Notice

This notice is issued by the administering authority pursuant to section 217 of the Environmental Protection Act 1994 to advise you that it is proposed to amend an environmental authority (mining activities) to correct a clerical or formal error.

The Directors
Anglo Coal (Callide) Pty Ltd
Level 11
201 Charlotte Street
BRISBANE QLD 4000

CC: The Mining Registrar
Department of Natural Resources and Mines
PO Box 3679
RED HILL QLD 4701

CC: Mr John McDougall
Environmental Superintendent
Callide Mine
PO Box 144
BILOELA QLD 4715

Our reference: GLT948 / MIN100507307

Dear Mr John Pritchard

Re: Administrative amendment to environmental authority (EA) MIN100507307 for Callide Mine on tenures ML5632, ML 5641, ML5654, ML5655, ML5662, ML6993, ML6994, ML80030, ML80092, ML80093, ML80107, ML80115, ML80117, ML80118, ML80122, ML80151.

You are hereby advised that the above mentioned environmental authority is to be amended in the following manner:

Insert of an asterisk in Table W2 Part A and Table W2 Part B against the number value for suspended solids to accurately relate this value to the table footnote.

Removal of reference to ANZECC and ARMACANZ guideline that is superseded by a number value for Electrical Conductivity that is provided in Table W10.

Please note that the Environmental Authority conditions will not change with this amendment.

If you consider that the above amendment may adversely affect the interest of the holders, you are advised to contact Kylie Dunlop of the department on (07) 4837 3501, within 5 business days of receipt of this notice.

The amended environmental authority is enclosed. A copy has been forwarded to the Mining Registrar.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

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Yours sincerely

49-Sch4

Sam Tarlinton
Manager, Environmental Services - Mining
Department of Environment and Heritage Protection
4 April 2013

Enquiries:
Department of Environment and Heritage Protection
PO Box 413
209 Bolsover Street
Rockhampton Qld 4700
Phone: (07) 4837 3501
Fax: (07) 4937 3418

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Permit[1]

Environmental Protection Act 1994

Environmental Authority (Mining Lease) Non Code Compliant Level 1 Mining Project

Permit[1] Number: MIN100507307

This permit is issued by the administering authority to authorise the activity specified in the permit in accordance with the conditions specified in the permit. This decision was made pursuant to Section 258 of the Environmental Protection Act 1994.

Takes Effect From: **4 April 2013**

Permit Holder(s)	Name	Address
Principal Holder	Anglo Coal (Callide) Pty Ltd	Level 11, 201 Charlotte Street BRISBANE QLD 4000
Joint Holder	Anglo Coal (Callide) No. 2 Pty Limited	Level 11, 201 Charlotte Street BRISBANE QLD 4000

Activity(s)	Location(s)
Mining Lease	ML5632 ML5641 ML5653 ML5654 ML5655 ML5662 ML6993 ML6994 ML80030 ML80092 ML80093 ML80107 ML80115 ML80117 ML80118 ML80122 ML80151

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The anniversary date of the environmental authority is **23 April**
The environmental authority is subject to the attached conditions of approval.

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Sam Tarlinton
Delegate
Department of Environment and Heritage Protection
4 April 2013

Enquiries:
Permit and Licence Management
Implementation & Support Unit
Department of Environment and Heritage Protection
GPO Box 2454
Brisbane Queensland 4001
Phone: 1300 130 372
Fax: 07 3896 3342
E-mail: palm@ehp.qld.gov.au

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

Department Interest: General

Financial Assurance

G1 Provide a financial assurance in the amount and form required by the administering authority prior to the commencement of activities proposed under this environmental authority.

*Note: The calculation of financial assurance for condition **G1** must be in accordance with 'Guideline 17 - Financial Assurances' for Mining Activities and may include a performance discount. The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas, which may vary on an annual basis due to progressive rehabilitation. The amount required for the financial assurance must be the highest Total Rehabilitation Cost calculated for any year of the Plan of Operations and calculated using the formula: (Financial Assurance = Highest Total Annual Rehabilitation Cost x Percentage Required).*

G2 The financial assurance is to remain in force until the administering authority is satisfied that no claim on the assurance is likely.

Note: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.

Maintenance of measures, plant and equipment

G3 The holder must:

a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority; and
b) maintain such measures, plant and equipment in a proper condition; and
c) operate such measures, plant and equipment in a proper manner.

Monitoring

G4 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.

G5 Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

G6 Spillage of all chemicals and fuels 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 AS 1940 - Storage and Handling of Flammable and Combustible Liquids.

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Definitions

G7 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.

Notification of emergencies, incidents and exceptions

G8 All reasonable actions are to be taken to minimise environmental harm, or potential environmental harm, resulting from any emergency, incident or circumstances not in accordance with the conditions of this environmental authority.

G9 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 in writing.

G10 Not more than ten (10) business days following the initial notification of an emergency, incident or information about circumstances which result or may 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 the information about circumstances which result or may result in environmental harm.

G11 As soon as practicable, but not more than six (6) weeks following the initial notification of an emergency, incident or information about circumstances which result 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.

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Department Interest: Air

Dust nuisance

A1 Subject to requirement of condition **A2** and condition **A3** the release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance at any sensitive place.

A2 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 place, and the results must be notified within ten (10) business days to the administering authority following completion of monitoring.

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A3 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 **A1**:

Total Suspended Particulates (TSP)

a) Less than 90 micrograms per cubic metre expressed as an annual average.

PM10 Particulates

A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (PM10) suspended in the atmosphere of:

a) Less than 50 micrograms per cubic metre over a 24 hour averaging time.

PM2.5 Particulates

A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometre (PM2.5) suspended in the atmosphere of:

a) Less than 8 micrograms per cubic metre expressed as an annual average;
b) Less than 25 micrograms per cubic metre over a 24 hour averaging time.

Dust Deposition

Dust deposition of 130 milligrams per square meter per day measured as insoluble matter, averaged over one month when monitored in accordance with Australian Standard AS 3580.10.1 of 2003.

Monitoring shall be carried out using methods identified in the latest version of the Air Quality Sampling Manual published by the administering authority or by an alternative method of sampling by agreement with the administering authority.

A4 If monitoring indicates exceedance if the relevant limits in **A3**, then the environmental authority holder must:

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

A5 Dust suppressant must be applied to each loaded rail wagon to ensure that dust emissions from the wagon during transport are prevented or minimised.

A6 Wagon loading must be undertaken in accordance with best practice wagon loading system as described in *Queensland Rail Limited's Final Report, Environmental Evaluation of Fugitive Coal Dust Emissions from Coal Trains Goonyella, Blackwater and Moura Coal Rail Systems*, 31 March 2008.

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Department Interest: Land

L1 All infrastructure, constructed by or for the environmental authority holder during the mining activities including water storage structures, must be removed from the site prior to mining lease surrender, except where agreed in writing by the post mining land owner / holder.

L2 All areas significantly disturbed by mining activities must be rehabilitated to the final land description as defined in *Table L1 Final Land Use Capability and Projective Area Schedule* and *Table L2 Final Landform Design Criteria.*

Table L1 Final Land Use Capability and Projective Area Schedule

Southern Pits		Boundary Hill	
Tenure ID: ML's: 5632, 5641, 5662, 5653, 5654, 80093, 6993, 80030, 80092, 80118, 80117, 80122		Tenure ID: ML5655, 6994, 80115, 80107, 80151	
Post Mine land capability classification	Projective surface area (ha)	Post mine land capability classification	Projective surface area (ha)
4	100	4	64
5	6.9	5	0
6	239.4	6	360
7	2203.70	7	563
8	2028.70	8	168

Table L2 Final Landform Design Criteria

Disturbance type	Slope	Drainage
Dragline and prestrip soil (except Dunn Creek A and S Cut spoil) – outer slopes	Overall slope angle of 15% on outer slopes.	Graded banks at 10m vertical intervals (approx. every 60m along the slope).
Dunn Creek A & S Cut spoil – outer slopes	Overall slope angle of 25%, 120m slope length, basalt mulch cladding.	Berms or graded banks at 120m spacings along the slope.
Internal slopes	Generally, 15% or flatter.	Graded banks at 10m vertical intervals
Trial slopes	From 15% to 25% with topsoil or basalt mulch cladding.	Graded banks at 10m vertical intervals.
	Up to 37% (angle of repose).	Cut off drain/diversion bund across top of slope

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L3 Progressive rehabilitation must commence when areas become available within the operational land.

L4 Areas which are to be progressively rehabilitated to native ecosystem must comply with the following outcomes:

a) achievement of a self sustaining native ecosystem with a species composition and distribution comparable and similar to nominated analogue sites; and

b) all areas disturbed by mining activities must be rehabilitated to the landform design criteria defined in *Table L2 Final Landform Design Criteria*; and

c) landforms are stable with erosion comparable and similar to analogue sites.

L5 Complete an investigation into rehabilitation of disturbed areas and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in condition **L1** and landform design criteria in *Table L1 Final Land Use Capability and Projective Area Schedule* and *Table L2 Final Landform Design Criteria* by 31 December 2003.

L6 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 ground water 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 L3 Residual Void Design Outcomes.*

Table L3 Residual Void Design Outcomes

Void Identification	Configuration
High wall	- 75° slope angle. - Safety bunds will be constructed along the top of the high walls and along the crest of the prestrip benches. The prestrip benches will be shaped to shed runoff over the high wall at several locations to limit erosion. - All exposed coal seams will be covered with inert material.
Low wall	- Generally at angle of repose. - Where the low all toe will be submerged, the slope will be lowered to 27° by backfilling against the toe or dozing the low wall slope down to this angle.
Ramp Spoil	- Generally at angle of repose. - Where the low wall toe will to be submerged, the slope will be lowered to 27° by backfilling against the toe or dozing the low wall slope down to this angle.

L7 Complete an investigation into residual voids and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in condition **L5** and landform design criteria in *Table L3 Residual Void Design Outcomes* by 31 December 2005.

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Department Interest: Noise

Noise nuisance

N1 Subject to requirement of condition **N2** noise from the mining activity must not cause an environmental nuisance, at any sensitive place.

N2 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 place, and the results must be notified within ten (10) business days to the administering authority following completion of monitoring.

N3 The method of measurement and reporting of noise levels must comply with the latest edition of the administering authority's Noise Measurement Manual.

N4 Subject to conditions **N5** and **N6** airblast overpressure and ground vibration from the mining activity must not cause an environmental nuisance, at any sensitive place.

N5 When requested by the administering authority, airblast overpressure and ground 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 place, and the results must be notified within ten (10) business days to the administering authority following completion of monitoring.

N6 If the environmental authority holder can provide evidence through monitoring that the limits defined in Table N1 Airblast Overpressure Limits and Table N2 Vibration limits are not being exceeded then the holder is not in breach of condition **N4**. Monitoring must include:

a) location of the blast/s within the mining area (including which bench level); and
b) atmospheric conditions including temperature, relative humidity and wind speed and direction; and
c) location, date and time of recording.

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Table N1 Airblast Overpressure Limits

Location	Monday to Saturday 9.00am – 5.00 pm	Sundays and Public Holidays 9.00am-5.00pm
Sensitive place or commercial place	**All mining areas:** Maximum air blast overpressure level (linear peak.) all blasts in any given 12 month period: Less than 115 dBL for 90% of blasts; 115 to 120 dBL for 9% of blasts; and 120 to 125 dBL for 1% of blasts.	**At The Hut mining area only: -** all blasts permitted. **All other mining areas: -** Interburden and coal blasts only and no overburden blasts permitted. Maximum air blast overpressure level (linear peak) all blasts in any given 12 month period: Less than 115 dBL for 90% of blasts; 115 to 120 dBL for 9% of blasts; and 120 to 125 dBL for 1% of blasts.

Table N2 Vibration limits

Location	Monday to Saturday 9.00am – 5.00 pm	Sundays and Public Holidays 9.00am-5.00pm
Sensitive place or commercial place	Vibration limits: 5mm/s peak particle velocity for any four (4) out of five (5) consecutive blasts and a maximum of 10 mm/s.	**The Hut Mining Area:-** all blasts permitted. Vibration limits: 10mm/s peak particle velocity for any 4 out of 5 consecutive blasts and a maximum of 10 mm/s. **Other Mining Areas**: Interburden and coal blasts only. No overburden blasts permitted.

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Note: The method of measurement and reporting of vibration levels must comply with the latest edition of the administering authority's vibration and air blast overpressure monitoring guideline.

