** Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
- H22** 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 to ensure the integrity of the regulated structure.
- H23** 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 (EM635)*.
- H24** The holder must:
- a) Within 20 business days of receipt of the annual inspection report, provide to the administering authority:
 - i) The recommendations section of the annual inspection report; and
 - ii) If applicable, any actions being taken in response to those recommendations; and
 - b) If, following receipt of the recommendations and (if applicable) actions, the administering authority requests a full copy of the annual inspection report from the holder, provide this to the administering authority within 10 business days⁶ of receipt of the request.

Transfer arrangements

- H25** The 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

H26 Dams must not be abandoned but be either:

- a) decommissioned and rehabilitated to achieve compliance with condition H27; or
- b) be left in-situ for a beneficial use(s) provided that:
 - i) it no longer contains contaminants that will migrate into the environment; and
 - ii) it contains water of a quality that is demonstrated to be suitable for its intended beneficial use(s); and
 - iii) the administering authority, the holder of the environmental authority and the landholder agree in writing that the dam will be used by the landholder following the cessation of the environmentally relevant activity(ies).

H27 After decommissioning, all significantly disturbed land caused by the carrying out of the environmentally relevant activity(ies) must be rehabilitated to meet the following final acceptance criteria:

- a) the landform is safe for humans and fauna;
- b) the landform is stable with no subsidence or significant erosion gullies for at least three (3) years;
- c) any contaminated land (e.g. contaminated soils) is remediated and rehabilitated;
- d) not allowing for acid mine drainage; or
- e) there is no ongoing contamination to waters (including groundwater);
- f) rehabilitation is undertaken in a manner such that any actual or potential acid sulfate soils on the area of significant disturbance are treated to prevent or minimise environmental harm in accordance with the Instructions for the treatment and management of acid sulfate soils (2001);
- g) all significantly disturbed land is reinstated to the pre-disturbed soil suitability class;
- h) for land that is not being cultivated by the landholder:
 - i. groundcover, that is not a declared pest species is established and self-sustaining
 - ii. vegetation of similar species richness and species diversity to pre-selected analogue sites is established and suited to the post mine land use, and
 - iii. the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance caused by carrying out the petroleum activity(ies).
- i) for land that is to be cultivated by the landholder, cover crop is revegetated, unless the landholder will be preparing the site for cropping within 3 months of petroleum activities being completed.

Register of Regulated Dams

H30 A Register of Regulated Dams must be established and maintained by the holder for each regulated dam.

H31 The holder must provisionally enter the required information in the Register of Regulated Dams when a design plan for a regulated dam is submitted to the administering authority.

- H32** The holder must make a final entry of the required information in the Register of Regulated Dams once compliance with condition H10 and H11 has been achieved.
- H33** The holder must ensure that the information contained in the Register of Regulated Dams is current and complete on any given day.
- H34** All entries in the Register of Regulated Dams must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.
- H35** The holder must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Dams, in the electronic format required by the administering authority.

Hydraulic performance of regulated dams

- H36** All regulated dams must meet the hydraulic performance criteria specified in *Table H1*.

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

Name of dam	Consequence category	Hydraulic performance criteria		
		Spillway capacity	Design Storage Allowance	Mandatory Reporting Level
North Pit	Significant	1:100 to 1:1000 AEP 72 hour duration storm event	1:20 AEP 2 month wet season	1:10 AEP 72 hour duration storm event
South Pit	Significant	1:100 to 1:1000 AEP 72 hour duration storm event	1:20 AEP 2 month wet season	1:10 AEP 72 hour duration storm event
WRD Dam	Significant	1:100 to 1:1000 AEP 72 hour duration storm event	1:20 AEP 2 month wet season	1:10 AEP 72 hour duration storm event
ROM Dam	Significant	1:100 to 1:1000 AEP 72 hour duration storm event	1:20 AEP 2 month wet season	1:10 AEP 72 hour duration storm event

END OF CONDITIONS FOR SCHEDULE H

Schedule I – Definitions

Definitions

Key terms and/or phrases used in this document are defined in this section and bolded throughout this document. Applicants should note that 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.

Acid rock drainage means any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata is disturbed and exposed to oxygen and moisture.

Administering Authority is the agency that administers the environmental authority provisions under the *Environmental Protection Act 1994*.

