

Permit

Environmental Protection Act 1994

Environmental authority EPML00969013

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

Environmental authority number: EPML00969013

Environmental authority takes effect on 10 February 2026

The anniversary date of this environmental authority is 4 May each year.

An annual return will be due each year on 01 April.

Environmental authority holder(s)

Name(s)	Registered address
Graymont (Calliope) Pty Ltd	Level 9, 118 Mount Street North Sydney, 2060 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 21: A mining activity that is an ineligible ERA, other than a mining activity mentioned in items 9 to 20	ML3594, ML3595, ML3596, ML3597, ML3598, ML3599, ML3600, ML3602, ML3603, ML3604, ML3605, ML3606, ML3608, ML3609, ML80036, ML80189, ML80190, ML80191, ML80192.

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 land give written notice to the administering authority if they become aware of the following:

- 1) the presence of, or happening of an event involving, a hazardous contaminant on the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- 2) if the land is contaminated land – a change in the condition of the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- 3) a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the land (notice must be given within 20 business days).

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:

- 4) 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
- 5) 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
- 6) 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 *Planning Act 2016* 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.

The anniversary day of this environmental authority is the same day each year. The payment of the annual fee will be due each year on this day. An annual return will be due each year on 01 April.

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.

Sarah de Vries

Signature

10 February 2026

Date

Sarah De Vries

Department of the Environment, Tourism, Science and
Innovation

Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:

Minerals Business Centre
Department of the Environment Tourism,
Science and Innovation

Phone: 07 4222 5352

Email: ESCairns@detsi.qld.gov.au

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 The environmentally relevant activity(ies) conducted at the location as described above must be conducted in accordance with the following site-specific conditions of approval.

This environmental authority incorporates the following schedules:

Schedule A – General

Schedule B – Air

Schedule C – Water

Schedule D – Noise and Vibration

Schedule E – Waste

Schedule F – Land

Schedule G – Dams

Schedule H – Community

Definitions

Maps

Schedule A – General

A1 This environmental authority authorises the activities listed in Table 1 (Authorised Mining Activities and Locations) to the extent that they are carried out in accordance with:

- a) the activity's corresponding:
 - i) maximum disturbance area;
 - ii) location; and
 - iii) Figure 1 – Calliope Primary Mine Features and Figure 2 Transitional areas

Table 1 - Authorised Mining activities and Locations

Disturbance Type	Relevant Tenures	Central Peg Coordinates Location (GDA2020/MGA56)		Maximum Disturbance Area (ha)
		Easting	Northing	
Access Tracks and Levees	ML3602, ML3603, ML3594, ML3608, ML3609, L80036, ML3595, ML3596, ML80189, ML80190, ML80191, ML80192	Refer to Figure 1 and 2		20.31#
Infrastructure	ML3602, ML3603, ML80192	320811.7502 320736.7564 321266.5821 321174.1757 321313.3872 321061.2749 320717.363516 321196.265239 321270.16272 321172.485395 321176.249984	7334433.4943 7334483.0209 7333707.9249 7333786.8692 7333849.4307 7334212.9326 7334496.597053 7333696.878946 7333706.770611 7333811.785823 7333729.110797	8.55
ROM processing area	ML80036, ML3602, ML3603, ML80192	321041.2104 320828.5981 321254.4875 321167.0610 321021.6907	7333671.9960 7333813.7716 7333945.1699 7333974.2862 7334091.6395	18.79

			321268.9932	7333589.9635	
Open Pit (Voids)	Pit 1				
	Pit 2	ML80192	320850.2463 320760.3233 320872.769149	7334104.6259 7333943.4211 7334091.437911	11.46
	Pit 3/4	ML3595, ML3594, ML3604, ML3608, ML3609, ML80036, ML80189, ML80190, ML80191	321040.4857 320846.803044 321053.477303	7332548.8732 7332106.332643 7332753.8696	109.71
Cleared Areas and Laydowns		ML3595, ML3602, ML3603, ML3608, ML80036, ML80189, ML80192	320670.2975 320715.7924 320618.3503 320640.1575 321235.4685 321265.5661 320656.4394 320639.1084 321199.0196 320650.5888 320727.016407 320726.967385 320703.888314	7333928.9784 7333419.3868 7333835.2419 7333480.6166 7334005.4982 7334123.2950 7331857.9365 7333345.8372 7334114.0142 7333085.3973 7332428.457775 7333278.736409 7333934.378992	11.22#
Spoil Piles		ML3595, ML80036, ML80191, ML80192	320901.6998 320865.75258 320748.433077 321211.70293 320986.51774	7333442.3728 7332424.720595 7332684.039666 7333172.78993 7333245.470157	19.22#
Topsoil Areas		ML3595, ML3608, ML80036, ML80191, ML80192, ML80189	320659.1725 321399.9560 320540.5814 320666.4564 320713.4323 321133.7218 320628.1209 320684.6445	7331212.0520 7332122.5826 7333763.4255 7331670.7236 7333298.4651 7333463.6670 7333721.1014 7331750.1568	7.01

		321289.314848	7333154.020518	
Sediment Ponds	ML3603, ML80192	320822.1960 321286.7328	7333681.0147 7333871.2242	1.46
Southern WRD	ML3609, ML80189	320815.4787 320629.224193	7331433.0391 7331501.679085	19.66
Northern WRD	ML80036	320905.163651	7333424.748777	6.03#
Silt Dump	320386.2295	320386.2295	7333839.7095	1.11

Refers to transitional areas as detailed in Figure 2 Primary Mine Features. A transitional area is an area that will change over time between pit, cleared areas/laydown, waste rock dump, spoil pile and tracks depending on the mine stage.

A2

Prevent and/or minimise the likelihood of environmental harm

In carrying out the environmentally relevant activities, the holder of this environmental authority must take all reasonable and practicable measures to prevent and/or minimise the likelihood of environmental harm being caused. Any environmentally relevant activity, that if carried out incompetently, or negligently, may cause environmental harm, in a manner that could have been prevented, shall be carried out in a proper manner in accordance with this authority.

Note: This authority authorises the environmentally relevant activity, it does not authorise environmental harm unless a condition contained within this authority explicitly authorises that harm. Where there is no condition or the authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.

A3

Maintenance of measures, plant and equipment

The environmental authority holder must ensure:

- a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed;
- b) that such measures, plant and equipment are maintained in a proper condition; and
- c) that such measures, plant and equipment are operated in a proper manner.

A4

Monitoring and records

Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.

A5

Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

- A6 **Storage and handling of flammable and combustible liquids**
- Spillage of all flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and maintained in accordance with the current version of AS 1940 – Storage and Handling of Flammable and Combustible Liquids.
- A7 Spillage of all chemicals must be contained within an on-site containment system and controlled in a manner that prevents environmental harm.
- A8 **Notification of emergencies, incidents and exceptions**
- All reasonable actions to be taken to minimise environmental harm, or potential environmental harm, resulting from any emergency, incident, or circumstances not in accordance with conditions of this environmental authority.
- A19 As soon as practicable after becoming aware of any emergency, incident or information about circumstances which results or may result in environmental harm not in accordance with the conditions of this environmental authority, the administering authority must be notified by telephone or email.
- A10 Not more than ten business days following the initial notification of an emergency or incident, or information about circumstances which result in environmental harm, written advice must be provided to the administering authority in relation to:
- a) proposed actions to prevent a recurrence of the emergency or incident;
 - b) the outcomes of actions taken at the time to prevent or minimise environmental harm; and
 - c) proposed actions to respond to information about circumstances which result or may result in environmental harm.
- A11 As soon as practicable, but not more than six weeks following the initial notification of an emergency, incident or information about circumstances which results or may result in environmental harm, environmental monitoring must be performed and written advice must be provided of the results of any such monitoring performed to the administering authority.
- A12 Only waste rock that is characterised as un-reactive and/or benign material (i.e. material that does not cause acid, neutral or saline mine drainage) may be used for the backfilling of pits and construction of temporary or permanent structures within the operation areas.
- A13 **Definitions**
- Words and phrases used throughout this environmental authority are defined in the Definitions section of this authority. Where a definition for a term used in this environmental authority is sought and the term is not defined within this environmental authority, the definitions in the *Environmental Protection Act 1994*, its regulations and policies must be used.
- A14 Notwithstanding any other condition of this environmental authority, the holder must not cause mining disturbance unless and until such time as that disturbance has an associated rehabilitation outcome provided for in the relevant PRCP Schedule.