N7 If monitoring indicates exceedance of the relevant limits in *Table N1 Airblast Overpressure Limits* and/or *Table N2 Vibration limits*, then the environmental authority holder must:

a) address the complaint including the use of appropriate dispute resolution if required; or
b) immediately implement air blast overpressure and/or vibration abatement measures so that air blast overpressure and / or vibration from the activity does not result in further environmental nuisance.

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Department Interest: Social

Complaint response

S1 All complaints received must be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. This information must be made available for inspection by the administering authority on request.

Department Interest: Waste

Storage of tyres

WA1 Tyres stored awaiting disposal or transport for take-back and, recycling, or waste-to-energy options - should be stockpiled in volumes less than 3m in height and 200m² in area and at least 10m from any other tyre storage area.

WA2 All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of the scrap tyre storage area.

WA3 Disposing of scrap tyres resulting from the mining activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as possible but not directly on the pit floor.

WA4 Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers and compromise the stability of the consolidated landform.

Department Interest: Water

Contaminant Release

W1. Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.

W2. Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to waters must only occur from the release points specified in *Table W1* of this environmental authority.

W3. The release of mine affected water to internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with conditions W31 to W35 inclusive is permitted.

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Table W1 - Part A - Mine Affected Water Release Points, Sources and Receiving Waters (Dunn Creek Dam)

Release Point (RP)	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Mine Affected Water Source and Location	Monitoring Point	Receiving waters description
Dunn Creek Dam	-24.3237	150.6695	Water storage and stormwater dam spillway overflow	Dam Spillway	Dunn Creek

Table W1 - Part B - Mine Affected Water Release Points, Sources and Receiving Waters (Other than Dunn Creek Dam)

Release Point (RP)	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Mine Affected Water Source and Location	Monitoring Point	Receiving waters description
RP1a	-24.2638	150.6208	Turkey's Nest Storage	Flow: End of pipe flow monitor Quality: Storage	Oaky Creek
RP1b	-24.2686	150.5528	Trap Gully Pipeline	Flow: End of pipe flow monitor Quality: Storage(Ghost Ryder's Dam)	Oaky Creek
RP2	-24.3019	150.5628	Ghost Ryders Storage	Flow: Gauging station downstream of pipe Quality: Downstream of pipe	Oaky Creek
RP3	-24.2114	150.5528	Lake Gasteen Dam	Flow: End of pipe flow monitor Quality: Downstream of pipe	Callide Creek

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W4 The release of mine affected water to waters in accordance with condition W2 must not exceed the release limits stated in *Table W2* when measured at the monitoring points specified in *Table W1* for each quality characteristic.

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Table W2 - Part A - Contaminant Release Limits – Dunn Creek Dam

Quality Characteristic	Interim Release Limits for all mines (limits to apply from the date of issue)	Future Release Limits from 31 DEC 2011 Note: These future limits will apply from a yet to be negotiated date using alternative numbers that will be derived from the information gathered by any combination of the following: (1) the results of near field monitoring; (2) any studies or investigations carried out in accordance with recommendations 2 & 3 of the Cumulative Impact Study on water quality in the Fitzroy River Basin; (3) any review of the QLD Water Quality Guidelines; (4) other relevant information *Note: This information should be available by the end of 2014* if not before and when it becomes available limits will be determined* for each mine site based on the environmental values to be protected and in accordance with criteria below*	Monitoring frequency	Comments
Electrical conductivity (µS/cm)	1400	Future limit to be determined to achieve aquatic ecosystem protection (no drinking water value): An end-of-pipe limit to achieve in the range 0 to 1000 EC in the receiving waters - for mines in the upper catchments must have natural flow i.e. the 20th percentile flow trigger.	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
Turbidity (NTU)	NA*	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release (the first sample must be taken within 2 hours of commencement of release)	Turbidity is required to assess ecosystems impacts and can provide instantaneous results
Suspended Solids (mg/L)	200*	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release (the first sample must be taken within 2 hours of commencement of release)	Suspended solids are required to measure the performance of sediment and erosion control measures.
Sulphate (SO_4^{2-}) (mg/L) **Oaky Creek** – d.s. to east of mining area	400	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release (the first sample must be taken within 2 hours of commencement of release)	Drinking water environmental values from NHMRC 2006 guidelines OR ANZECC & ARMCANZ 2000 stock water quality guidelines.
Sulphate (SO_4^{2-}) (mg/L) **Dunn Ck Dam** –spillway **Goldings Dam** – d.s. of decant pipe **Lake Gasteen** – spillway	400	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release (the first sample must be taken within 2 hours of commencement of release)	Drinking water environmental values from NHMRC 2006 guidelines OR ANZECC & ARMCANZ 2000 stock water quality guidelines.

*Note: *Limit for suspended solids can be omitted if turbidity limit is included. Limit for turbidity not required if suspended solids limit included. Both indicators should be measured in all cases.*

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Table W2 - Part B - Mine Affected Water Release Limits Other than for Dunn Creek Dam

Quality Characteristic	Release Limits	Monitoring frequency	Comment
Electrical conductivity (µS/cm)	Release limits specified in Table W 4 for variable flow criteria.	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
Turbidity (NTU)	Current limit or limit derived from suspended solids limit and demonstrated correlation between turbidity to suspended solids historical monitoring data for dam water*	Daily during release* (first sample within 2 hours of commencement of release)	Turbidity is required to assess ecosystems impacts and can provide instantaneous results.
Suspended Solids (mg/L)	1000*	Daily during release* (first sample within 2 hours of commencement of release)	Suspended solids are required to measure the performance of sediment and erosion control measures.
Sulphate (SO_4^{2-}) (mg/L)	Release limits specified in Table W4 for variable flow criteria.	Daily during release* (first sample within 2 hours of commencement of release)	Drinking water environmental values from NHMRC 2006 guidelines OR ANZECC.

*Note: *Limit for suspended solids can be omitted if turbidity limit is included. Limit for turbidity not required if suspended solids limit included. Both indicators should be measured in all cases.*

W5 The release of mine affected water to waters from the release points must be monitored at the locations specified in *Table W1* for each quality characteristic and at the frequency specified in *Table W2* and *Table W3.*

Note: the administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition W5 is contravened due to a temporary lack of safe or practical access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.

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Table W3 - Release Contaminant Trigger Investigation Levels - Potential Contaminants

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	55	*For aquatic ecosystem protection, based on SMD guideline*	Commencement of release and thereafter weekly during release
Cadmium	0.2	*For aquatic ecosystem protection, based on SMD guideline*	
Chromium	1	*For aquatic ecosystem protection, based on SMD guideline*	
Copper	2	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Iron	300	*For aquatic ecosystem protection, based on low reliability guideline*	
Lead	4	*For aquatic ecosystem protection, based on SMD guideline*	
Mercury	0.2	*For aquatic ecosystem protection, based on LOR for CV FIMS*	
Nickel	11	*For aquatic ecosystem protection, based on SMD guideline*	
Zinc	8	*For aquatic ecosystem protection, based on SMD guideline*	
Boron	370	*For aquatic ecosystem protection, based on SMD guideline*	
Cobalt	1.4	*For aquatic ecosystem protection, based on low reliability guideline*	
Manganese	1900	*For aquatic ecosystem protection, based on SMD guideline*	
Selenium	10	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Silver	1	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Uranium	1	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Vanadium	10	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Nitrate	1100	*For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN*	
Sodium	180 000	*Australian Drinking Water Guidelines (2004)*	

Note:

1. All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.

2. The quality characteristics required to be monitored as per Table W3 can be reviewed once the results of two years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk, and it may be determined that a reduced monitoring frequency is appropriate or that certain quality characteristics can be removed from Table W3 by amendment.

3. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC & ARMCANZ (2000).

4. LOR – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.

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W6 If quality characteristics of the release exceed any of the trigger levels specified in *Table W3* during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in *Table W3* and:

1. where the trigger values are not exceeded then no action is to be taken; or
2. where the downstream results exceed the trigger values specified *Table W3* for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and:
   a) if the result is less than the background monitoring site data, then no action is to be taken; or
   b) if the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
      (i) details of the investigations carried out; and
      (ii) actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **W6 (2)b)(ii)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*

W7 If an exceedance in accordance with condition **W6(2)(b)** is identified, the holder of the authority must notify the administering authority within **14 days** of receiving the result.

Mine Affected Water Release Events

W8 The holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in *Table W4.*

W9 Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with condition **W2** must only take place during periods of natural flow events in accordance with the receiving water flow criteria for discharge specified in *Table W4* for the release points specified in *Table W1.*

W10 The release of mine affected water to waters in accordance with condition W2 must not exceed the Electrical Conductivity and Sulphate release limits or the Maximum Release Rate (for all combined release point flows) for each receiving water flow criteria for discharge specified in *Table W4* when measured at the monitoring points specified in *Table W1.*

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Table W4 - Part A – Mine Affected Water Release During Flow Events – Dunn Creek

Receiving water/stream	Release Point (RP)	Gauging station	Gauging Station Latitude (Decimal Degrees GDA94)	Gauging Station Longitude (Decimal Degrees GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
Dunn Creek	Dunn Creek Dam	Callide Dam headwaters	-24.3237	150.6695	1.5 m^3/sec	Continuous (minimum daily)

Table W4- Part B - Mine Affected Water Release during Flow Events – Other than Dunn Creek

Receiving waters/ stream	Release Point (RP)	Gauging station	Gauging Station Latitude (Decimal Degrees GDA94)	Gauging Station Longitude (Decimal Degrees GDA94)	Receiving Water Flow Recording Frequency	Receiving Water Flow Criteria for discharge (m^3/s)	Maximum release rate (for all combined RP flows)	Electrical Conductivity and Sulphate Release Limits
Oaky Creek	RP 1a RP 1b	Oaky Creek Downstream (GS1)	- 24.2617	150.5961	Continuous (minimum daily)	**No/Low Flow** <0.2 m^3/s for a period of 31 days after natural flow events that exceed 0.2 m^3/s	<0.1 m^3/s	Electrical conductivity (µS/cm): <1150 Sulphate (SO_4^{2-}): 250 mg/L
						Medium Flow >0.2 m^3/s Subtract release at RP1 and RP2 (if any and including if under no/low flow scenario) from measurement before comparing with trigger	<0.1 m^3/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1000
						High Flow >1 m^3/s Subtract release at RP1 and RP2 (if any and including if under no/low flow scenario) from measurement	<0.5 m^3/s	Electrical conductivity (µS/cm) < 2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1200

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						before comparing with trigger		
						High Flow >2 m³/s Subtract release at RP1 and RP2 (if any and including if under no/low flow scenario) from measurement before comparing with trigger	<1.0 m³/s	Electrical conductivity (µS/cm) < 2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1200
Oaky Creek	RP 2	Oaky Creek Trap Gully Confluence (GS2)	- 24.2952	150.5326	Continuous (minimum daily)	**No/Low Flow** <0.13 m³/s for a period of 31 days after natural flow events that exceed 0.5 m³/s	<0.13 m³/s	Electrical conductivity (µS/cm): <1150 Sulphate (SO_4^{2-}): 250 mg/L
						Medium Flow >0.5 m³/s Subtract release at RP1, RP2 and RP3 (if any and including if under no/low flow scenario) from measurement before comparing with trigger	<0.1 m³/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1200
						High Flow >2.5 m³/s Subtract release at RP1, RP2 and RP3 (if any and including if under no/low flow scenario) from measurement before comparing with trigger	<0.5 m³/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1200

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Callide Creek	RP 3	Callide Creek Confluence (GS3)	- 24.2658	150.4132	Continuous (minimum daily)	**No/Low Flow** <0.27 m³/s for a period of 31 days after natural flow events that exceed 5.3 m³/s	<0.27 m³/s	Electrical conductivity (µS/cm): <1150 Sulphate (SO_4^{2-}): 250 mg/L
						Medium Flow >5.3 m³/s	<0.10 m³/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1400
						High Flow >26.5 m³/s	<0.5 m³/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1400

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W11 The daily quantity of mine affected water released from each release point must be measured and recorded at the monitoring points in *Table W1*.

W12 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in such waters.

Notification of Release Event

W13 The environmental authority holder must notify the administering authority as soon as practicable and no later than **twenty-four (24) hours** after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information:

a) release commencement date/time;
b) expected release cessation date/time;
c) release point/s;
d) release volume (estimated);
e) receiving water/s including the natural flow rate; and
f) any details (including available data) regarding likely impacts on the receiving water(s).