Affected person is someone whose drinking water can potentially be impacted as a result of discharges from a dam or their life can be put at risk due to dwellings or workplaces being in the path of a dam break flood.

Airblast overpressure means energy transmitted from the blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in this wave, above ambient pressure is the peak airblast overpressure measured in decibels linear (dBL).

Annual inspection report means an assessment prepared by a suitably qualified and experienced person containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan);

- (a) against recommendations contained in previous annual inspections reports;
- (b) against recognised dam safety deficiency indicators;
- (c) for changes in circumstances potentially leading to a change in consequence category;
- (d) for conformance with the conditions of this authority;
- (e) for conformance with the 'as constructed' drawings;
- (f) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems);
- (g) for evidence of conformance with the current operational plan.

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, with reference to the water schedule means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.

Blasting means the use of explosive materials to fracture:

- (a) rock, coal and other minerals for later recovery, or
- (b) structural components or other items to facilitate removal from a site or for reuse.

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)).

Certification, Certifying 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 *Agricultural and Veterinary Chemicals Code Act 1994* (Commonwealth), or
- b) a dangerous good under the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council, or
- c) a lead hazardous substance within the meaning of the Workplace Health and Safety Regulation 1997, 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
 - v. a substance used for, or intended for use for mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater, or
 - vi. 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.

Coal seam gas water means groundwater that is necessarily or unavoidably brought to the surface in the process of coal seam gas exploration or production.

Coal seam gas water concentrate means the concentrated saline water waste stream from a water treatment process that does not exceed a total dissolved solid concentration of 40 000 mg/L.

Coal seam gas evaporation dam is defined as a impoundment, enclosure or structure that is designed to be used to hold coal seam gas water for evaporation.

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 *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

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 (for example, via spillway).

Design plan is a document that contains the design, operation, monitoring and revegetation criteria of a watercourse diversion that addresses the outcomes stated in conditions on the environmental authority relating to the diversion. The document should include, but not be limited to:

- a) required information under a functional design
- b) the location, function and description of geomorphic and riparian vegetation features within the proposed watercourse diversion
- c) results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion
- d) a revegetation and vegetation management plan (a revegetation plan) for the diversion
- e) engineering drawings depicting the physical attributes and dimensions of the diversion
- f) (if relevant) the staged development of a permanent watercourse diversion including the proposed use of temporary watercourse diversions with identified lifespans
- g) all investigation and other reports relied on by the design
- h) plans and specifications sufficient to complete construction and revegetation in accordance with the design.

Design storage allowance or DSA means an available volume, estimated in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* 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.

Development approval means a development approval under the *Integrated Planning Act 1997* or the *Sustainable Planning Act 2009* in relation to a matter that involves an environmentally relevant activity under the *Environmental Protection Act 1994*.

Disturbance of land includes:

- a) compacting, removing, covering, exposing or stockpiling of earth
- b) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion
- c) carrying out mining within a watercourse, waterway, wetland or lake
- d) the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls

- e) temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after the mining activity has ceased
- f) releasing of contaminants into the soil, or underlying geological strata.

However, the following areas are not included when calculating areas of 'disturbance':

- a) areas off lease (e.g. roads or tracks which provide access to the mining lease)
- b) areas previously disturbed which have achieved the rehabilitation outcomes
- c) by agreement with the administering authority, areas previously disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions)
- d) areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner
- e) disturbance that pre-existed the grant of the tenure.

EC means electrical conductivity.

Effluent treated waste water released from sewage treatment plants.

Emergency action plan means documentation forming part of the operational plan held by the holder or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam owner and operating personnel in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to downstream communities and the implementation of protection measures. The plan must require dam owners to annually update contact.

Equilibrium: A state where 'balance' is achieved despite changing variables.

Existing structure means a structure that was in existence prior to the adoption of this schedule of conditions under the authority.

Extreme Storm Storage – means a storm storage allowance determined in accordance with the criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority

Flare pit means containment area where any hydrocarbon that is discovered in an over-pressured reservoir during a drilling operation is diverted to, and combusted. The flare pit is only used during the drilling and work over process on a petroleum well.

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.

Functional design is a document that contains 'conceptual' information about the design, operation and revegetation criteria of a watercourse diversion that addresses the outcomes stated in the conditions on the environmental authority relating to the diversion. The document should include, but not be limited to:

- a) geomorphic and vegetation assessment of the existing watercourse

- b) hydrologic conditions of the existing watercourse
- c) the proposed watercourse diversion route
- d) results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion.