END OF SCHEDULE A

Schedule B – Air**B1 Dust nuisance**

Subject to conditions B2 and B3 the release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.

B2 When requested by the administering authority, dust and particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

B3 If the environmental authority holder can provide evidence through monitoring that the following limits are not being exceeded then the holder is not in breach of condition B1:

- a) dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with the most recent version of *AS 3580.10.1 Methods for sampling and analysis of ambient air – Determination of particulates – Deposited matter – Gravimetric method*; or
- b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24 hour averaging time, at a sensitive or commercial place downwind of the operational land, when monitored in accordance with:
 - i. particulate matter – Determination of suspended particulate PM10 high-volume sampler with a size-selective inlet – Gravimetric method when monitored in accordance with *AS 3580.9.6 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM (sub) 10 high volume sampler with size-selective inlet – Gravimetric method*; and
 - ii. any alternative method of sampling PM10, which may be permitted by the *Air Quality Sampling Manual* as published from time to time by the administering authority.

B4 If monitoring indicates exceedance of the relevant limits in condition B3, then the environmental authority holder must:

- a) address the complaint using the use of appropriate dispute resolution if required; and
- b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

END OF SCHEDULE B

Schedule C - Water

- C1 Contaminants that will, or have 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
- C2 The release of contaminants to waters must only occur from the release points specified in Table 2 and depicted in Figure 3 attached to this environmental authority.

Table 2 – Contaminant release points, sources and receiving waters

Release Point (RP)	Easting (GDA2020)	Northing (GDA2020)	Contaminant Source and Location	Monitoring Point	Receiving waters
F1	321432.6541	7332027.421	Pit 3 and Pit 4	End of pipe F1 (Discharge Monitoring Point)	Lake Awoonga Dam
F2	320399.654	7331470.421	Undisturbed natural flow and/or Pit 3	Raggote Ck at F2 (Downstream Monitoring Point)	Farmers Dam
C1	320757.6543	7333602.421	Pit 2 and Pit 4	C1 dam spillway (Discharge Monitoring Point)	Pit 2 and/or Recycled Water Storage Dam
C2	320102.6544	7333855.421	Undisturbed natural stormwater flow	C2 creek adjacent to rail siding road (Upstream Monitoring Point)	Raggote Creek

- C3 The release of contaminants to waters must not exceed the release limits stated in Table 3 when measured at the monitoring points specified in Table 2 for each quality characteristic.

Table 3 – Contaminant release limits

Quality Characteristic	Release Limits	Monitoring Frequency
Electrical conductivity ($\mu\text{S}/\text{cm}$)	900	Weekly during discharge
pH (pH Unit)	6.5 (minimum) 8.5 (maximum)	Weekly during discharge
Total Suspended Solids (mg/L)	100 (maximum) Or when measured at C1, F2 or F1 not more than 110% of value at monitoring point C2	Weekly during discharge

C4 Water general

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 10 hours of each other where possible;
- d) carried out on representative samples; and
- e) laboratory testing must be undertaken using a laboratory accredited (e.g. NATA) for the method of analysis being used.

Note: The Monitoring and Sampling Manual to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.

C5 The release of contaminants directly or indirectly to waters:

- a) Must not produce any visible discolouration of receiving waters; and
- 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.

C6 Annual water monitoring reporting

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 in the specified format with each annual return:

- 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 release 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.

C7 Temporary Interference with waterways

Temporarily destroying native vegetation, excavating or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with Department of Natural Resources and Mines *Guideline – Activities in a Watercourse, Lake or Spring associated with Mining Activities*.

C8 Water management plan

A Water Management Plan must be developed and implemented that provides for the purpose 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.

- C9 The Water Management Plan must be developed in accordance with the department's *Guideline for Preparing a Water Management Plan* and must include at least the following components:
- a) contaminant source study;
 - b) site water balance and model;
 - c) water management system;
 - d) saline drainage prevention and management measures;
 - e) acid rock drainage prevention and management measures (if applicable);
 - f) emergency and contingency planning; and
 - g) monitoring and review.
- C10 Each year the holder of the environment authority must undertake a review of the water management plan prior to the wet season (i.e. by 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.
- C11 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.
- C12 **Saline drainage**
- 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 drainage.
- C13 **Acid rock drainage**
- 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 acid rock drainage.
- C14 **Stormwater and water sediment controls**
- An erosion and sediment control plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.
- C15 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.
- C16 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 stormwater drainage system or receiving waters.

Groundwater

- C17 The holder of this environmental authority must develop and implement a groundwater monitoring and management program. The program must:
- a) be able to detect a significant change to groundwater quality values due to activities that are part of this mining project;
 - b) include measures to minimise the impact of the mining activities on groundwater resources;
 - c) include contingency procedures for emergencies; and
 - d) include a program for monitoring and review of the effectiveness of the groundwater monitoring and management program.
- C18 When requested by the administering authority, report the results and analysis of groundwater monitoring conducted under condition C17.
- C19 Subject to condition C20, groundwater levels must be monitored and groundwater draw down fluctuations in excess of two metres per year of previously observed maximum seasonal fluctuation, not resulting from the pumping of licensed bores, must be notified as per conditions A9 – A12.
- C20 Groundwater level and quality must be monitored at the locations and frequencies defined in Table 4 Groundwater monitoring locations and frequency and as shown in Figure 4 Calliope Groundwater monitoring locations.
- C21 By 31 August 2026, hydraulic testing of all groundwater monitoring bores stipulated in Figure 4 Calliope Groundwater monitoring locations must be completed and the hydrogeological characterisation of all bores in the network must be determined.
- C22 By 31 March 2028, an independent appropriately qualified person must prepare a groundwater assessment report that includes:
- a) a review of the baseline data collected to date,
 - b) hydrogeological conceptualisation and assessment of the adequacy of the groundwater monitoring network in accordance with the *Australian Groundwater Modelling Guidelines* (Barnett et al., 2012), including at minimum:
 - i. two cross-sections oriented perpendicular and parallel to the expanded pit strike; and
 - ii. groundwater flow directions and any inferred groundwater divides
 - c) identification of predicted groundwater impacts from the mining activity,
 - d) recommendations for changes to the groundwater monitoring and management program
 - e) recommendation for whether a numerical groundwater model is required.