Note: Notification to the administering authority must be addressed to the Manager and Project Manager of the local administering authority via email or facsimile.

W14 The environmental authority holder must notify the administering authority as soon as practicable; (nominally within **twenty-four (24) hours** after cessation of a release event) of the cessation of a release notified under condition W13 and within **28 days** provide the following information in writing:

a) release cessation date/time;
b) natural flow volume in receiving water;
c) volume of water released;

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d) details regarding the compliance of the release with the conditions of Agency Interest: Water of this environmental authority (i.e. contamination limits, natural flow, discharge volume);
e) all in-situ water quality monitoring results; and
f) any other matters pertinent to the water release event.

*Note: Successive or intermittent releases occurring within **twenty-four (24) hours** of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with conditions **W15** and **W16**, provided the relevant details of the release are included within the notification provided in accordance with conditions **W15** and **W16**.*

Notification of Release Event Exceedance

W15 If the release limits defined in *Table W2* are exceeded, the holder of the environmental authority must notify the administering authority within **twenty-four (24) hours** of receiving the results.

W16 The authority holder must, within **twenty-eight (28) days** of a release that exceeds the conditions of this authority, provide a report to the administering authority detailing:
a) the reason for the release;
b) the location of the release;
c) all water quality monitoring results;
d) any general observations;
e) all calculations; and
f) any other matters pertinent to the water release event.

Monitoring of Water Storage Quality

W17 Water storages stated in *Table W 5* which are associated with the release points must be monitored for the water quality characteristics specified in *Table W6* at the monitoring locations and at the monitoring frequency specified in *Table W5*

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Table W5 Water Storage Monitoring – Part A

Water Storage Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree,	Monitoring Location	Frequency of Monitoring
Dunn Creek Dam	-24.3237	150.6695	Dam Spillway	Quarterly

Table W5 (Water Storage Monitoring) – Part B

Water Storage Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Monitoring Location	Frequency of Monitoring
Turkey's Nest	-24.26352187147	150.62181740631	Middle of Dam	Quarterly
Ghost Ryders	-24.30033762874	150.56543401712	Middle of Dam	Quarterly
Lake Gasteen	-24.21147328083	150.48230117883	Middle of Dam	Quarterly

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W18 In the event that water storages defined in *Table W 5* exceed the contaminant limits defined in *Table W6*, the holder of the environmental authority must implement measures, where practicable, to prevent access to waters by all livestock.

Table W6 (Onsite Water Storage Contaminant Limits)

Quality Characteristic	Test Value	Contaminant Limit
pH (pH unit)	Range	Greater than 4.0, less than 9.0[2]
EC (µS/cm)	Maximum	5970[1]
Sulphate (mg/L)	Maximum	1000[1]
Fluoride (mg/L)	Maximum	2[1]
Aluminium (mg/L)	Maximum	5[1]
Arsenic (mg/L)	Maximum	0.5[1]
Cadmium (mg/L)	Maximum	0.01[1]
Cobalt (mg/L)	Maximum	1[1]
Copper (mg/L)	Maximum	1[1]
Lead (mg/L)	Maximum	0.1[1]
Nickel (mg/L)	Maximum	1[1]
Zinc (mg/L)	Maximum	20[1]

Note:
[1] Contaminant limit based on ANZECC & ARMCANZ (2000) stock water quality guidelines.
[2] Page 4.2-15 of ANZECC & ARMCANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4–9".
Note: Total measurements (unfiltered) must be taken and analysed

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Receiving Environment Monitoring and Contaminant Trigger Levels

W19 The quality of the receiving waters must be monitored at the locations specified in *Table W8* for each quality characteristic and at the monitoring frequency stated in *Table W 7*

Table W7 Receiving Waters Contaminant Trigger Levels

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 – 8.0	Daily during the release
Electrical Conductivity (µS/cm)	1150	
Suspended solids (mg/L)	1000	
Sulphate (SO_4^{2-}) (mg/L)	250 (Protection of drinking water Environmental Value)	
Sodium (mg/L)	180 (Australian Drinking Water Guidelines, 2004)	

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Table W8 – Part A – Receiving Water Upstream Background Sites and Down Stream Monitoring Points

Monitoring Points	Receiving Waters Location Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)
Upstream Background Monitoring Point			
Dunn Creek Dam	Callide Dam headwaters	-24.3237	150.6695
Upstream Background Monitoring Point			
Dunn Creek Dam	Callide Dam	-24.3693	150.6143

Notes: a) The data from background monitoring points must not be used where they are affected by releases from other mines.

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Table W8 - Part B - Receiving Water Upstream Background Sites and Down Stream Monitoring Points

Monitoring Points	Receiving Waters Location Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)
Upstream Background Monitoring Points			
Monitoring Point 1	Dingo Gully 3700 metres upstream of RP1a	- 24.2772	150.6447
Monitoring Point 2	Timber Reserve Background 3000 metres Upstream of RP1b	- 24.2487	150.5666
Monitoring Point 3	Trap Gully 5000 metres upstream of RP2 unnamed gully confluence with Oaky Creek	- 24.2826	150.5708
Monitoring Point 4	Gate Creek 1500 meters upstream of RP3 unnamed gully confluence with Gate Ck.	- 24.2287	150.4867
Downstream Monitoring Points			
Monitoring Point 7	Oaky Creek Downstream 3800 metres downstream of RP1a	- 24.2618	150.5959
Monitoring Point 8	Oaky Creek at Dawson Highway 2100 metres downstream of RP1b	- 24.2724	150.5422
Monitoring Point 9	Trap Gully Oaky Creek Confluence 7000 meters downstream of RP2	- 24.3089	150.5087
Monitoring Point 10	Callide Creek Confluence 7500 meters downstream of RP3 subject to landholder's consent'	- 24.2580	150.4294

Notes:

a) The upstream monitoring point should be within 15km the release point.

b) The downstream point should not be greater than 15km from the release point.

c) The data from background monitoring points must not be used where they are affected by releases from other mines.

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W20 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in *Table W7* during a release event, the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and:

1. where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or
2. where the downstream results exceed the upstream results, complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
   (i) details of the investigations carried out; and
   (ii) actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **W20(2)(ii)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*

Receiving Environment Monitoring Program (REMP)

W21. The environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site.

For the purposes of the REMP, the receiving environment is the waters as described in *Table W8 Receiving Water Upstream Background Sites and Down Stream Monitoring Points* and connected waterways within 8.3km downstream of the Dunn Creek Dam release, and additionally the Callide Creek and Oaky Creek 15 km downstream of the respective releases and connected or surrounding waterways within the Callide Catchment (e.g. 15km) downstream of the release. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

W22 The REMP must:

a) Assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality); and
b) Be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected; and
c) Include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in *Table W8*); and
d) Specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the *Queensland Water Quality Guidelines* 2006. This should include monitoring during periods of natural flow irrespective of mine or other discharges; and
e) Include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in *Table W2 and W3*); and
f) Include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.*1 Guidance on Sampling of Bottom Sediments*); and
g) Include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology, and
h) Apply procedures and/or guidelines from ANZECC & ARMCANZ 2000 and other relevant guideline documents; and
i) Describe sampling and analysis methods and quality assurance and control; and
j) Incorporate stream flow and hydrological information in the interpretations of water quality and biological data.

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W23 A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with conditions **W21** and **W22** must be prepared annually and made available on request to the administrating authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

Water Reuse

W24 Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party for the purpose of:

(i) supplying stock water subject to compliance with the quality release limits specified in *Table W9* ; or

(ii) supplying irrigation water subject to compliance with quality release limits in *Table W10*; or

(iii) supplying water for construction and/or road maintenance in accordance with the conditions of this environmental authority.

Table W9 Stock Water Release Limits

Quality characteristic	Units	Minimum	Maximum
pH	pH units	6.5	8.5
Electrical Conductivity	µS/cm	N/A	5000

Table W10 Irrigation Water Release Limits

Quality characteristic	Units	Minimum	Maximum
pH	pH units	6.5	8.5
Electrical Conductivity	µS/cm	N/A	2,900

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W25 Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as dams or tanks, for the purpose of supplying water to business or other interested parties within the vicinity of the mine site. The volume, pH and electrical conductivity of water transferred to businesses or other interested parties within the vicinity of the mine site must be monitored and recorded.

W26 If the responsibility for mine affected water is given or transferred to another person in accordance with conditions **W24 or W25:**

a) the responsibility for the mine affected water must only be given or transferred in accordance with a written agreement (the third party agreement); and

b) the third party agreement must include a commitment from the person utilising the mine affected water to use it in such a way as to prevent environmental harm or public health incidents and specifically make the persons aware of the General Environmental Duty (GED) under section 319 of the *Environmental Protection Act 1994*, environmental sustainability of the water disposal and protection of environmental values of waters; and

c) the third party agreement must be signed by both parties to the agreement.

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Water General

W27 All determinations of water quality and biological monitoring 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 Department of Environment and Resource Management's Monitoring and Sampling Manual;

c) collected from the monitoring locations identified within this environmental authority, within 24 hours of each other where possible;

d) carried out on representative samples; and

e) analysed at a laboratory accredited (e.g. NATA) for the method of analysis being used.

*Note: Condition **W27** requires the Water Quality Manual to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.*

W28 The release of any contaminants as permitted by this environmental authority, directly or indirectly to waters, other than internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with conditions W31 to W36 inclusive:

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.

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Annual Water Monitoring Reporting

W29 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 mine affected water released from all release points;

e) the release flow rate at the time of sampling for each release point;

f) the results of all monitoring and details of any exceedances of 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.

Temporary Interference with waterways

W30 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 administering authority's *Guideline - Activities in a Watercourse, Lake or Spring associated with Mining Activities.*

Water Management Plan

W31 An amended Water Management Plan must be developed by an appropriately qualified person and implemented within 3 months of the date of approval of amendments to this environmental authority in response to the application for amendment dated 28 May 2012.

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W32 The Water Management Plan must:

a) provide for effective management of actual and potential environmental impacts resulting from water management associated with the mining activity carried out under this environmental authority; and

b) be developed in accordance with Department of Environment and Resource Management guideline *Preparation of water management plans for mining activities* and include:

i. a study of the source of contaminants;

ii. a water balance model for the site;

iii. a water management system for the site;

iv. measures to manage and prevent saline drainage;

v. measures to manage and prevent acid rock drainage;

vi. contingency procedures for emergencies; and

vii. a program for monitoring and review of the effectiveness of the water management plan.

W33 The Water Management Plan must be reviewed each calendar year and a report prepared by an appropriately qualified person. The report must:

a) assess the plan against the requirements under condition **W32**;

b) include recommended actions to ensure actual and potential environmental impacts are effectively managed for the coming year; and

c) identify any amendments made to the water management plan following the review.

W34 The holder of this environmental authority must attach to the review report required by condition **W33**, a written response to the report and recommended actions, detailing the actions taken or to be taken by the environmental authority holder on stated dates:

a) to ensure compliance with this environmental authority; and
b) to prevent a recurrence of any non-compliance issues identified.

W35 The review report required by condition **W33** and the written response to the review report required by condition **W34** must be submitted to the administering authority with the subsequent annual return under the signature of the appointed signatory for the annual return.

W36 A copy of the Water Management Plan must be provided to the administering authority on request.

Saline Drainage

W37 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.

Acid Rock Drainage

W38 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.

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Stormwater and Water sediment controls

W39 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.

W40 Stormwater, other than mine affected water, is permitted to be released to waters from:

i) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition **W39**; and

ii) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with conditions **W31** to **W36** inclusive, for the purpose of ensuring water does not become mine affected water.

W41 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.

W42 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.

All Dams

W43 The hazard category of each dam must be determined by a suitably qualified and experienced person at least once in each two year period.

W44 Dams having a hazard category determined to be significant or high, must be specifically authorised by an environmental authority.

W45 All effluent released from the sewage treatment plants at Dunn Creek and Boundary Hill must be monitored at the frequency and for the parameters specified in *Table W11 Sewerage Effluent Quality Targets for Irrigation*.

Effluent irrigation

Table 11 Sewage Effluent Quality Targets for Irrigation

Quality characteristics	Release limit	Units	Limit type	Monitoring frequency
5-day Biochemical Oxygen Demand (uninhibited)	20	mg/L	Max	Monthly
pH	6.0 to 9.0		range	Monthly
TSS	30	mg/L		
Free Chlorine Residual	5	mg/l	Max	Monthly
Faecal Coliforms, based on the average of a minimum of five samples collected	<10	Colonies per 100 millilitres	Max	Monthly

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W46 Sewage effluent used for dust suppression or irrigation must not exceed sewage effluent release limits defined in *Table W11 Sewerage Effluent Quality Targets for Irrigation*.