Functionality: the purpose that something is designed or expected to fulfil.

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.

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 'Manual for Assessing Hazard Categories and Hydraulic Performance of Dams'.

Holder, for a mining tenement, means a holder of the tenement under the *Mineral Resources Act 1989*, and the holder of the associated environmental authority under the *Environmental Protection Act 1994*.

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 *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

Infrastructure means water storage dams, levees,, roads and tracks, buildings and other structures built for the purpose of the mining activity.

Land in the 'land schedule' of this document means land excluding waters and the atmosphere, that is, the term has a different meaning from the term as defined in the *Environmental Protection Act 1994*. For the purposes of the *Acts Interpretation Act 1954*, it is expressly noted that the term 'land' in this environmental authority relates to physical land and not to interests in land.

Land use means the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

Leachate means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of at the operational land, which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

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.

Licensed place means the mining activities carried out at the mining tenements.

Low consequence dam means any dam that is not a high or significant consequence category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

Low impact activities means activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation, or result in significant disturbance to land which cannot be rehabilitated immediately using hand tools after the activity is completed. Examples of such activities include but are not necessarily limited to soil surveys (excluding test pits), topographic surveys, cadastral surveys and ecological surveys, the installation of monitoring equipment provided that it is within the meaning of low impact and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.

Mandatory reporting level or MRL means a warning and reporting level determined in accordance with the criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

Manual means the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

Maximum extent of impacts means the total maximum, unabated, impact to a prescribed environmental matter that could occur over the whole-of-project life.

Minimise is to reduce to the smallest possible amount or degree.

Modification or modifying (see definition of 'construction')

NATA means National Association of Testing Authorities, Australia.

Natural flow means the flow of water through waters caused by natural processes (*i.e.* rainfall in the catchment area and subsequent runoff into watercourses).

Non polluting means having no adverse impacts upon the receiving environment.

Notice of election has the meaning in section 18(2) *Environmental Offsets Act 2014* by which an authority holder elects to deliver an environmental offset.

Operational plan includes:

- (a) Normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA allowance);
- (b) Contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure.

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 (mm/s).

Permanent watercourse diversion is a man-made structure that incorporates the geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse and is designed, constructed, operated and maintained according to an engineering standard that ultimately achieves a self-sustaining watercourse able to function without features or characteristics that rely on ongoing maintenance or that impose a financial or other burden on the proponent, government or the community.

Pre-existing watercourse is the section of watercourse from which the flow of water will be diverted as a result of the construction and operation of a watercourse diversion.

Prescribed environmental matters has the meaning in section 10 of the *Environmental Offsets Act 2014*, limited to the matters of State environmental significant listed in schedule 2 of the *Environmental Offsets Regulation 2014*.

Protected area means – a protected area under the *Nature Conservation Act 1992*, or

- a) a marine park under the *Marine Parks Act 1992*, or
- b) a World Heritage Area.

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) Waters;
- b) Land;
- c) Air; and
- d) Any area that is not specified in Table A1 of this environmental authority.

Receiving waters means the waters into which this environmental authority authorises releases of contaminated water.

Regulated dam means any dam in the significant or high consequence category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

Register of Regulated Dams includes:

- a) Date of entry in the register;
- b) Name of the dam, its purpose and intended/actual contents;
- c) The consequence category of the dam as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*;
- d) Dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam;
- e) Name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;
- f) For the regulated dam, other than in relation to any levees –
 - i. The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;
 - ii. Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area
 - iii. Dam crest volume (megalitres);

- iv. Spillway crest level (metres AHD).
- v. Maximum operating level (metres AHD);
- vi. Storage rating table of stored volume versus level (metres AHD);
- vii. Design storage allowance (megalitres) and associated level of the dam (metres AHD);
- viii. Mandatory reporting level (metres AHD);
- g) The design plan title and reference relevant to the dam;
- h) The date construction was certified as compliant with the design plan;
- i) The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;
- j) Details of the composition and construction of any liner;
- k) The system for the detection of any leakage through the floor and sides of the dam;
- l) Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;
- m) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority;
- n) Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

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.

Release event means a discharge of water contaminated by the mining activity.

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 drilling material means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.