- C23 Where changes to the groundwater monitoring and management program are recommended under Condition C22 d), within six months of the groundwater assessment report, the groundwater monitoring and management program must be updated to incorporate:
- a) predicted drawdown and mounding,
 - b) inflow rates,
 - c) potential impacts to receiving environments, and
 - d) corrective actions required where groundwater monitoring results deviate from the conceptual hydrogeological model predictions.
- C24 Where numerical groundwater modelling is required under Condition C22 e), the model must be developed by an appropriately qualified person and in accordance with the *Australian Groundwater Modelling Guidelines (Barnett et al., 2012)*.
- C25 The numerical groundwater model required by Condition C24 must:
- f) consider the hydrogeological characterisation of the bores under condition C22
 - g) include a hydrogeological conceptual model, hydrostratigraphy of the groundwater units and bore logs;
 - h) include updated hydraulic testing data from all bores;
 - i) provide groundwater contours;
 - j) predict groundwater levels;
 - k) represent existing and expanded pit extents, surrounding hydrostratigraphy features and surface water features, particularly Awoonga Dam and Ragotte Creek;
 - l) include drawdown contour maps, with inclusion of the main mine features and the receiving environment;
 - m) predict operational groundwater seepage and post-mining seepage rates;
 - n) predict lateral and vertical geographical extents of contaminants and direction of movements of contaminants; and
 - o) be calibrated against observed groundwater levels and aquifer test data and include sensitivity analysis to evaluate the relative effect of model input parameters and boundary conditions on model calibration and predictive outputs
- C26 By 31 October 2028, the numerical groundwater model required under Condition C24 and a model peer review report providing details of the numerical groundwater model must:
- a) be submitted to the administering authority upon request; and
 - b) have due consideration given to any comments made by the administering authority on the numerical groundwater model.
- C27 The numerical groundwater model required under Condition C24 must be maintained and calibrated periodically to ensure the site groundwater system is modelled for operational and post-mining activities.

- C28 The groundwater monitoring and management program required under Condition C17 must be reviewed and updated within six months of numerical groundwater model completion, to incorporate findings from the latest calibrated numerical model including predicted drawdown, inflow rates and potential receiving environment impacts. Where groundwater monitoring results deviate from the numerical groundwater model predictions, corrective actions must be implemented within the groundwater monitoring and management program.
- C29 The records of the numerical groundwater model required under Condition C24 and the subsequent updates required under Condition C27 must be kept and provided to the administering authority upon request.

Table 4 – Groundwater monitoring locations and frequency

Monitoring point	Easting (GDA 2020)	Northing (GDA 2020)	Monitoring frequency				
			Screen interval (mAHD)	Groundwater level	EC, TSS, pH and Major Anions	Metal Screen	Hydrocarbon
FM5	321430.6541	7332651.421	45 – 36	Quarterly*	Quarterly	Annual (Jul)	Annual (Jul)
FM5B	321432.0776	7332658.128	33.7 – 20.7				
FM6	321080.6545	7334350.421	16.8 – 4.8				
FM7	321133.7934	7333730.139	45.88 – 33.88				
FM8	321546.5801	7332636.828	40.03 – 25.03				
FM9	320721.6894	7332516.483	33.58 – 18.58				
FM10	TBD**	TBD**	TBD**				
FM11	TBD**	TBD**	TBD**				
FM12	TBD**	TBD**	TBD**				
FM13	TBD**	TBD**	TBD**				

* Groundwater level must be monitored monthly during active dewatering.

**Bore locations for any TBD must be nominated in accordance with condition C30.

C30 All “TBD” listed in Schedule C – Table 4 (Groundwater Monitoring Locations and Frequency) must be nominated via an amendment application pursuant to the *Environmental Protection Act 1994* to this environmental authority by 30 June 2026.

C31 If the groundwater contaminant trigger levels defined in Table 5 Groundwater contaminant trigger values are exceeded, an investigation must be completed into the potential for environmental harm and notify the administering authority within 28 days of receiving the analysis results.

Table 5 – Groundwater contaminant trigger values

Water Quality Indicator	Unit	Trigger Value
Calcium	mg/L	250
Chloride	mg/L	200
CO ₃	mg/L	500
Electrical Conductivity	µS/cm	1500
HCO ₃	mg/L	500
Magnesium	mg/L	35
Petroleum Hydrocarbons (Total)	mg/L	1.0
pH	pH units	6.5-8.5
Potassium	mg/L	5.0
SO ₄	mg/L	20
Sodium	mg/L	100
Total Suspended Solids	mg/L	1500

C32 Background groundwater monitoring program

A background groundwater monitoring program must be developed to include bore(s) that are located in an appropriate distance from potential sources of impact from mining activities to provide the following:

- representative groundwater samples from the aquifers potentially affected by mining activities;
- at least eight sampling events (quarterly sampling) to determine background groundwater quality as practicable;
- background water quality in hydraulically isolated background bore(s) that have not been affected by any mining activities; and
- the final groundwater contaminant parameters and trigger levels required for each bore type must be provided according to condition C33.

C33 The groundwater monitoring data must be reviewed on an annual basis. The review must include the assessment of groundwater levels and water quality data, and the suitability of the monitoring network. The assessment must be submitted to the administering authority within 28 days of receiving the report.

C34 The following information must be recorded in relation to all groundwater sampling:

- The date on which the sample was taken;
- The time at which the sample was taken;
- The monitoring point at which the sample was taken; and
- The results of all monitoring.

Schedule D - Noise

- D1 Noise nuisance**
- Subject to conditions D2 and D3 noise from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.
- D2**
- When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.
- D3**
- If the environmental authority holder can provide evidence through monitoring that the limits defined in Table 6 and Table 7, are not being exceeded then the holder is not in breach of condition D1. Monitoring must include:
- a) LA, max adj, T;
 - b) Relevant background source level;
 - c) The level and frequency of occurrence and impulsive or tonal noise;
 - d) Atmospheric conditions including wind speed and direction; and
 - e) Location, date and time of recording.
- D4**
- If monitoring indicates exceedance of the limits in Table 6 and Table 7, then the environmental authority holder must:
- a) Address the complaint including the use of appropriate dispute resolution if required; and
 - b) Immediately implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.
- D5**
- The method of measurement and reporting of noise levels must comply with the latest edition of the administering authority's *Noise Measurement Manual*.

Table 6 – Noise Limits

Noise level dB(A) measured as:	Monday to Sunday (including public holidays)		
	7am to 6pm	6pm to 10pm	10pm to 7am
	Noise measured at a 'sensitive or commercial place'		
L_{A10} , adj, 10 mins	Background + 5	Background + 5	Background + 3
L_{A1} , adj, 10 mins	Background + 10	Background + 10	Background + 5

Note: Where "Background" means background sound pressure level measured in accordance with the latest edition of the administering authority's Noise Measurement Manual. Table 5 does not purport to set operating hours for the mining activities.

Table 7 – Airblast overpressure level*

Parameter	Airblast overpressure measured at a sensitive or commercial place	
	Monday to Sunday 9am – 7pm	Other times and public holidays
Air blast overpressure level (dB [Lin] Peak)	Maximum 115 dB for 4 out of 5 consecutive blasts	No blasting to occur
Air blast overpressure level (dB [Lin] Peak)	120 dB maximum	No blasting to occur

Note: * Table 7 does not purport to set limits applicable to any particular explosive blast, rather sets design criteria for every explosive blast.

D6 Vibration nuisance

Subject to conditions D7 and D8 vibration from the mining activity must not cause an environmental nuisance, at any sensitive place

D7 When requested by the administering authority, vibration monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

D8 If the environmental authority holder can provide evidence through monitoring that the limits defined in Table 8, are not being exceeded then the holder is not in breach of condition D6. Monitoring must include:

- Peak particle velocity (mm/s);
- air blast overpressure level (dB linear peak);
- location of the blast/s within the mining area (including which bench level);
- atmospheric conditions including temperature, relative humidity and wind speed and direction; and
- Location, date and time of recording.

Table 8 – Vibration Limits

Vibration parameter	Vibration measured at a sensitive place	
	Monday to Sunday 9am – 7pm	Other times and public holidays
Peak particle velocity (mm/s)	Maximum 5 mm/s for 4 out of 5 consecutive blasts	No blasting to occur
Peak particle velocity (mm/s)	10 mm/s maximum	No blasting to occur

- D9 For the purposes of condition D6 the mining activities will not cause environmental nuisance where noise from the mining activities does not exceed the criteria specified in Table 8.
- D10 If monitoring indicates exceedance of the limits in Table 8, then the environmental authority holder must:
- a) Address the complaint including the use of appropriate dispute resolution if required; and
 - b) Immediately implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.
- D11 Every explosive blast for the mining activity shall be designed by a competent person to achieve the criteria specified in Table 7 and Table 8.
- D12 All relevant information pertaining to the design of every explosive blast for the mining activity in relation to the criteria specified in Table 7 and Table 8 shall be kept in written and diagrammatic form.