W47 Sewage effluent used for dust suppression or irrigation must not cause spray drift or over spray to any sensitive place.

W48 Subject to conditions **W45**, **W46** and **W47**, sewage effluent from sewage treatment facilities must be reused or evaporated and must not be directly released from the sewage treatment plant to any water way or drainage line.

Groundwater management

W49 Groundwater, potentially affected by the mining activities, must be monitored for the parameters and at the locations and frequencies defined in *Table W12 Groundwater Monitoring Locations, Parameters and Frequency*.

W50 Subject to condition **W49**, if the groundwater contaminant trigger levels defined in *Table W13 Groundwater contaminant trigger levels* are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within three (3) months of receiving the analysis results.

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Table 12 Groundwater Monitoring Locations, Parameters and Frequency

Mining Area	Monitoring Bore	Longitude Easting	Latitude Northing	Surface RL	Parameters/Frequency SWL – 2 monthly EC & pH – 6 monthly
Dunn Creek	1900	259181.607	7307632.030	270.32m	SWL,EC & pH
	1904	257729.635	7307175.107	290.15m	SWL
	C2455C	256802.199	7308737.298	344.38m	SWL,EC & pH
	C2455P	256802.199	7308737.298	344.38m	SWL,EC & pH
	R2476	260467.4	7308634.6	385.3m	SWL
	R2478	259645.4	7309024.7	370.1m	SWL
Trap Gully	C1363C	252882.053	7312210.275	249.34m	SWL,EC & pH
	C1363P	252882.053	7312210.275	249.34m	SWL,EC & pH
	C1462C	252414.84	7312369.336	252.87m	SWL,EC & pH
	C1462P	252414.84	7312369.336	252.87m	SWL,EC & pH
	R1471C	253113.552	7310526.47	260.25m	SWL,EC & pH
	R1471P	253113.552	7310526.47	260.25m	SWL,EC & pH
	R1475P	253114.223	7310882.935	268.52m	SWL,EC & pH
	R1481C	251853.388	7311722.802	242.71m	SWL
	R1482C	253864.66	7311458.235	283.85m	SWL
	R1773	253318.598	7312187.226	263.71m	SWL, EC & pH
	R1828	253755.963	7312102.755	270.73m	SWL, EC & pH
	R1829	254111.67	7312108.646	278.97m	SWL, EC & pH
	R1830	253227.67	7311554.397	276.42m	SWL, EC & pH
	R1831	253525.033	7311487.054	274.33m	SWL, EC & pH
The Hut	F2641	257309.565	7314868.199	374.39m	SWL
Boundary Hill	Stewart's				SWL, EC & pH
	C2903	246071.780	7318865.940	230.26m	SWL, EC & pH
	R2938	245086.503	7319734.660	260.13m	SWL
	R2940	244449.247	7320231.600	202.81m	SWL, EC & pH
	C2951	246146.721	7319319.486	243.48m	SWL
	ENV01				SWL, EC & pH
The Bluff	C1531	261361.853	7308625.21	349.58m	SWL, EC & pH
	C1532	261482.791	7398545.556	338.83m	SWL, EC & pH
	C1533	261365.007	7308808.359	358.68m	SWL, EC & pH
	C1538	261279.314	7308097.935	362.16m	SWL, EC & pH
	F1451	261242.91	7308539.62	367.16m	SWL

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Table 13 Groundwater contaminant trigger levels

Mining Area	Monitoring Bore #	Parameter – pH Contaminant trigger levels (Acceptable Range)	Parameter – EC µs/cm Contaminant trigger levels Max
Dunn Creek	1900	6.0 – 8.8	10000
	1904		
	C2455C	5.5 – 7.5	2000
	C2455P	5.5 – 7.5	2000
	R2476		
	R2478		
Trap Gully	C1363C	6.0 – 9.0	2000
	C1363P	6.0 – 9.0	2000
	C1462C	6.0 – 9.0	2000
	C1462P	6.0 – 9.0	2000
	R1471C	6.0 – 9.0	1500
	R1471P	6.0 – 9.0	1500
	R1475P	6.0 – 9.0	1500
	R1481C		
	R1482C		
	R1773	5.8 – 8.0	1500
	R1828	5.5 – 8.0	1500
	R1829	5.5 – 8.5	1500
	R1830	6.0 – 9.0	1500
	R1831	6.0 – 8.5	1500
The Hut	F2641		
Boundary Hill	Stewart's	5.0 – 8.0	2000
	C2903	6.0 – 8.0	2500
	R2938		
	R2940	6.0 – 8.0	25000
	C2951		
	ENV01	6.0 – 8.5	2000
The Bluff	C1531	6.0 – 8.0	2000
	C1532	6.0 – 8.0	2000
	C1533	6.0 – 8.0	2000
	C1538	6.0 – 8.0	2000
	F1541		

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W51 Subject to condition **W46**, groundwater levels must be monitored and groundwater draw down fluctuations in excess of 2m per year, not resulting from the pumping of licensed bores, must be notified within ten (10) business days to the administering authority following completion of monitoring.

W52 The method of sampling of surface and groundwater must comply with that set out in the latest edition of the administering authority's Water Quality Sampling Manual.

W53 Mine affected water release rate from **Dunn Creek Dam** release point must not exceed **twenty percent (20%)** of receiving water flow rate.

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Definitions

Words and phrases used throughout this licence 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.

"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 the land are deemed to be complete. The acceptance criteria indicate the success of the 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 recolonisation of specific fauna groups such as collembola, mites and termites which are involved in these processes;
e) microbiological studies including recolonisation 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; and
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 as a result of mining activity.

"administering authority" means the Department of Environment and Heritage Protection or its successor.

"AEP" means the Annual Exceedence 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).

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"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 relative to the subject matter using the relevant protocols, standards, methods or literature.

"ARD" means acid rock drainage and refers to the low pH, high heavy metal pollutant typical of sulphidic mine wastes, and most commonly associated with the production of ferrous iron and sulphuric acid through the oxidation of sulphide minerals.

"assessed" or **"assess"** by a suitably qualified and experienced person in relation to a hazard 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 at any time:

a) exactly what has been assessed and the precise nature of that assessment;
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 environmental authority (mining activities) under the *Environmental Protection Act 1994*.

"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*;

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c) sustainable by virtue of written undertakings given by that owner to maintain that dam; and
d) the transfer and use have been approved or authorised under any relevant legislation.

"biosolids" means the treated and stabilised solids from sewage.

"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" or **"certified"** by a suitably qualified and experienced person in relation to a design plan or an annual report regarding dams, 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; and
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 dangerous goods code; or
c) a lead hazardous substance within the meaning of the *Workplace Health and Safety Regulation 2008*; or
d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth; or
e) any substance used as, or intended for use as –
   i. a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or
   ii. a surface active agent, including, for example, soap or related detergent; or
   iii. a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or
   iv. a fertiliser for agricultural, horticultural or garden use; or
f) a substance used for, or intended for use for –

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i. mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or

ii. manufacture of plastic or synthetic rubber.

"climax community" flora and fauna communities have attained a stable biological diversity and have reached equilibrium with the surrounding ecosystems.

"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" includes building a new dam and modifying or lifting an existing dam.

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

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"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 a germination medium or landform armouring.

"dam" means a land-based structure or a 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 AS1940 is *not* a dam.

"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

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documents must include design and investigation reports, specifications and certifications, together with the planned decommissioning and rehabilitation works and outcomes. A design plan may include 'as constructed' drawings.

"design storage allowance" or **"DSA"** means the minimum storage required in a dam at the first of November each year in order to meet the hydraulic performance requirements.

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

"domestic waste" means waste, other than domestic clean-up waste, green waste, recyclable waste, interceptor waste or waste discharged to a sewer, produced as a result of the ordinary use or occupation of domestic premises.

"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; or
b) a caravan, mobile home or other vehicle or structure on land; or
c) a water craft in a marina.

"effluent" treated waste water discharged from sewage treatment plants.

"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*.

"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.

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"flowable substance" means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

"foreseeable future" is the period used for assessing the total 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.

"general waste" means waste other than regulated waste.

"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", prepared by the Department of Environment and Resource Management, as amended from time to time.

"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 Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

"infrastructure" means water storage dams, roads and tracks, buildings and other structures built for the purpose of mining activities but does not include other facilities required for the long term management of mining impacts or the protection of potential resources. Such other facilities include dams, waste rock dumps, voids, or ore stockpiles and buildings as well as other structures whose ownership can be transferred and which have a residual beneficial use for the next owner of the operational land or the background land owner.

"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.

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"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.

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

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

"land use" term to describe the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

"landfill" means land used as a waste disposal site for lawfully putting solid waste on the land.

"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 unplanned releases from other works of 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.

"mandatory reporting level" or **"MRL"** means a warning and reporting level determined in accordance with the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

"mg/L" means milligrams per litre.

"mineral" means a substance which normally occurs naturally as part of the earth's crust or is dissolved or suspended in water within or upon the earth's crust and includes a substance which may be extracted from such a substance, and includes—

a) clay if mined for use for its ceramic properties, kaolin and bentonite;

b) foundry sand;

c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for

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the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil there from;

d) limestone if mined for use for its chemical properties;
e) marble;
f) mineral oil or gas extracted or produced from shale or coal by in situ processes;
g) peat;
h) salt including brine;
i) shale from which mineral oil may be extracted or produced;
j) silica, including silica sand, if mined for use for its chemical properties;
k) rock mined in block or slab form for building or monumental purposes;

But does not include—

l) living matter;
m) petroleum within the meaning of the *Petroleum Act 1923*;
n) soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form;
o) water.

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

i) pit water, tailings dam water, processing plant water;
ii) 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;
iii) 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 runoff containing sediment only, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water;
iv) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;
v) groundwater from the mine's dewatering activities;
vi) a mix of mine affected water (under any of paragraphs i)-v)) and other water.

"NAF" means non acid forming.

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

"nature" includes:

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

"noxious" means harmful or injurious to health or physical well being.

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"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.

"PAF" means potentially acid forming.

"palletised" means stored on a movable platform on which batteries are placed for storage or transportation.

"peak particle velocity (ppv)" means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mms-1).

"Probable Maximum Flood (PMF)" is the flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in a particular drainage area.

"protected area" means:

a) a protected area under the *Nature Conservation Act 1992*;
b) a marine park under the *Marine Parks Act 2004*; or
c) a World Heritage Area.

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

"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 all groundwater and surface water that are not disturbed areas authorised by this environmental authority.

"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.

"recycled water" means appropriately treated effluent and urban stormwater suitable for further use.

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"reference site" (or analogue site) may reflect the original location, adjacent area or another area where rehabilitation success has been completed for a similar biodiversity. Details of the reference site may be as photographs, computer generated images and vegetation models etc.

"regulated dam" means any dam in the significant or high hazard category as assessed using the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

"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; and
b) anything that has contained the 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.

"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 has been rehabilitated and has maintained the required acceptance criteria without human intervention for a period nominated by the administering authority.

"sensitive place" means:

a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
b) a motel, hotel or hostel; or
c) an educational institution; or
d) a medical centre or hospital; or
e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or
f) a public park or gardens.

"sewage" means the used water of person's to be treated at a sewage treatment plant.

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"Shields, P.G. and Williams, B.M. (1991)" means Shields, P.G. and Williams, B.M. (1991) Land resource survey and evaluation of the Kilcummin area, Queensland. QDPI Bulletin QV 91001.

"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.

"stormwater" means all surface water runoff from rainfall.

"suitably qualifled and experienced person" in relation to dams means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 1988*, 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 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; and

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.

"trackable waste" means a waste or combination of waste stated in Schedule 1 of the *Environmental Protection (Waste Management) Regulation 2000.*

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"trivial harm" means environmental harm which is not material or serious environmental harm and will not cause actual or potential loss or damage to property of an amount of, or amounts totalling more than $5,000.

"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.

"waste" as defined in section 13 of the *Environmental Protection Act 1994*.

"water" means –

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

"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.

"µg/L" means micrograms per litre

"µS/cm" means microsiemens per centimetre

"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.