Revegetation is the re-establishment of vegetation¹ of a species and density of cover similar to surrounding undisturbed areas or the landform that existed before mining activities on soil surfaces associated with the construction or rehabilitation of a watercourse diversion.

RL means reduced level, relative to mean sea level as distinct from depths to water.

Saline drainage The movement of waters, contaminated with salts, as a result of the mining activity.

Self-sustaining means not requiring on-going intervention and maintenance to maintain functional riverine processes and characteristics

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 *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area, or
- f) a public park or gardens.

Significant residual impact has the meaning in section 8 *Environmental Offsets Act 2014*.

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.

Structure means 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 *Professional Engineers Act 2002*, 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.

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.

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.

Temporary watercourse diversion is a man-made structure that may incorporate geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse and is designed, constructed, operated and maintained to an engineering standard that ensures the diversion does not compromise the equilibrium and performance of the diversion and adjoining watercourses. A temporary diversion is replaced by a permanent diversion, or the re-establishment of the pre-existing watercourse, within the timeframe specified in the design plan.

the Act means the *Environmental Protection Act 1994*.

Void means any constructed, open excavation in the ground.

Water is defined under Schedule 4 of the *Water Act 2000*.

Watercourse has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means a river, creek or stream in which water flows permanently or intermittently—

- (a) in a natural channel, whether artificially improved or not; or
- (b) in an artificial channel that has changed the course of the watercourse.

Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

Water quality means the chemical, physical and biological condition of water.

Waters includes all or any part of a river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water in natural or artificial watercourses, bed and banks of a watercourse, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater.

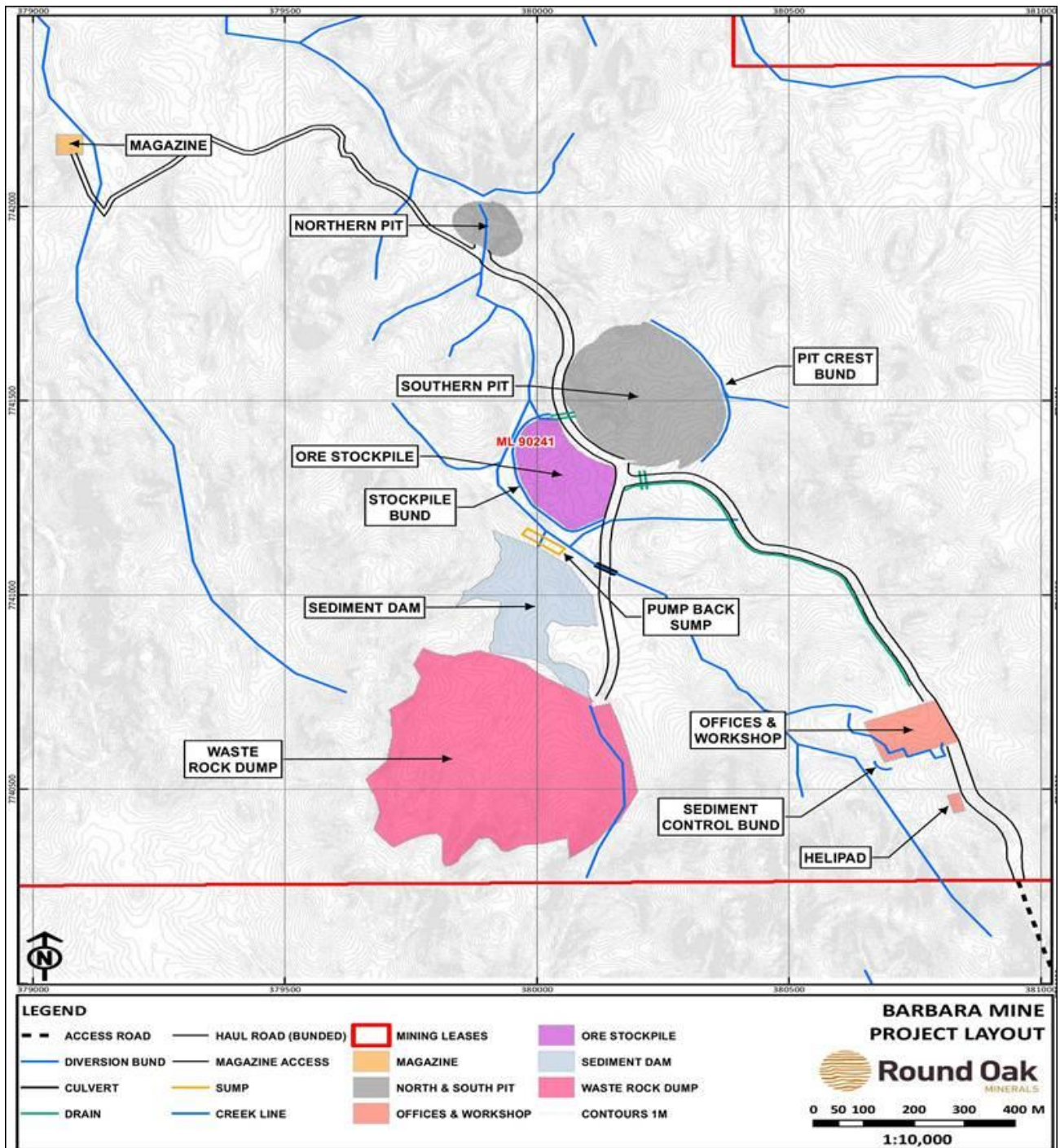
Water year means the 12-month period from 1 July to 30 June.