END OF SCHEDULE D

Schedule E - Waste

- | | |
|----|--|
| E1 | Storage of tyres

Scrap tyres stored awaiting disposal or transport for take-back or recycling, or waste-to-energy options must be stored in stable stacks and at least 10 metres from any other scrap tyre storage area, or combustible or flammable material, including vegetation. |
| E2 | All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10 metre radius of the scrap tyre storage area. |
| E3 | Where no feasible recycling or waste-to-energy options are available, disposing of scrap tyres resulting from the mining activities in spoil emplacements is acceptable, provided tyres are placed as deep in the soil as reasonably practicable. |
| E4 | Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform. |
| E5 | Where possible and practical, vegetation waste from clearing shall be spread on rehabilitated areas. Vegetation waste only may be burns as a last resort and only if there is minimal risk of causing nuisance to the neighbouring sensitive receptors. General waste must not be burnt or allowed to burn on the licensed site unless permitted by the administering authority. |
| E6 | All regulated waste removed from the site must be removed by a person who holds a current approval to transport such waste under the provisions of the <i>Environmental Protection Act 1994</i> . |
| E7 | Regulated waste must only be removed to a facility licensed under the <i>Environmental Protection Act 1994</i> to receive such waste. |

END OF SCHEDULE E

Schedule F - Land**F1 Preventing contaminant release to land**

Contaminants must not be released to land in a manner which constitutes nuisance, material or serious environmental harm.

F2 Fire prevention

All reasonable and practicable fire prevention measures must be implemented.

F3 Topsoil

Topsoil must be strategically stripped ahead of mining in accordance with a topsoil management plan.

F4 A topsoil inventory which identifies the topsoil requirements for the Calliope Limestone Mine and availability of suitable topsoil on site must be detailed in the Plan of Operations.

F5 Rehabilitation landform criteria

All areas significantly disturbed by mining activities must be rehabilitated to a stable landform with a self-sustaining vegetation cover in accordance with Table 9 and Table 10.

Table 9 – Final land use and rehabilitation approval schedule

Disturbance Type	Relevant Tenures	Area Available for Rehabilitation at End of Mine Life (ha)¹	Post Mining Land Use
Access Tracks and Levees	ML3602, ML3603, ML3594, ML3608, ML3609, L80036, ML3595, ML3596, ML80189, ML80190, ML80191, ML80192	17.25	Retained Access Tracks, per Landholder Agreement
Infrastructure	ML3602, ML3603, ML80192	8.55	Low Intensity Grazing
ROM processing area	ML80036, ML3602, ML3603, ML80192	18.79	Low Intensity Grazing
Open pit (Voids)	Pit 2 ML80192	11.46	Water Storage

	Pit 3/4 ML3595, ML3594, ML3604, ML3608, ML3609, ML80036, ML80189, ML80190, ML80191	109.71	
Cleared Areas and Laydowns	ML3595, ML3602, ML3603, ML3608, ML80036, ML80189, ML80192	6.77	Low Intensity Grazing
Spoil Piles	ML3595, ML80036, ML80191, ML80192	6.03	Low Intensity Grazing
Topsoil Areas	ML3595, ML3608, ML80036, ML80191, ML80192, ML80189	7.01	Low Intensity Grazing
Sediment Ponds	ML3603, ML80192	1.46	Low Intensity Grazing
Waste Rock Dump	ML3609, ML80189	19.66	Low Intensity Grazing
Northern WRD	ML80036	-	Spoil Pile Storage
Silt Dump	ML80192	1.11	Low Intensity Grazing
Total Disturbance		207.82	

Table 10 – Landform design criteria

Disturbance type	Maximum slope range %	Projective surface area (ha)
Residual void(s)	<= 128% (52°)	30 ha Approximate values +/- 20%
Rejects	25%	

- F6 Progressive rehabilitation must commence when areas become available within the operational land.
- F7 Areas which are to be rehabilitated to native ecosystem must achieve a self-sustaining native ecosystem with species composition and distribution similar to an analogue site or another suitable alternative approved by the administering authority.
- F8 Areas to be rehabilitated must be rehabilitated to the landform design criteria defined in Table 10 and the landforms must be stable.
- F9 Where reasonable and practicable, areas of the site where grazing is nominated as the post-mine land use must include native grass species endemic to the area.
- F10 **Residual voids outcome**
Residual voids must comply with the following outcomes:

- a) Residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself and subject to any other condition within this environmental authority; and
- b) Residual voids must comply with Table 11.

Table 11 – Residual Void Design

Void identification	Void wall – competent rock slope (%)	Void low wall – incompetent rock slope (%)	Void maximum surface area (ha)
ML80192	<= 128% (52°)	<= 70% (35°)	11.46
ML3595, ML3594, ML3604, ML3608, ML3609, ML80036, ML80189, ML80190, ML80191	<= 128% (52°)	<= 70% (35°)	109.71

F11

General

The environmental management plan and plan of operations must be consistent with the geotechnical and erosivity assessment within three months of the completion of the assessment outlined in condition F10.

F12

Cleared vegetation from the site must be managed in accordance with the following hierarchy:

- a) Reuse, e.g. use of logs and tree stumps as shelter for fauna in rehabilitated areas;
- b) Recycle, e.g. mulching of vegetation and use in rehabilitation on the site; and
- c) Other alternative management options implemented in a way that causes the least amount of environmental harm.

F13

A weed management plan must be developed and implemented. The weed management plan must describe how weeds are to be managed in accordance with the *Land Protection (Pest and Stock Route Management) Act 2002* and/or local government requirements for weeds not declared under state legislation.

F14

Infrastructure

All infrastructure constructed by or for the environmental authority holder during the licensed activities including water storage structures, must be removed from the site prior to surrender, except where agreed in writing by the post mining land owner/holder.

F15

Exploration

Disturbance due to exploration activities in areas not authorised to be mined must be rehabilitated in accordance with the provisions detailed in the Code of Environmental Compliance for Exploration and Mineral Development Projects.

END OF SCHEDULE F

Schedule G - Dams

- G1 All dams**
- The holder of this environmental authority must ensure that dams are designed, constructed, operated and maintained in accordance with accepted engineering standards.
- G2**
- Except for dams affected by condition G3, the hazard category of dams must be assessed by a suitably qualified and experienced person prior to their construction, and then not less frequently than on an annual basis.
- G3**
- The hazard category of dams constructed prior to grant of this environmental authority, must be assessed by a suitably qualified and experienced person within six months of this environmental authority taking effect, and not less frequently than on an annual basis.
- G4**
- Where the hazard category of a dam is assessed as significant or high, the holder of the environmental authority must act immediately to ensure:
- a) The administering authority is advised of the current location and details of that dam; and
 - b) That dam meets the hydraulic performance required of the assessed hazard category within six months of that assessment.
- G5**
- The condition of dams must be monitored for early signs of loss of structural or hydraulic integrity, based on the advice of a suitably qualified and experienced person. The methods of monitoring and frequency of monitoring shall be assessed by that suitably qualified and experienced person, based on the hazard category and particular circumstances of each dam.
- G6**
- In the event of early signs of loss of structural or hydraulic integrity, the holder of this environmental authority must immediately take action to prevent or minimise any actual or potential environmental harm and report in writing any findings and actions taken to the administering authority within 28 days.
- G7**
- The holder of this environmental authority must decommission each dam to a situation where ongoing environmental harm is prevented.
- G8**
- As a minimum, dams must be decommissioned such that they:
- a) No longer contain flowable substances;
 - b) Become stable landforms; and
 - c) Comply with rehabilitation requirements of this environmental authority.
- G9**
- The holder of this environmental authority must ensure that, where a current operational plan covers decommissioning and rehabilitation, those operations are consistent with the objectives in any design plan for the dam.
- G10**
- The annual inspection may be conducted as early as 1 September each year, but not later than 1 November each year, except that the assessment of adequacy of available storage in a dam must be based on dam levels observed in the month of October in the year that the inspection is conducted.