END OF ENVIRONMENTAL AUTHORITY

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Notice

Environmental Protection Act 1994

Amendment of an environmental authority by the administering authority

This notice is issued by the administering authority[1], pursuant to section 211 of the Environmental Protection Act 1994 *to advise that an environmental authority is being amended.*

To: Anglo Coal (Callide) Pty Ltd and Anglo Coal (Callide) No. 2 Pty Limited
C/- Anglo Coal (Callide) Pty Ltd
GPO Box 1410
BRISBANE QLD 4001

Email: John McDougall
Environmental Superintendent
john.mcdougall@angloamerican.com

Cc: The Mining Registrar
Department of Natural Resources and Mines
PO Box 3679
REDHILL QLD 4701

Your reference: MIN100507307
Our reference: 173072

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Amendment of an environmental authority to correct a clerical error.

1. **Environmental authority details**

Environmental authority number MIN100507307 dated 24 April 2013.

Land description: ML5632; ML5641; ML5653; ML5654; ML5655; ML5662; ML6993; ML6994; ML80030; ML80092; ML80093; ML80107; ML80115; ML80117; ML80118; ML80122; ML80151.

2. **Amendment**

The administering authority has become aware that thereis a clerical error on the environmental authority that requires correction. This correction is minor in nature and will not adversely impact your interests or anyone else. As a result, the following amendment has been made to your environmental authority:

Deletion of condition W53 on environmental authority MIN100507307 that was incorrectly inserted in the environmental authority amendment issued on 4 April 2013.

[1] The Department of Environment and Heritage Protection is the administering authority under the *Environmental Protection Act 1994.*

Amendment of an environmental authority by the administering authority

49-Sch4	24/4/13
Signature	Date

Sam Tarlinton
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Kylie Dunlop
Environmental Services - Mining
PO Box 413
ROCKHAMPTON QLD 4700
Phone: (07) 4837 3501
Fax: (07) 4837 3418
Email: kylie.dunlop@ ehp.qld.gov.au

Attachments

Amended environmental authority (reference MIN100507307)

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Permit[1]

Environmental Protection Act 1994

Environmental Authority (Mining Lease) Non Code Compliant Level 1 Mining Project

Permit[1] Number: MIN100507307

This permit is issued by the administering authority to authorise the activity specified in the permit in accordance with the conditions specified in the permit. This decision was made pursuant to Section 258 of the Environmental Protection Act 1994.

Takes Effect From: **24 April 2013**

Permit Holder(s)	Name	Address
Principal Holder	Anglo Coal (Callide) Pty Ltd	Level 11, 201 Charlotte Street BRISBANE QLD 4000
Joint Holder	Anglo Coal (Callide) No. 2 Pty Limited	Level 11, 201 Charlotte Street BRISBANE QLD 4000

Activity(s)	Location(s)
Mining Lease	ML5632 ML5641 ML5653 ML5654 ML5655 ML5662 ML6993 ML6994 ML80030 ML80092 ML80093 ML80107 ML80115 ML80117 ML80118 ML80122 ML80151

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The anniversary date of the environmental authority is **23 April**
The environmental authority is subject to the attached conditions of approval.

49-Sch4

Sam Tarlinton
Delegate
Department of Environment and Heritage Protection
24 April 2013

Enquiries:
Permit and Licence Management
Implementation & Support Unit
Department of Environment and Heritage Protection
GPO Box 2454
Brisbane Queensland 4001
Phone: 1300 130 372
Fax: 07 3896 3342
E-mail: palm@ehp.qld.gov.au

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

Department Interest: General

Financial Assurance

G1 Provide a financial assurance in the amount and form required by the administering authority prior to the commencement of activities proposed under this environmental authority.

*Note: The calculation of financial assurance for condition **G1** must be in accordance with 'Guideline 17 - Financial Assurances' for Mining Activities and may include a performance discount. The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas, which may vary on an annual basis due to progressive rehabilitation. The amount required for the financial assurance must be the highest Total Rehabilitation Cost calculated for any year of the Plan of Operations and calculated using the formula: (Financial Assurance = Highest Total Annual Rehabilitation Cost x Percentage Required).*

G2 The financial assurance is to remain in force until the administering authority is satisfied that no claim on the assurance is likely.

Note: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.

Maintenance of measures, plant and equipment

G3 The holder must:

a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority: and
b) maintain such measures, plant and equipment in a proper condition; and
c) operate such measures, plant and equipment in a proper manner.

Monitoring

G4 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.

G5 Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

G6 Spillage of all chemicals and fuels 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 AS 1940 - Storage and Handling of Flammable and Combustible Liquids.

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Definitions

G7 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.

Notification of emergencies, incidents and exceptions

G8 All reasonable actions are to be taken to minimise environmental harm, or potential environmental harm, resulting from any emergency, incident or circumstances not in accordance with the conditions of this environmental authority.

G9 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 in writing.

G10 Not more than ten (10) business days following the initial notification of an emergency, incident or information about circumstances which result or may 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 the information about circumstances which result or may result in environmental harm.

G11 As soon as practicable, but not more than six (6) weeks following the initial notification of an emergency, incident or information about circumstances which result 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.

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Department Interest: Air

Dust nuisance

A1 Subject to requirement of condition **A2** and condition **A3** the release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance at any sensitive place.

A2 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 place, and the results must be notified within ten (10) business days to the administering authority following completion of monitoring.

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A3 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 **A1**:

Total Suspended Particulates (TSP)

a) Less than 90 micrograms per cubic metre expressed as an annual average.

PM10 Particulates

A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (PM10) suspended in the atmosphere of:

a) Less than 50 micrograms per cubic metre over a 24 hour averaging time.

PM2.5 Particulates

A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometre (PM2.5) suspended in the atmosphere of:

a) Less than 8 micrograms per cubic metre expressed as an annual average;
b) Less than 25 micrograms per cubic metre over a 24 hour averaging time.

Dust Deposition

Dust deposition of 130 milligrams per square meter per day measured as insoluble matter, averaged over one month when monitored in accordance with Australian Standard AS 3580.10.1 of 2003.

Monitoring shall be carried out using methods identified in the latest version of the Air Quality Sampling Manual published by the administering authority or by an alternative method of sampling by agreement with the administering authority.

A4 If monitoring indicates exceedance if the relevant limits in **A3**, then the environmental authority holder must:

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

A5 Dust suppressant must be applied to each loaded rail wagon to ensure that dust emissions from the wagon during transport are prevented or minimised.

A6 Wagon loading must be undertaken in accordance with best practice wagon loading system as described in *Queensland Rail Limited's Final Report, Environmental Evaluation of Fugitive Coal Dust Emissions from Coal Trains Goonyella, Blackwater and Moura Coal Rail Systems*, 31 March 2008.

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Department Interest: Land

L1 All infrastructure, constructed by or for the environmental authority holder during the mining activities including water storage structures, must be removed from the site prior to mining lease surrender, except where agreed in writing by the post mining land owner / holder.

L2 All areas significantly disturbed by mining activities must be rehabilitated to the final land description as defined in *Table L1 Final Land Use Capability and Projective Area Schedule* and *Table L2 Final Landform Design Criteria*.

Table L1 Final Land Use Capability and Projective Area Schedule

Southern Pits		Boundary Hill	
Tenure ID: ML's: 5632, 5641, 5662, 5653, 5654, 80093, 6993, 80030, 80092, 80118, 80117, 80122		Tenure ID: ML5655, 6994, 80115, 80107, 80151	
Post Mine land capability classification	Projective surface area (ha)	Post mine land capability classification	Projective surface area (ha)
4	100	4	64
5	6.9	5	0
6	239.4	6	360
7	2203.70	7	563
8	2028.70	8	168

Table L2 Final Landform Design Criteria

Disturbance type	Slope	Drainage
Dragline and prestrip soil (except Dunn Creek A and S Cut spoil) – outer slopes	Overall slope angle of 15% on outer slopes.	Graded banks at 10m vertical intervals (approx. every 60m along the slope).
Dunn Creek A & S Cut spoil – outer slopes	Overall slope angle of 25%, 120m slope length, basalt mulch cladding.	Berms or graded banks at 120m spacings along the slope.
Internal slopes	Generally, 15% or flatter.	Graded banks at 10m vertical intervals
Trial slopes	From 15% to 25% with topsoil or basalt mulch cladding.	Graded banks at 10m vertical intervals.
	Up to 37% (angle of repose).	Cut off drain/diversion bund across top of slope

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L3 Progressive rehabilitation must commence when areas become available within the operational land.

L4 Areas which are to be progressively rehabilitated to native ecosystem must comply with the following outcomes:

a) achievement of a self sustaining native ecosystem with a species composition and distribution comparable and similar to nominated analogue sites; and

b) all areas disturbed by mining activities must be rehabilitated to the landform design criteria defined in *Table L2 Final Landform Design Criteria*; and

c) landforms are stable with erosion comparable and similar to analogue sites.

L5 Complete an investigation into rehabilitation of disturbed areas and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in condition L1 and landform design criteria in *Table L1 Final Land Use Capability and Projective Area Schedule* and *Table L2 Final Landform Design Criteria* by 31 December 2003.

L6 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 ground water 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 L3 Residual Void Design Outcomes*.

Table L3 Residual Void Design Outcomes

Void Identification	Configuration
High wall	- 75° slope angle. - Safety bunds will be constructed along the top of the high walls and along the crest of the prestrip benches. The prestrip benches will be shaped to shed runoff over the high wall at several locations to limit erosion. - All exposed coal seams will be covered with inert material.
Low wall	- Generally at angle of repose. - Where the low all toe will be submerged, the slope will be lowered to 27° by backfilling against the toe or dozing the low wall slope down to this angle.
Ramp Spoil	- Generally at angle of repose. - Where the low wall toe will to be submerged, the slope will be lowered to 27° by backfilling against the toe or dozing the low wall slope down to this angle.

L7 Complete an investigation into residual voids and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in condition L6 and landform design criteria in *Table L3 Residual Void Design Outcomes* by 31 December 2005.

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Department Interest: Noise

Noise nuisance

N1 Subject to requirement of condition **N2** noise from the mining activity must not cause an environmental nuisance, at any sensitive place.

N2 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 place, and the results must be notified within ten (10) business days to the administering authority following completion of monitoring.

N3 The method of measurement and reporting of noise levels must comply with the latest edition of the administering authority's Noise Measurement Manual.

N4 Subject to conditions **N5** and **N6** airblast overpressure and ground vibration from the mining activity must not cause an environmental nuisance, at any sensitive place.

N5 When requested by the administering authority, airblast overpressure and ground 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 place, and the results must be notified within ten (10) business days to the administering authority following completion of monitoring.

N6 If the environmental authority holder can provide evidence through monitoring that the limits defined in Table N1 Airblast Overpressure Limits and Table N2 Vibration limits are not being exceeded then the holder is not in breach of condition **N4**. Monitoring must include:

a) location of the blast/s within the mining area (including which bench level); and
b) atmospheric conditions including temperature, relative humidity and wind speed and direction; and
c) location, date and time of recording.

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Table N1 Airblast Overpressure Limits

Location	Monday to Saturday 9:00am – 5:00 pm	Sundays and Public Holidays 9.00 am-5.00pm
Sensitive place or commercial place	**All mining areas:** Maximum air blast overpressure level (linear peak.) all blasts in any given 12 month period: Less than 115 dBL for 90% of blasts; 115 to 120 dBL for 9% of blasts; and 120 to 125 dBL for 1% of blasts.	**At The Hut mining area only: -** all blasts permitted. **All other mining areas: -** Interburden and coal blasts only and no overburden blasts permitted. Maximum air blast overpressure level (linear peak) all blasts in any given 12 month period: Less than 115 dBL for 90% of blasts; 115 to 120 dBL for 9% of blasts; and 120 to 125 dBL for 1% of blasts.

Table N2 Vibration limits

Location	Monday to Saturday 9:00am – 5:00 pm	Sundays and Public Holidays 9.00am-5.00pm
Sensitive place or commercial place	Vibration limits: 5mm/s peak particle velocity for any four (4) out of five (5) consecutive blasts and a maximum of 10 mm/s.	**The Hut Mining Area:-** all blasts permitted. Vibration limits: 10mm/s peak particle velocity for any 4 out of 5 consecutive blasts and a maximum of 10 mm/s. **Other Mining Areas:** Interburden and coal blasts only. No overburden blasts permitted.

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Note: The method of measurement and reporting of vibration levels must comply with the latest edition of the administering authority's vibration and air blast overpressure monitoring guideline.