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.

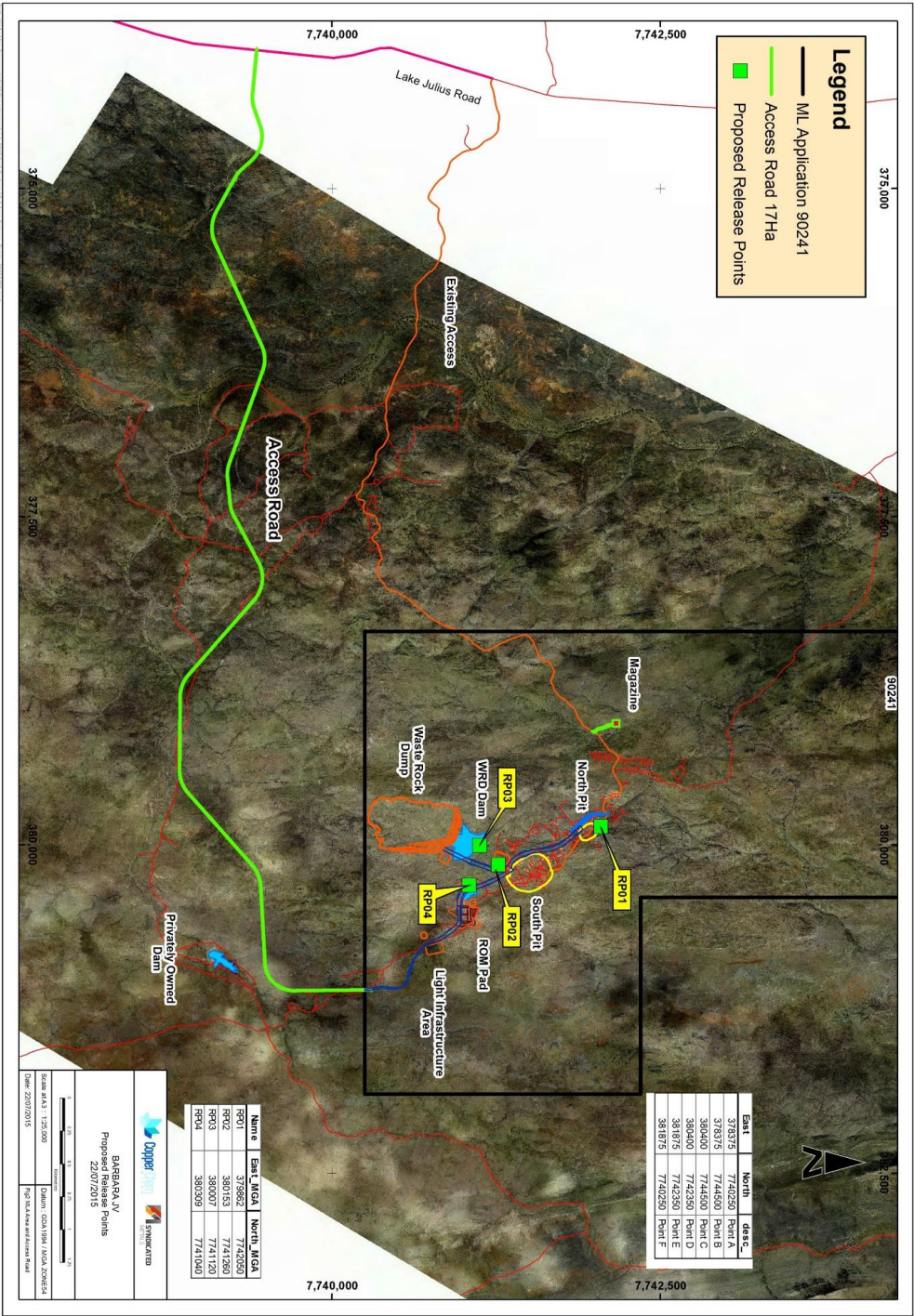
END OF SCHEDULE I