END OF SCHEDULE G

Schedule H - Community

H1

Complaint response

All complaints received must be recorded including investigations undertaken, conclusions formed and actions taken. This information must be made available for inspection by the administering authority on request.

H2

The holder of this environmental authority must record the following details for all complaints received and provide this information to the administering authority on request:

- a) Time, date, name and contact details of the complainant;
- b) Reasons for the complaint;
- c) Conclusions formed; and
- d) Any actions taken.

END OF SCHEDULE H

Definitions

Words and phrases used throughout this environmental authority are defined below except where identified in the *Environmental Protection Act 1994* or subordinate legislation. Where a word or term is not defined, the ordinary English meaning applies, and regard should be given to the *Macquarie Dictionary*.

“20th percentile flow” means the 20th percentile of all daily flow measurements (or estimations) of daily flow over a 10 year period for a particular site. The 20th percentile calculation should only include days where flow has been measured (or estimated), i.e. not dry weather days.

“accepted engineering standards” in relation to dams, means those standards of design, construction, operation and maintenance that are broadly accepted within the profession of engineering as being good practice for the purpose and application being considered. IN the case of dams, the most relevant documents would be publications of the Australian National Committee on Large Dams (ANCOLD) guidelines published by Queensland government departments, and relevant Australian and New Zealand Standards.

“acceptance criteria” means the measures by which the actions implemented to rehabilitate land are deemed to be complete. The acceptance criteria indicate the success of rehabilitation outcome or remediation of areas which have been significantly disturbed by the mining activities. Acceptance criteria may include information regarding:

- a) Vegetation establishment, survival and succession;
- b) Vegetation productivity, sustained growth and structure development;
- c) Fauna colonisation and habitat development;
- d) Ecosystem processes such as soil development and nutrient cycling, and the recolonization of specific fauna groups such as collembolan, mites and termites which are involved in these processes;
- e) Microbiological studies including recolonization by mycorrhizal fungi, microbial biomass and respiration;
- f) Effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;
- g) Resilience of vegetation to disease, insect attack, drought and fire;
- h) 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 biological reactions, when geological strata is disturbed and exposed to oxygen and moisture.

“administering authority” means the Department of the Environment, Tourism, Science and Innovation or its successor.

“AEP” means the Annual Exceedance Probability, which is the probability that at least one event in excess of a particular magnitude will occur in any given year.

“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).

“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.

“ANZECC” means the Australian and New Zealand Guidelines for Fresh Marine Water Quality 2000.

“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.

“authority” means an environmental authority (mining activities) under the *Environmental Protection Act 1994*.

“assessed” or “assess” by a suitably qualified and experienced person in relation to a consequence assessment of a dam, means that 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.

“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.

“bed and banks” for a waters, river, creek, stream, lake, lagoon, pond, swamp, wetland or dam means land over which the water of the waters, lake, lagoon, pond, swamp, wetland or dam normally flows or that is normally covered by the water, whether permanently or intermittently; but does not include land adjoining or adjacent to the bed and banks that is from time to time covered by floodwater.

“beneficial use” in respect of dams means that the current or proposed owner of the land on which a dam stands, has found a use for that dam that is:

- a) of benefit to that owner in that it adds real value to their business or to the general community;
- b) in accordance with relevant provisions of the *Environmental Protection Act 1994*;
- c) sustainability by virtue of written undertakings given by that owner to maintain that dam;
- d) the transfer and use have been approved or authorised under any relevant legislation.

“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.

“bunded” means within bunding consistent with Australian Standard 1940.

“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)*.
- b) a dangerous good under the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council.
- c) a lead hazardous substance within the meaning of the *Workplace Health and Safety Regulation 2011*.
- 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.
- e) any substance used as, or intended for use as:
 - i. a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product;
 - ii. a surface active agent, including, for example, soap or related detergent;
 - iii. a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide;
 - iv. a fertiliser for agricultural, horticultural or garden use;
- f) a substance used for, or intended for use for:
 - a. mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater
 - b. manufacture of plastic or synthetic rubber.

“commercial place” means a work place 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.

“competent person” means a person with the demonstrated skill and knowledge required to carry out the task to a standard necessary for the reliance upon collected data or protection of the environment.

“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 purposes of designing a design plan.

“contaminate” means to render impure by contact or mixture.

“contaminated” means the substance has come into contact with a contaminant.

“contaminant” – a contaminant can be:

- a) a gas, liquid or solid
- b) an odour;
- c) an organism (whether alive or dead), including a virus;
- d) energy, including noise, heat, radioactivity and electromagnetic radiation;
- e) a combination of contaminants.

“control measure” means any action or activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level.

“cover material” means any soil or rock suitable as germination medium or landform armouring.

“dam” means a land-based structure or void that is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. However; a dam does not mean a fabricated or manufactured tank or container designed to a recognised standard, nor does a dam mean a land-based structure where that structure is designed to an Australian Standard. In case there is any doubt, a levee (dyke or bund) is a dam, but (for example) a bund designed for spill containment to AS 1940 is not a dam.

“density of cover” in reference to trees and/or shrubs, it means the number of trees or shrubs in a specified area (e.g. 50 trees per square kilometre). With reference to understorey plant species (e.g. grasses and forbs), it means the percentage of surface area covered by a particular species.

“design plan” is the documentation required to describe the physical dimensions of the dam, the materials and standards to be used for construction of the dam, and the criteria to be used for operating the dam. The documents must include all investigation and design reports, plans and specifications to be used for operating the dam. The documents must include all investigation and design reports, plans and specifications sufficient to hand to a contractor for construction, and planned decommissioning and rehabilitation outcomes, so as to address all hazard scenarios that would be identified by a properly conducted hazard assessment for the structure. Documentation must be such that a ‘suitably qualified and experienced person’ could conduct an independent review without seeking further information from the designer.

“design storage allowance” or “DSA” means an available volume, estimated in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams* published by the administering authority, must be provided in a dam as at 1 November each year to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that Manual.

“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; or
- 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.

“dwelling” means any of the following structures or vehicles that is principally used as a residence:

- a) a house, unit, motel, nursing home or other building or part of a building;
- b) a caravan, mobile home or other vehicle or structure on land;
- c) a water craft in a marina.

“EC” means electrical conductivity.

“end of pipe” means the location at which water is released to waters or land.

“environmental authority” means an environmental authority granted in relation to an environmentally relevant activity under the *Environmental Protection Act 1994*.

“environmental authority holder” means the holder of this environmental authority.

“environmentally relevant activity” means an environmentally relevant activity as defined under Section 18 of the *Environmental Protection Act 1994* and listed under Schedule 2 of the *Environmental Protection Regulation 2008*.

“ERE” means an endangered regional ecosystem identified in the database maintained by the department called “Regional Ecosystem Description Database” containing regional ecosystem numbers and descriptions.

“financial assurance” means a security required under the *Environmental Protection Act 1994* by the administering authority to cover the cost of rehabilitation or remediation of disturbed land or to secure compliance with the environmental authority.

“floodwater” means water overflowing, or that has overflowed, from waters, river, creek, stream, lake, pond, wetland or dam onto or over riparian land that is not submerged when the watercourse or lake flows between or is contained within its bed and banks.

“flowable substance” means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable structure 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 probability 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 probability of failure before that time.