N7 If monitoring indicates exceedance of the relevant limits in *Table N1 Airblast Overpressure Limits* and/or *Table N2 Vibration limits*, then the environmental authority holder must:

a) address the complaint including the use of appropriate dispute resolution if required; or
b) immediately implement air blast overpressure and/or vibration abatement measures so that air blast overpressure and / or vibration from the activity does not result in further environmental nuisance.

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Department Interest: Social

Complaint response

S1 All complaints received must be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. This information must be made available for inspection by the administering authority on request.

Department Interest: Waste

Storage of tyres

WA1 Tyres stored awaiting disposal or transport for take-back and, recycling, or waste-to-energy options - should be stockpiled in volumes less than 3m in height and 200m² in area and at least 10m from any other tyre storage area.

WA2 All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of the scrap tyre storage area.

WA3 Disposing of scrap tyres resulting from the mining activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as possible but not directly on the pit floor.

WA4 Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers and compromise the stability of the consolidated landform.

Department Interest: Water

Contaminant Release

W1. Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.

W2. Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to waters must only occur from the release points specified in *Table W1* of this environmental authority.

W3. The release of mine affected water to internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with conditions W31 to W35 inclusive is permitted.

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Table W1 - Part A - Mine Affected Water Release Points, Sources and Receiving Waters (Dunn Creek Dam)

Release Point (RP)	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Mine Affected Water Source and Location	Monitoring Point	Receiving waters description
Dunn Creek Dam	-24.3237	150.6695	Water storage and stormwater dam spillway overflow	Dam Spillway	Dunn Creek

Table W1 - Part B - Mine Affected Water Release Points, Sources and Receiving Waters (Other than Dunn Creek Dam)

Release Point (RP)	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Mine Affected Water Source and Location	Monitoring Point	Receiving waters description
RP1a	-24.2638	150.6208	Turkey's Nest Storage	Flow: End of pipe flow monitor Quality: Storage	Oaky Creek
RP1b	-24.2686	150.5528	Trap Gully Pipeline	Flow: End of pipe flow monitor Quality: Storage(Ghost Ryder's Dam)	Oaky Creek
RP2	-24.3019	150.5628	Ghost Ryders Storage	Flow: Gauging station downstream of pipe Quality: Downstream of pipe	Oaky Creek
RP3	-24.2114	150.5528	Lake Gasteen Dam	Flow: End of pipe flow monitor Quality: Downstream of pipe	Callide Creek

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W4 The release of mine affected water to waters in accordance with condition W2 must not exceed the release limits stated in *Table W2* when measured at the monitoring points specified in *Table W1* for each quality characteristic.

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Table W2 - Part A - Contaminant Release Limits – Dunn Creek Dam

Quality Characteristic	Interim Release Limits for all mines (Limits to apply from the date of issue)	Future Release Limits from 31 DEC 2011 Note: These future limits will apply from a yet to be negotiated date using alternative numbers that will be derived from the information gathered by any combination of the following: (1) the results of near field monitoring; (2) any studies or investigations carried out in accordance with recommendations 2 & 3 of the Cumulative Impact Study on water quality in the Fitzroy River Basin; (3) any review of the QLD Water Quality Guidelines; (4) other relevant information. *Note: This information should be available by the end of 2010 if not before and when it becomes available limits will be determined for each mine site based on the environmental values to be protected and in accordance with criteria below*	Monitoring frequency	Comments
Electrical conductivity (µS/cm)	1400	Future limit to be determined to achieve aquatic ecosystem protection (no drinking water value): An end-of-pipe limit to achieve in the range 0 to 1000 EC in the receiving waters - for mines in the upper catchments must have natural flow i.e. the 20th percentile flow trigger.	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
Turbidity (NTU)	NA*	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release (the first sample must be taken within 2 hours of commencement of release)	Turbidity is required to assess ecosystems impacts and can provide instantaneous results
Suspended Solids (mg/L)	200*	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release (the first sample must be taken within 2 hours of commencement of release)	Suspended solids are required to measure the performance of sediment and erosion control measures.
Sulphate (SO_4^{2-}) (mg/L) **Oaky Creek** – d.s. to east of mining area	400	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release (the first sample must be taken within 2 hours of commencement of release)	Drinking water environmental values from NHMRC 2006 guidelines OR ANZECC & ARMCANZ 2000 stock water quality guidelines.
Sulphate (SO_4^{2-}) (mg/L) **Dunn Ck Dam** –spillway **Goldings Dam** – d.s. of decant pipe **Lake Gasteen** – spillway	400	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release (the first sample must be taken within 2 hours of commencement of release)	Drinking water environmental values from NHMRC 2006 guidelines OR ANZECC & ARMCANZ 2000 stock water quality guidelines.

*Note: *Limit for suspended solids can be omitted if turbidity limit is included. Limit for turbidity not required if suspended solids limit included. Both indicators should be measured in all cases.*

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Table W2 - Part B - Mine Affected Water Release Limits Other than for Dunn Creek Dam

Quality Characteristic	Release Limits	Monitoring frequency	Comment
Electrical conductivity (µS/cm)	Release limits specified in Table W 4 for variable flow criteria.	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
Turbidity (NTU)	Current limit or limit derived from suspended solids limit and demonstrated correlation between turbidity to suspended solids historical monitoring data for dam water*	Daily during release* (first sample within 2 hours of commencement of release)	Turbidity is required to assess ecosystems impacts and can provide instantaneous results.
Suspended Solids (mg/L)	1000*	Daily during release* (first sample within 2 hours of commencement of release)	Suspended solids are required to measure the performance of sediment and erosion control measures.
Sulphate (SO_4^{2-}) (mg/L)	Release limits specified in Table W4 for variable flow criteria.	Daily during release* (first sample within 2 hours of commencement of release)	Drinking water environmental values from NHMRC 2006 guidelines OR ANZECC.

*Note: *Limit for suspended solids can be omitted if turbidity limit is included. Limit for turbidity not required if suspended solids limit included. Both indicators should be measured in all cases.*

W5 The release of mine affected water to waters from the release points must be monitored at the locations specified in *Table W1* for each quality characteristic and at the frequency specified in *Table W2* and *Table W3.*

Note: the administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition W5 is contravened due to a temporary lack of safe or practical access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.

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Table W3 - Release Contaminant Trigger Investigation Levels - Potential Contaminants

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	55	*For aquatic ecosystem protection, based on SMD guideline*	Commencement of release and thereafter weekly during release
Cadmium	0.2	*For aquatic ecosystem protection, based on SMD guideline*	
Chromium	1	*For aquatic ecosystem protection, based on SMD guideline*	
Copper	2	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Iron	300	*For aquatic ecosystem protection, based on low reliability guideline*	
Lead	4	*For aquatic ecosystem protection, based on SMD guideline*	
Mercury	0.2	*For aquatic ecosystem protection, based on LOR for CV FIMS*	
Nickel	11	*For aquatic ecosystem protection, based on SMD guideline*	
Zinc	8	*For aquatic ecosystem protection, based on SMD guideline*	
Boron	370	*For aquatic ecosystem protection, based on SMD guideline*	
Cobalt	1.4	*For aquatic ecosystem protection, based on low reliability guideline*	
Manganese	1900	*For aquatic ecosystem protection, based on SMD guideline*	
Selenium	10	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Silver	1	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Uranium	1	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Vanadium	10	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Nitrate	1100	*For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN*	
Sodium	180 000	*Australian Drinking Water Guidelines (2004)*	

Note:

1. All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.

2. The quality characteristics required to be monitored as per Table W3 can be reviewed once the results of two years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk, and it may be determined that a reduced monitoring frequency is appropriate or that certain quality characteristics can be removed from Table W3 by amendment.

3. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC & ARMCANZ (2000).

4. LOR – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.

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W6 If quality characteristics of the release exceed any of the trigger levels specified in *Table W3* during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in *Table W3* and:

1. where the trigger values are not exceeded then no action is to be taken; or
2. where the downstream results exceed the trigger values specified *Table W3* for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and:
   a) if the result is less than the background monitoring site data, then no action is to be taken; or
   b) if the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
      (i) details of the investigations carried out; and
      (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with W6 (2)b)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

W7 If an exceedance in accordance with condition **W6(2)(b)** is identified, the holder of the authority must notify the administering authority within **14 days** of receiving the result.

Mine Affected Water Release Events

W8 The holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in *Table W4.*

W9 Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with condition W2 must only take place during periods of natural flow events in accordance with the receiving water flow criteria for discharge specified in *Table W4* for the release points specified in *Table W1.*

W10 The release of mine affected water to waters in accordance with condition W2 must not exceed the Electrical Conductivity and Sulphate release limits or the Maximum Release Rate (for all combined release point flows) for each receiving water flow criteria for discharge specified in *Table W4* when measured at the monitoring points specified in *Table W1.*

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Table W4 - Part A – Mine Affected Water Release During Flow Events – Dunn Creek

Receiving water/stream	Release Point (RP)	Gauging station	Gauging Station Latitude (Decimal Degrees GDA94)	Gauging Station Longitude (Decimal Degrees GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
Dunn Creek	Dunn Creek Dam	Callide Dam headwaters	-24.3237	150.6695	1.5 m^3/sec	Continuous (minimum daily)

Table W4- Part B - Mine Affected Water Release during Flow Events – Other than Dunn Creek

Receiving waters/ stream	Release Point (RP)	Gauging station	Gauging Station Latitude (Decimal Degrees GDA94)	Gauging Station Longitude (Decimal Degrees GDA94)	Receiving Water Flow Recording Frequency	Receiving Water Flow Criteria for discharge (m^3/s)	Maximum release rate (for all combined RP flows)	Electrical Conductivity and Sulphate Release Limits
Oaky Creek	RP 1a RP 1b	Oaky Creek Downstream (GS1)	- 24.2617	150.5961	Continuous (minimum daily)	**No/Low Flow** <0.2 m^3/s for a period of 31 days after natural flow events that exceed 0.2 m^3/s	<0.1 m^3/s	Electrical conductivity (µS/cm): <1150 Sulphate (SO_4^{2-}): 250 mg/L
						Medium Flow >0.2 m^3/s Subtract release at RP1 and RP2 (if any and including if under no/low flow scenario) from measurement before comparing with trigger	<0.1 m^3/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1000
						High Flow >1 m^3/s Subtract release at RP1 and RP2 (if any and including if under no/low flow scenario) from measurement	<0.5 m^3/s	Electrical conductivity (µS/cm) < 2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1200

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						before comparing with trigger		
						High Flow >2 m³/s Subtract release at RP1 and RP2 (if any and including if under no/low flow scenario) from measurement before comparing with trigger	<1.0 m³/s	Electrical conductivity (µS/cm) < 2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1200
Oaky Creek	RP 2	Oaky Creek Trap Gully Confluence (GS2)	-24.2952	150.5326	Continuous (minimum daily)	**No/Low Flow** <0.13 m³/s for a period of 31 days after natural flow events that exceed 0.5 m³/s	<0.13 m³/s	Electrical conductivity (µS/cm): <1150 Sulphate (SO_4^{2-}): 250 mg/L
						Medium Flow >0.5 m³/s Subtract release at RP1, RP2 and RP3 (if any and including if under no/low flow scenario) from measurement before comparing with trigger	<0.1 m³/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1200
						High Flow >2.5 m³/s Subtract release at RP1, RP2 and RP3 (if any and including if under no/low flow scenario) from measurement before comparing with trigger	<0.5 m³/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1200

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Callide Creek	RP 3	Callide Creek Confluence (GS3)	- 24.2658	150.4132	Continuous (minimum daily)	**No/Low Flow** <0.27 m^3/s for a period of 31 days after natural flow events that exceed 5.3 m^3/s	<0.27 m^3/s	Electrical conductivity (µS/cm): <1150 Sulphate (SO_4^{2-}): 250 mg/L
						Medium Flow >5.3 m^3/s	<0.10 m^3/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1400
						High Flow >26.5 m^3/s	<0.5 m^3/s	Electrical conductivity (µS/cm) <2200 µS/cm Sulphate (SO_4^{2-}) (mg/L) <1400

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W11 The daily quantity of mine affected water released from each release point must be measured and recorded at the monitoring points in *Table W1*.

W12 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in such waters.

Notification of Release Event

W13 The environmental authority holder must notify the administering authority as soon as practicable and no later than **twenty-four (24) hours** after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information:

a) release commencement date/time;
b) expected release cessation date/time;
c) release point/s;
d) release volume (estimated);
e) receiving water/s including the natural flow rate; and
f) any details (including available data) regarding likely impacts on the receiving water(s).