Schedule J – Maps and Plans

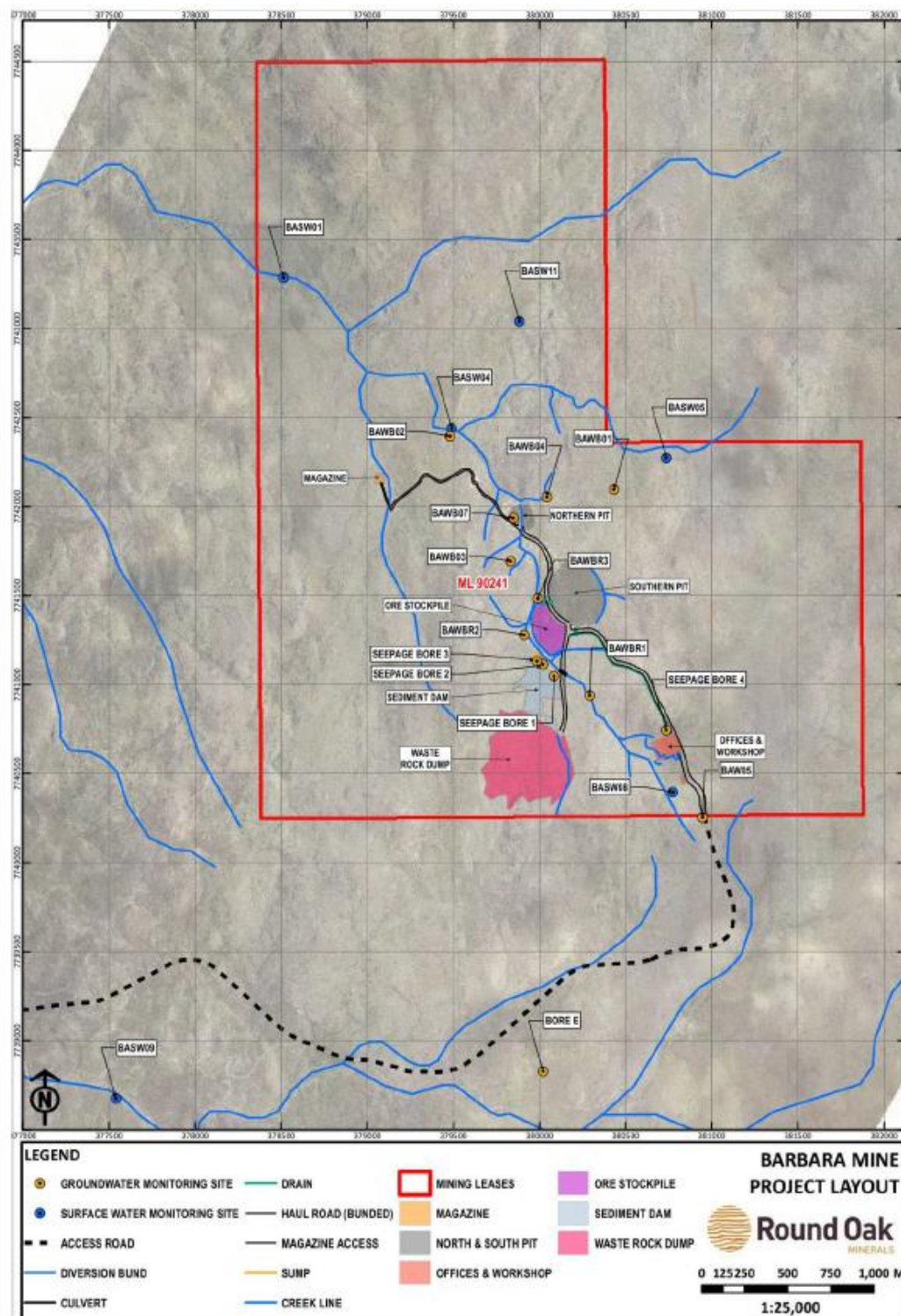
Map 1 – Location of authorised disturbance