“hazardous waste” means a substance, whether liquid, solid or gaseous that, if improperly treated, stored, disposed of or otherwise managed, is likely to cause environmental harm.

“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 *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

“hydraulic performance” means the capacity of a regulated dam to contain or safely pass flowable substances based on a probability (AEP) of performance failure specified for the relevant hazard category in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

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

“LA 10, adj, 10 mins,” means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 10 minute measurement period, using Fast response.

"LA 1, adj, 10 mins," means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1 % of any 10 minute measurement period, using Fast response

"LA, max adj, T" means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over any 10 minute period, using Fast response.

"lake" includes:

- a) lagoon, swamp or other natural collection of water, whether permanent or intermittent; and
- b) the bed and banks and any other element confining or containing the water.

"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 capability" as defined in the *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland (DME 1995)*.

"land suitability" as defined in the *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland (DME 1995)*.

"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 a dam, dyke or bund that is designed only to provide 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 or infrastructure, during the progress of those stormwater or flood flows or those unplanned 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 detailed on Page 1 of this environmental authority

"m" means metres.

"mandatory reporting level" or "MRL" means a warning and reporting level determined in accordance with the criteria in *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

"measures" includes any measures to prevent or minimise environmental impacts of the mining activity such as bunds, silt fences, diversion drains, capping and containment systems.

"mg/L" means milligrams per litre.

"mine affected water" means the following types of water:

- a) pit water, tailings dam water, processing plant water;
- b) water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the *Environmental Protection Regulation 2008* if it had not formed part of the mining activity;
- c) rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion

and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage such runoff, provided that this water has not been mixed with pit water, tailings water dam, processing plant water or workshop water;

- d) groundwater which has been in contact with any areas disturbed by the mining activities which have not yet been rehabilitated;
- e) groundwater from the mine's dewatering activities;
- f) a mix of mine affected water (under any of paragraphs i)-v) and other water.

Does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by mining activities that have not yet been completely rehabilitated, has only been in contact with:

- a) land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success; or
- b) land that has been partially rehabilitated and monitoring demonstrates that the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example:
 - i. areas that area been capped and have monitoring data demonstrating hazardous material adequately contained with the site;
 - ii. evidence provided through monitoring that the relevant surface water would have met the water quality parameters for mine affected water release limits in this environmental authority, if those parameters had been applicable to the surface water runoff; or
 - iii. both.

“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 earths crust and includes a substance which may be extracted from such 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 of for the purpose of enhance the safety of current or future mining operations for coal or the extraction or production of mineral oil therefrom;
- d) limestone if mined for use for its chemical properties;
- e) marble
- f) mineral oil or gas 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 its chemical properties;
- k) rock mined in block or slab form for building or monumental purposes

But does not include:

- a) living matter;
- b) petroleum within the meaning of the Petroleum Act 1923;
- c) 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;
- d) water.

“mine water” means process water and contaminated stormwater.

“NATA” means National Association of Testing Authorities, Australia.

“natural flow” means the flow of water through waters caused by nature.

“native vegetation” means vegetation that occurs naturally in a certain area.

“nature” includes:

- a) ecosystems and their constituent parts;
- b) all natural and physical resources;
- c) natural dynamic processes.

“non-polluting” means having no adverse impacts upon the receiving environment.

“noxious” means harmful or injurious to health or physical wellbeing.

“offensive” means causing reasonable offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive, other than trivial harm.

“operational land” means the land associated with the project for which this environmental authority has been issued.

“operational plan” 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.

“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).

“progressive rehabilitation” means rehabilitation (defined below) undertaken progressively or a staged approach to rehabilitation as mining operations are ongoing.

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

- a) a marine park under the *Marine Parks Act 2004*, or
- b) a World Heritage Area.

“process water” means water used or produced during the mineral development activities.

“receiving environment” means all groundwater, surface water, land, and sediments that are not disturbed areas authorised by this environmental authority.

“receiving waters” means the waters into which this environmental authority authorises releases of mine affected water.

“reference site” (or analogue site) may reflect the original location, adjacent or another area where rehabilitation success have 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 *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

“regulated waste” means non-domestic waste mentioned in schedule 7 of the *Environmental Protection Regulation 20018* (whether or not it has been treated or immobilised), and includes:

- a) for an element – any chemical compound containing the element;
- b) anything that has contained the waste.

“regulated waste” means non-domestic waste mentioned in schedule 7 of the *Environmental Protection Regulation 2008* (whether or not it has been treated or immobilised), and includes:

- a) for an element –any chemical compound containing the element
- b) anything that has contained waste

“rehabilitation” 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.

“release event” means a surface water discharge from mine affected water storages or contaminated areas on the licensed place.

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

“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 drainage” The movement of waters, contaminated with salt(s), as a result of the mining activity.

“self sustaining” means an area of land which have 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 *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area, or
- f) a public park or gardens.

Note: The definition of ‘sensitive place’ and ‘commercial place’ is based on Schedule 1 of EPP Noise. That is, a sensitive place is inside or outside on a dwelling, library and educational institution, childcare or kindergarten, school or playground, hospital, surgery or other medical institution, commercial & retail activity, protected area or an area identified under a conservation plan under *Nature Conservation Act 1992* as a critical habitat or an area of major interest, marine park under *Marine Parks Act 2004*, park or garden that is outside of the mining lease and open to the public for the use other than for sport or organised entertainment. A commercial place is inside or outside a commercial or retail activity.

A mining camp (i.e., accommodation and ancillary facilities for mine employees or contractors or both, associated with the mine the subject of the environmental authority) is not a sensitive place for that mine or mining project, whether or not the mining camp is located within a mining tenement that is part of the mining project the subject of the environmental authority. For example, the mining camp might be located on neighbouring land owned or leased by the same company as one of the holders of the environmental authority for the mining project, or a related company. Accommodation for mine employees or contractors is a sensitive place if the land is held by a mining company or related company, and if occupation is restricted to the employees, contractors and their families for the particular mine or mines which are held by the same company or a related company.

For example, a township (occupied by the mine employees, contractors and their families for multiple mines that are held by different companies) would be a sensitive place, even if part or all of the township is constructed on land owned by one or more of the companies.

“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” in relation to land, 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.

“storm water” means all surface water runoff from rainfall.

“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*, OR registered as a National Professional Engineer (NPER) with the Institution of Engineers Australia, OR holds equivalent professional qualifications to the satisfaction of the administering authority for the Act, AND the administering authority for the Act is satisfied that the person has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below:

- a) knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams;
- b) a total of five years of suitable experience and demonstrated expertise in at least four of the following categories, with the ‘geomechanics of dams’ category being compulsory:
 - i. geomechanics of dams with particular emphasis on stability, geology and geochemistry;
 - ii. investigation, design or construction of dams;
 - iii. operation and maintenance of dams;
 - iv. hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology;
 - v. hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes;
 - vi. hydrogeology with particular reference to seepage, groundwater;
 - vii. solute transport processes and monitoring thereof;
 - viii. dam safety.

“the Act” means the *Environmental Protection Act 1994*.

“tolerable limits” means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values. For example, a range of settlement for a tailings capping, rather than a single value, could still meet the objective of draining the cap quickly, preventing pondage and limiting infiltration and percolation.

“void” means any man-made, open excavation in the ground.

“water” means:

- a) water in waters or spring;
- b) underground water;
- c) overland flow water;
- d) water that has been collected in a dam.

“watercourse” has the same meaning given in the *Water Act 2000*.

“waste water” means used water from the activity, process water or contaminated storm water.

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

“waters” includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), storm water channel, storm water drain and groundwater and any part thereof.

“µg/L” means micrograms per litre.

“µS/cm” means micro siemens per centimetre.