Note: Notification to the administering authority must be addressed to the Manager and Project Manager of the local administering authority via email or facsimile.

W14 The environmental authority holder must notify the administering authority as soon as practicable, (nominally within **twenty-four (24) hours** after cessation of a release event) of the cessation of a release notified under condition W13 and within **28 days** provide the following information in writing:

a) release cessation date/time;
b) natural flow volume in receiving water;
c) volume of water released;

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d) details regarding the compliance of the release with the conditions of Agency Interest: Water of this environmental authority (i.e. contamination limits, natural flow, discharge volume);
e) all in-situ water quality monitoring results; and
f) any other matters pertinent to the water release event.

*Note: Successive or intermittent releases occurring within **twenty-four (24) hours** of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with conditions **W15** and **W16**, provided the relevant details of the release are included within the notification provided in accordance with conditions **W15** and **W16**.*

Notification of Release Event Exceedance

W15 If the release limits defined in *Table W2* are exceeded, the holder of the environmental authority must notify the administering authority within **twenty-four (24) hours** of receiving the results.

W16 The authority holder must, within **twenty-eight (28) days** of a release that exceeds the conditions of this authority, provide a report to the administering authority detailing:
a) the reason for the release;
b) the location of the release;
c) all water quality monitoring results;
d) any general observations;
e) all calculations; and
f) any other matters pertinent to the water release event.

Monitoring of Water Storage Quality

W17 Water storages stated in *Table W 5* which are associated with the release points must be monitored for the water quality characteristics specified in *Table W6* at the monitoring locations and at the monitoring frequency specified in *Table W5*

Table W5 Water Storage Monitoring – Part A

Water Storage Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree,	Monitoring Location	Frequency of Monitoring
Dunn Creek Dam	-24.3237	150.6695	Dam Spillway	Quarterly

Table W5 (Water Storage Monitoring) – Part B

Water Storage Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Monitoring Location	Frequency of Monitoring
Turkey's Nest	-24.26352187147	150.62181740631	Middle of Dam	Quarterly
Ghost Ryders	-24.30033762874	150.56543401712	Middle of Dam	Quarterly
Lake Gasteen	-24.21147328083	150.48230117883	Middle of Dam	Quarterly

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W18 In the event that water storages defined in *Table W 5* exceed the contaminant limits defined in *Table W6*, the holder of the environmental authority must implement measures, where practicable, to prevent access to waters by all livestock.

Table W6 (Onsite Water Storage Contaminant Limits)

Quality Characteristic	Test Value	Contaminant Limit
pH (pH unit)	Range	Greater than 4.0, less than 9.0[2]
EC (µS/cm)	Maximum	5970[1]
Sulphate (mg/L)	Maximum	1000[1]
Fluoride (mg/L)	Maximum	2[1]
Aluminium (mg/L)	Maximum	5[1]
Arsenic (mg/L)	Maximum	0.5[1]
Cadmium (mg/L)	Maximum	0.01[1]
Cobalt (mg/L)	Maximum	1[1]
Copper (mg/L)	Maximum	1[1]
Lead (mg/L)	Maximum	0.1[1]
Nickel (mg/L)	Maximum	1[1]
Zinc (mg/L)	Maximum	20[1]

Note:
[1] Contaminant limit based on ANZECC & ARMCANZ (2000) stock water quality guidelines.
[2] Page 4.2-15 of ANZECC & ARMCANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4–9".
Note: Total measurements (unfiltered) must be taken and analysed

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Receiving Environment Monitoring and Contaminant Trigger Levels

W19 The quality of the receiving waters must be monitored at the locations specified in *Table W8* for each quality characteristic and at the monitoring frequency stated in *Table W 7*

Table W7 Receiving Waters Contaminant Trigger Levels

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 – 8.0	Daily during the release
Electrical Conductivity (µS/cm)	1150	
Suspended solids (mg/L)	1000	
Sulphate (SO_4^{2-}) (mg/L)	250 (Protection of drinking water Environmental Value)	
Sodium (mg/L)	180 (Australian Drinking Water Guidelines, 2004)	

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Table W8 – Part A – Receiving Water Upstream Background Sites and Down Stream Monitoring Points

Monitoring Points	Receiving Waters Location Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)
Upstream Background Monitoring Point			
Dunn Creek Dam	Callide Dam headwaters	-24.3237	150.6695
Upstream Background Monitoring Point			
Dunn Creek Dam	Callide Dam	-24.3693	150.6143

Notes: a) The data from background monitoring points must not be used where they are affected by releases from other mines.

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Table W8 - Part B - Receiving Water Upstream Background Sites and Down Stream Monitoring Points

Monitoring Points	Receiving Waters Location Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)
Upstream Background Monitoring Points			
Monitoring Point 1	Dingo Gully 3700 metres upstream of RP1a	- 24.2772	150.6447
Monitoring Point 2	Timber Reserve Background 3000 metres Upstream of RP1b	- 24.2487	150.5666
Monitoring Point 3	Trap Gully 5000 metres upstream of RP2 unnamed gully confluence with Oaky Creek	- 24.2826	150.5708
Monitoring Point 4	Gate Creek 1500 meters upstream of RP3 unnamed gully confluence with Gate Ck.	- 24.2287	150.4867
Downstream Monitoring Points			
Monitoring Point 7	Oaky Creek Downstream 3800 metres downstream of RP1a	- 24.2618	150.5959
Monitoring Point 8	Oaky Creek at Dawson Highway 2100 metres downstream of RP1b	- 24.2724	150.5422
Monitoring Point 9	Trap Gully Oaky Creek Confluence 7000 meters downstream of RP2	- 24.3089	150.5087
Monitoring Point 10	Callide Creek Confluence 7500 meters downstream of RP3 subject to landholder's consent'	- 24.2580	150.4294

Notes:

a) The upstream monitoring point should be within 15km the release point.

b) The downstream point should not be greater than 15km from the release point.

c) The data from background monitoring points must not be used where they are affected by releases from other mines.

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W20 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in *Table W7* during a release event, the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and:

1. where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or
2. where the downstream results exceed the upstream results, complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
   (i) details of the investigations carried out; and
   (ii) actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **W20(2)(ii)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*

Receiving Environment Monitoring Program (REMP)

W21. The environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site.

For the purposes of the REMP, the receiving environment is the waters as described in *Table W8 Receiving Water Upstream Background Sites and Down Stream Monitoring Points* and connected waterways within 8.3km downstream of the Dunn Creek Dam release, and additionally the Callide Creek and Oaky Creek 15 km downstream of the respective releases and connected or surrounding waterways within the Callide Catchment (e.g. 15km) downstream of the release. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

W22 The REMP must:

a) Assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality); and
b) Be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected; and
c) Include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in *Table W8*); and
d) Specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the *Queensland Water Quality Guidelines* 2006. This should include monitoring during periods of natural flow irrespective of mine or other discharges; and
e) Include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in *Table W2 and W3*); and
f) Include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.*1 Guidance on Sampling of Bottom Sediments*); and
g) Include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology, and
h) Apply procedures and/or guidelines from ANZECC & ARMCANZ 2000 and other relevant guideline documents; and
i) Describe sampling and analysis methods and quality assurance and control; and
j) Incorporate stream flow and hydrological information in the interpretations of water quality and biological data.

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W23 A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with conditions **W21** and **W22** must be prepared annually and made available on request to the administrating authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

Water Reuse

W24 Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party for the purpose of:

(i) supplying stock water subject to compliance with the quality release limits specified in *Table W9* ; or

(ii) supplying irrigation water subject to compliance with quality release limits in *Table W10*; or

(iii) supplying water for construction and/or road maintenance in accordance with the conditions of this environmental authority.

Table W9 Stock Water Release Limits

Quality characteristic	Units	Minimum	Maximum
pH	pH units	6.5	8.5
Electrical Conductivity	µS/cm	N/A	5000

Table W10 Irrigation Water Release Limits

Quality characteristic	Units	Minimum	Maximum
pH	pH units	6.5	8.5
Electrical Conductivity	µS/cm	N/A	2,900

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W25 Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as dams or tanks, for the purpose of supplying water to business or other interested parties within the vicinity of the mine site. The volume, pH and electrical conductivity of water transferred to businesses or other interested parties within the vicinity of the mine site must be monitored and recorded.

W26 If the responsibility for mine affected water is given or transferred to another person in accordance with conditions **W24 or W25:**

a) the responsibility for the mine affected water must only be given or transferred in accordance with a written agreement (the third party agreement); and

b) the third party agreement must include a commitment from the person utilising the mine affected water to use it in such a way as to prevent environmental harm or public health incidents and specifically make the persons aware of the General Environmental Duty (GED) under section 319 of the *Environmental Protection Act 1994*, environmental sustainability of the water disposal and protection of environmental values of waters; and

c) the third party agreement must be signed by both parties to the agreement.

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Water General

W27 All determinations of water quality and biological monitoring 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 Department of Environment and Resource Management's Monitoring and Sampling Manual;

c) collected from the monitoring locations identified within this environmental authority, within 24 hours of each other where possible;

d) carried out on representative samples; and

e) analysed at a laboratory accredited (e.g. NATA) for the method of analysis being used.

*Note: Condition **W27** requires the Water Quality Manual to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.*

W28 The release of any contaminants as permitted by this environmental authority, directly or indirectly to waters, other than internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with conditions W31 to W36 inclusive:

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.

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Annual Water Monitoring Reporting

W29 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 mine affected water released from all release points;

e) the release flow rate at the time of sampling for each release point;

f) the results of all monitoring and details of any exceedances of 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.

Temporary Interference with waterways

W30 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 administering authority's *Guideline - Activities in a Watercourse, Lake or Spring associated with Mining Activities.*

Water Management Plan

W31 An amended Water Management Plan must be developed by an appropriately qualified person and implemented within 3 months of the date of approval of amendments to this environmental authority in response to the application for amendment dated 28 May 2012.

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W32 The Water Management Plan must:

a) provide for effective management of actual and potential environmental impacts resulting from water management associated with the mining activity carried out under this environmental authority; and

b) be developed in accordance with Department of Environment and Resource Management guideline *Preparation of water management plans for mining activities* and include:

i. a study of the source of contaminants;

ii. a water balance model for the site;

iii. a water management system for the site;

iv. measures to manage and prevent saline drainage;

v. measures to manage and prevent acid rock drainage;

vi. contingency procedures for emergencies; and

vii. a program for monitoring and review of the effectiveness of the water management plan.

W33 The Water Management Plan must be reviewed each calendar year and a report prepared by an appropriately qualified person. The report must:

a) assess the plan against the requirements under condition **W32**;

b) include recommended actions to ensure actual and potential environmental impacts are effectively managed for the coming year; and

c) identify any amendments made to the water management plan following the review.

W34 The holder of this environmental authority must attach to the review report required by condition **W33**, a written response to the report and recommended actions, detailing the actions taken or to be taken by the environmental authority holder on stated dates:

a) to ensure compliance with this environmental authority; and
b) to prevent a recurrence of any non-compliance issues identified.

W35 The review report required by condition **W33** and the written response to the review report required by condition **W34** must be submitted to the administering authority with the subsequent annual return under the signature of the appointed signatory for the annual return.

W36 A copy of the Water Management Plan must be provided to the administering authority on request.

Saline Drainage

W37 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.

Acid Rock Drainage

W38 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.

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Stormwater and Water sediment controls

W39 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.

W40 Stormwater, other than mine affected water, is permitted to be released to waters from:

i) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition **W39**; and

ii) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with conditions **W31** to **W36** inclusive, for the purpose of ensuring water does not become mine affected water.

W41 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.

W42 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.

All Dams

W43 The hazard category of each dam must be determined by a suitably qualified and experienced person at least once in each two year period.

W44 Dams having a hazard category determined to be significant or high, must be specifically authorised by an environmental authority.

W45 All effluent released from the sewage treatment plants at Dunn Creek and Boundary Hill must be monitored at the frequency and for the parameters specified in *Table W11 Sewerage Effluent Quality Targets for Irrigation.*

Effluent Irrigation

Table 11 Sewage Effluent Quality Targets for Irrigation

Quality characteristics	Release limit	Units	Limit type	Monitoring frequency
5-day Biochemical Oxygen Demand (uninhibited)	20	mg/L	Max	Monthly
pH	6.0 to 9.0		range	Monthly
TSS	30	mg/L		
Free Chlorine Residual	5	mg/l	Max	Monthly
Faecal Coliforms, based on the average of a minimum of five samples collected	<10	Colonies per 100 millilitres	Max	Monthly

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W46 Sewage effluent used for dust suppression or irrigation must not exceed sewage effluent release limits defined in *Table W11 Sewerage Effluent Quality Targets for Irrigation*.