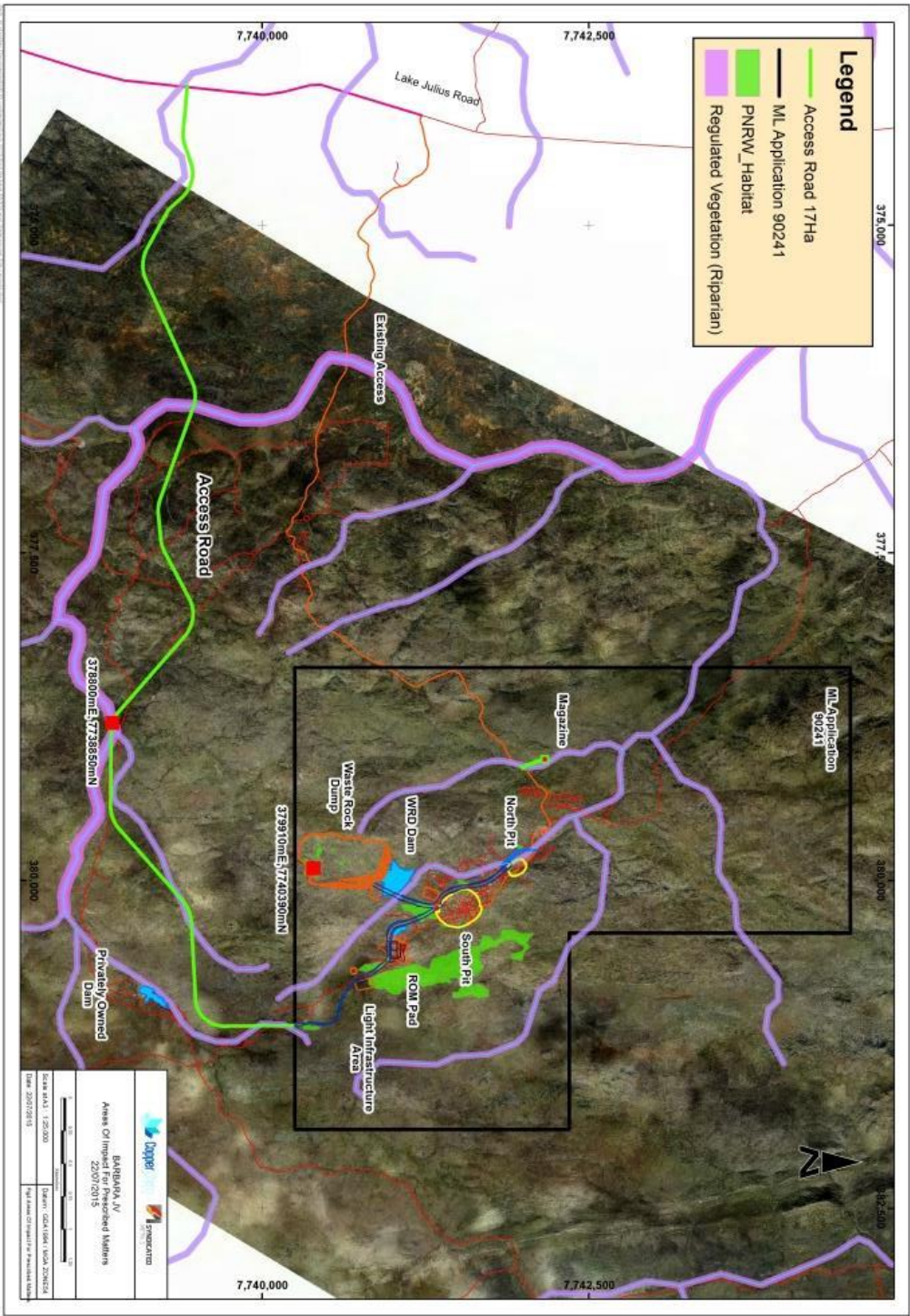
Map 2—Release points



Map 3—Monitoring and reference sites



Map 4—Areas of impact for prescribed matters



End of Schedule J

END OF PERMIT