FIGURES

Figure 1 – Calliope Primary Mine Features

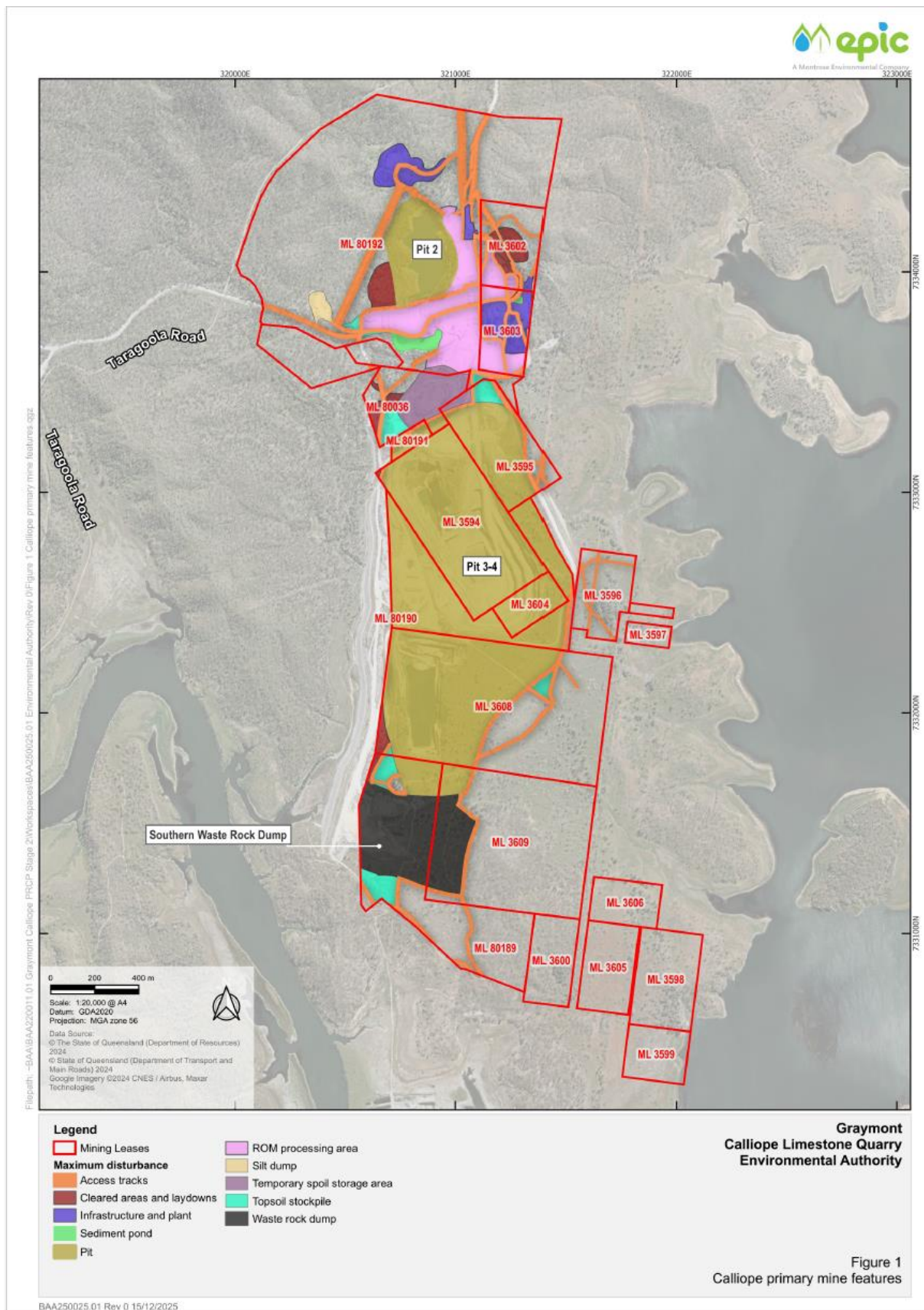


Figure 2 Transitional Areas

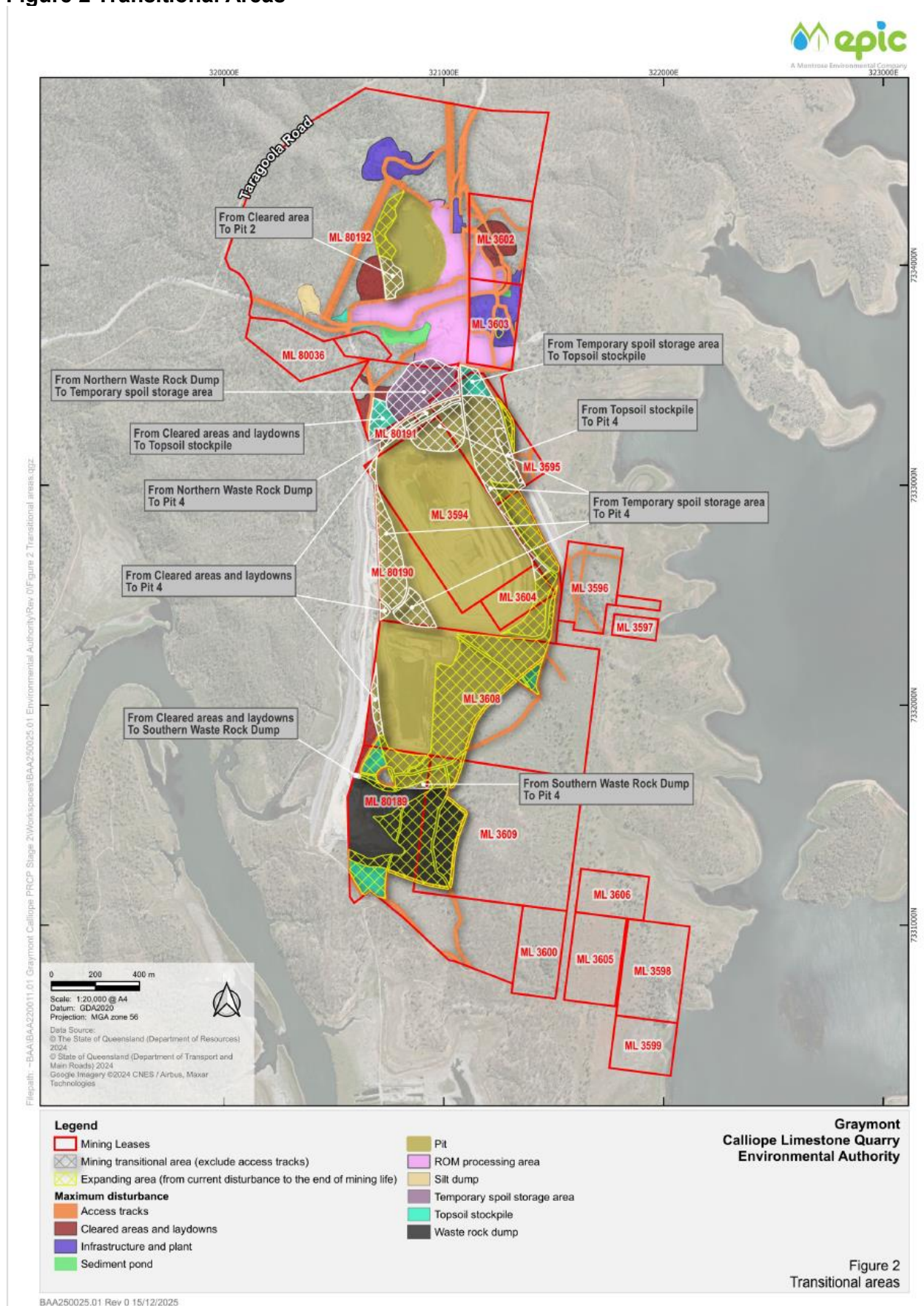


Figure 3 – Calliope Contaminants Release Points and Receiving Environment Monitoring Points

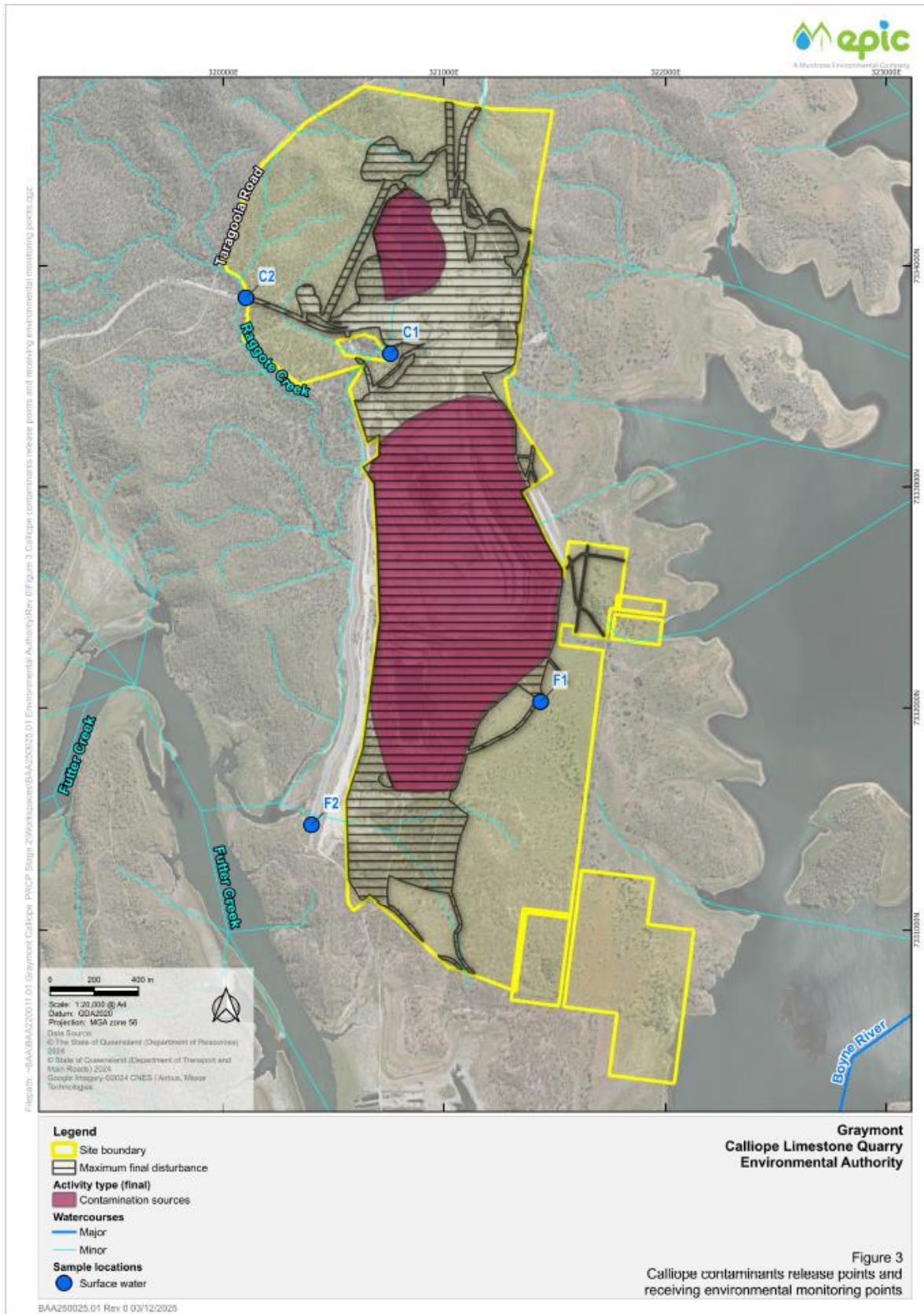
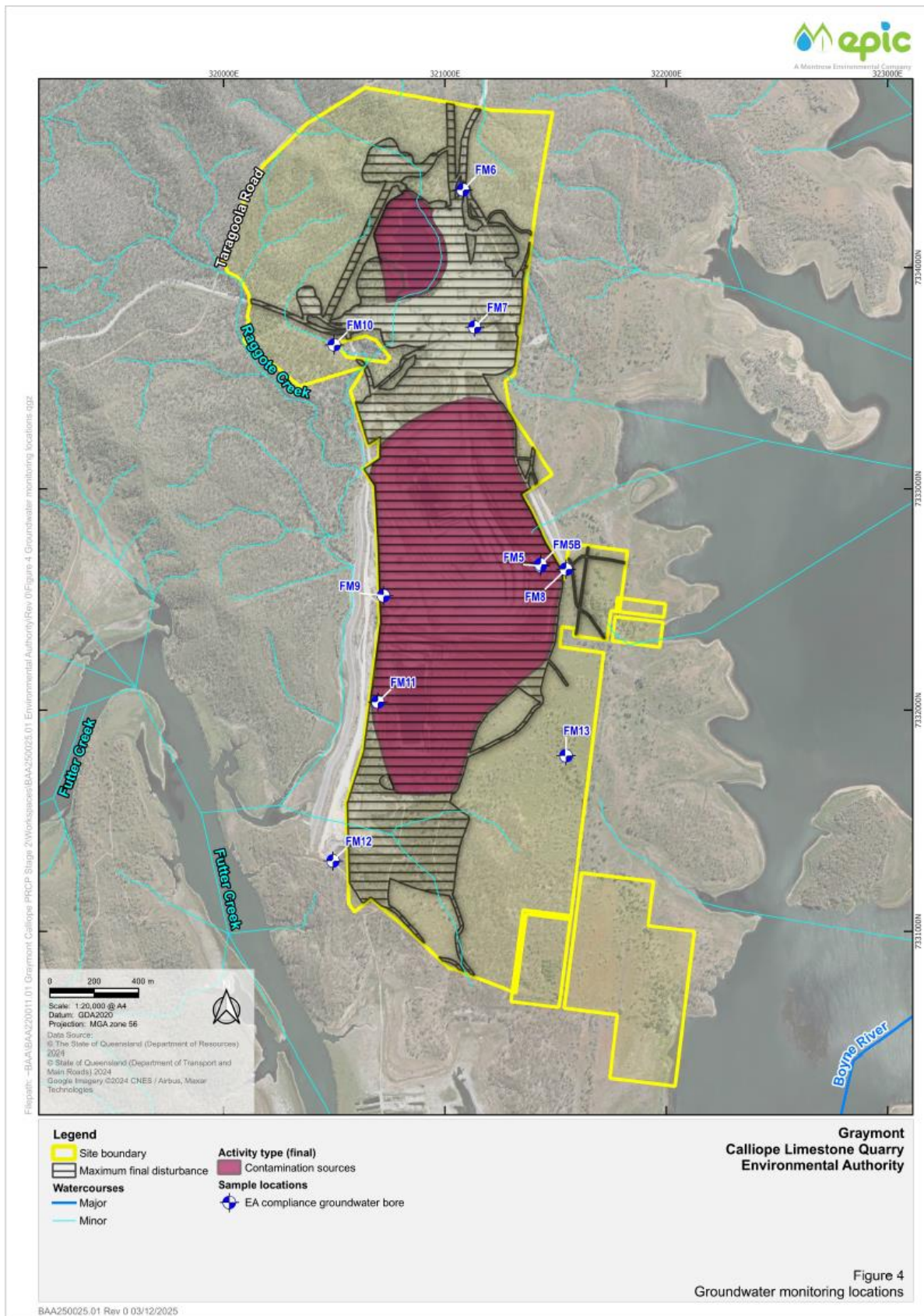


Figure 4 – Calliope Groundwater Monitoring Locations



END OF PERMIT