W47 Sewage effluent used for dust suppression or irrigation must not cause spray drift or over spray to any sensitive place.

W48 Subject to conditions **W45**, **W46** and **W47**, sewage effluent from sewage treatment facilities must be reused or evaporated and must not be directly released from the sewage treatment plant to any water way or drainage line.

Groundwater management

W49 Groundwater, potentially affected by the mining activities, must be monitored for the parameters and at the locations and frequencies defined in *Table W12 Groundwater Monitoring Locations, Parameters and Frequency*.

W50 Subject to condition **W49**, if the groundwater contaminant trigger levels defined in *Table W13 Groundwater contaminant trigger levels* are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within three (3) months of receiving the analysis results.

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Table 12 Groundwater Monitoring Locations, Parameters and Frequency

Mining Area	Monitoring Bore#	Longitude Easting	Latitude Northing	Surface RL	Parameters/Frequency SWL – 2 monthly EC & pH – 6 monthly
Dunn Creek	1900	259181.607	7307632.030	270.32m	SWL,EC & pH
	1904	257729.635	7307175.107	290.15m	SWL
	C2455C	256802.199	7308737.298	344.38m	SWL,EC & pH
	C2455P	256802.199	7308737.298	344.38m	SWL,EC & pH
	R2476	260467.4	7308634.6	385.3m	SWL
	R2478	259645.4	7309024.7	370.1m	SWL
Trap Gully	C1363C	252882.053	7312210.275	249.34m	SWL,EC & pH
	C1363P	252882.053	7312210.275	249.34m	SWL,EC & pH
	C1462C	252414.84	7312369.336	252.87m	SWL,EC & pH
	C1462P	252414.84	7312369.336	252.87m	SWL,EC & pH
	R1471C	253113.552	7310526.47	260.25m	SWL,EC & pH
	R1471P	253113.552	7310526.47	260.25m	SWL,EC & pH
	R1475P	253114.223	7310882.935	268.52m	SWL,EC & pH
	R1481C	251853.388	7311722.802	242.71m	SWL
	R1482C	253864.66	7311458.235	283.85m	SWL
	R1773	253318.598	7312187.226	263.71m	SWL, EC & pH
	R1828	253755.963	7312102.755	270.73m	SWL, EC & pH
	R1829	254111.67	7312108.646	278.97m	SWL, EC & pH
	R1830	253227.67	7311554.397	276.42m	SWL, EC & pH
	R1831	253525.033	7311487.054	274.33m	SWL, EC & pH
The Hut	F2641	257309.565	7314868.199	374.39m	SWL
Boundary Hill	Stewart's				SWL, EC & pH
	C2903	246071.780	7318865.940	230.26m	SWL, EC & pH
	R2938	245086.503	7319734.660	260.13m	SWL
	R2940	244449.247	7320231.600	202.81m	SWL, EC & pH
	C2951	246146.721	7319319.486	243.48m	SWL
	ENV01				SWL, EC & pH
The Bluff	C1531	261361.853	7308625.21	349.58m	SWL, EC & pH
	C1532	261482.791	7398545.556	338.83m	SWL, EC & pH
	C1533	261365.007	7308808.359	358.68m	SWL, EC & pH
	C1538	261279.314	7308097.935	362.16m	SWL, EC & pH
	F1451	261242.91	7308539.62	367.16m	SWL

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Table 13 Groundwater contaminant trigger levels

Mining Area	Monitoring Bore #	Parameter – pH Contaminant trigger levels (Acceptable Range)	Parameter – EC µs/cm Contaminant trigger levels Max
Dunn Creek	1900	6.0 – 8.8	10000
	1904		
	C2455C	5.5 – 7.5	2000
	C2455P	5.5 – 7.5	2000
	R2476		
	R2478		
Trap Gully	C1363C	6.0 – 9.0	2000
	C1363P	6.0 – 9.0	2000
	C1462C	6.0 – 9.0	2000
	C1462P	6.0 – 9.0	2000
	R1471C	6.0 – 9.0	1500
	R1471P	6.0 – 9.0	1500
	R1475P	6.0 – 9.0	1500
	R1481C		
	R1482C		
	R1773	5.8 – 8.0	1500
	R1828	5.5 – 8.0	1500
	R1829	5.5 – 8.5	1500
	R1830	6.0 – 9.0	1500
	R1831	6.0 – 8.5	1500
The Hut	F2641		
Boundary Hill	Stewart's	5.0 – 8.0	2000
	C2903	6.0 – 8.0	2500
	R2938		
	R2940	6.0 – 8.0	25000
	C2951		
	ENV01	6.0 – 8.5	2000
The Bluff	C1531	6.0 – 8.0	2000
	C1532	6.0 – 8.0	2000
	C1533	6.0 – 8.0	2000
	C1538	6.0 – 8.0	2000
	F1541		

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W51 Subject to condition **W46**, groundwater levels must be monitored and groundwater draw down fluctuations in excess of 2m per year, not resulting from the pumping of licensed bores, must be notified within ten (10) business days to the administering authority following completion of monitoring.

W52 The method of sampling of surface and groundwater must comply with that set out in the latest edition of the administering authority's Water Quality Sampling Manual.

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Definitions

Words and phrases used throughout this licence 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.

"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 the land are deemed to be complete. The acceptance criteria indicate the success of the 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 recolonisation of specific fauna groups such as collembola, mites and termites which are involved in these processes;
e) microbiological studies including recolonisation 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; and
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 as a result of mining activity.

"administering authority" means the Department of Environment and Heritage Protection or its successor.

"AEP" means the Annual Exceedence 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).

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"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 relative to the subject matter using the relevant protocols, standards, methods or literature.

"ARD" means acid rock drainage and refers to the low pH, high heavy metal pollutant typical of sulphidic mine wastes, and most commonly associated with the production of ferrous iron and sulphuric acid through the oxidation of sulphide minerals.

"assessed" or **"assess"** by a suitably qualified and experienced person in relation to a hazard 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 at any time:

a) exactly what has been assessed and the precise nature of that assessment;
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 environmental authority (mining activities) under the *Environmental Protection Act 1994*.

"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*;

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c) sustainable by virtue of written undertakings given by that owner to maintain that dam; and
d) the transfer and use have been approved or authorised under any relevant legislation.

"biosolids" means the treated and stabilised solids from sewage.

"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" or **"certified"** by a suitably qualified and experienced person in relation to a design plan or an annual report regarding dams, 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; and
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 dangerous goods code; or
c) a lead hazardous substance within the meaning of the *Workplace Health and Safety Regulation 2008*; or
d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth; or
e) any substance used as, or intended for use as –
    i. a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or
    ii. a surface active agent, including, for example, soap or related detergent; or
    iii. a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or
    iv. a fertiliser for agricultural, horticultural or garden use; or
f) a substance used for, or intended for use for –

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i. mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or

ii. manufacture of plastic or synthetic rubber.

"climax community" flora and fauna communities have attained a stable biological diversity and have reached equilibrium with the surrounding ecosystems.

"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" includes building a new dam and modifying or lifting an existing dam.

"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; or
b) an odour; or
c) an organism (whether alive or dead), including a virus; or
d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
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 a germination medium or landform armouring.

"dam" means a land-based structure or a 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 AS1940 is *not* a dam.

"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

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documents must include design and investigation reports, specifications and certifications, together with the planned decommissioning and rehabilitation works and outcomes. A design plan may include 'as constructed' drawings.

"design storage allowance" or **"DSA"** means the minimum storage required in a dam at the first of November each year in order to meet the hydraulic performance requirements.

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

"domestic waste" means waste, other than domestic clean-up waste, green waste, recyclable waste, interceptor waste or waste discharged to a sewer, produced as a result of the ordinary use or occupation of domestic premises.

"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; or
b) a caravan, mobile home or other vehicle or structure on land; or
c) a water craft in a marina.

"effluent" treated waste water discharged from sewage treatment plants.

"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*.

"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.

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"flowable substance" means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

"foreseeable future" is the period used for assessing the total 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.

"general waste" means waste other than regulated waste.

"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", prepared by the Department of Environment and Resource Management, as amended from time to time.

"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 Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

"infrastructure" means water storage dams, roads and tracks, buildings and other structures built for the purpose of mining activities but does not include other facilities required for the long term management of mining impacts or the protection of potential resources. Such other facilities include dams, waste rock dumps, voids, or ore stockpiles and buildings as well as other structures whose ownership can be transferred and which have a residual beneficial use for the next owner of the operational land or the background land owner.

"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.

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"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.

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

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

"land use" term to describe the selected post mining use of the land, which is planned to occur after the cessation of mining operations.
"landfill" means land used as a waste disposal site for lawfully putting solid waste on the land.

"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 unplanned releases from other works of 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.

"mandatory reporting level" or **"MRL"** means a warning and reporting level determined in accordance with the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

"mg/L" means milligrams per litre.

"mineral" means a substance which normally occurs naturally as part of the earth's crust or is dissolved or suspended in water within or upon the earth's crust and includes a substance which may be extracted from such a substance, and includes—

a) clay if mined for use for its ceramic properties, kaolin and bentonite;
b) foundry sand;
c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for

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the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil there from;

d) limestone if mined for use for its chemical properties;

e) marble;

f) mineral oil or gas extracted or produced from shale or coal by in situ processes;

g) peat;

h) salt including brine;

i) shale from which mineral oil may be extracted or produced;

j) silica, including silica sand, if mined for use for its chemical properties;

k) rock mined in block or slab form for building or monumental purposes;

But does not include—

l) living matter;

m) petroleum within the meaning of the *Petroleum Act 1923*;

n) soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form;

o) water.

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

i) pit water, tailings dam water, processing plant water;
ii) 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;
iii) 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 runoff containing sediment only, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water;
iv) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;
v) groundwater from the mine's dewatering activities;
vi) a mix of mine affected water (under any of paragraphs i)-v)) and other water.

"NAF" means non acid forming.

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

"nature" includes:

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

"noxious" means harmful or injurious to health or physical well being.

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"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.

"PAF" means potentially acid forming.

"palletised" means stored on a movable platform on which batteries are placed for storage or transportation.

"peak particle velocity (ppv)" means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mms-1).

"Probable Maximum Flood (PMF)" is the flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in a particular drainage area.

"protected area" means:

a) a protected area under the *Nature Conservation Act 1992*;
b) a marine park under the *Marine Parks Act 2004*; or
c) a World Heritage Area.

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

"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 all groundwater and surface water that are not disturbed areas authorised by this environmental authority.

"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.

"recycled water" means appropriately treated effluent and urban stormwater suitable for further use.

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"reference site" (or analogue site) may reflect the original location, adjacent area or another area where rehabilitation success has been completed for a similar biodiversity. Details of the reference site may be as photographs, computer generated images and vegetation models etc.

"regulated dam" means any dam in the significant or high hazard category as assessed using the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

"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; and
b) anything that has contained the 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.

"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 has been rehabilitated and has maintained the required acceptance criteria without human intervention for a period nominated by the administering authority.

"sensitive place" means:

a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
b) a motel, hotel or hostel; or
c) an educational institution; or
d) a medical centre or hospital; or
e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or
f) a public park or gardens.

"sewage" means the used water of person's to be treated at a sewage treatment plant.

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"Shields, P.G. and Williams, B.M. (1991)" means Shields, P.G. and Williams, B.M. (1991) Land resource survey and evaluation of the Kilcummin area, Queensland. QDPI Bulletin QV 91001.

"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.

"stormwater" means all surface water runoff from rainfall.

"suitably qualified and experienced person" in relation to dams means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 1988*, 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 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; and

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.

"trackable waste" means a waste or combination of waste stated in Schedule 1 of the *Environmental Protection (Waste Management) Regulation 2000.*

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"trivial harm" means environmental harm which is not material or serious environmental harm and will not cause actual or potential loss or damage to property of an amount of, or amounts totalling more than $5,000.

"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.

"waste" as defined in section 13 of the *Environmental Protection Act 1994*.

"water" means –

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

"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.

"µg/L" means micrograms per litre

"µS/cm" means microsiemens per centimetre

"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.

END OF ENVIRONMENTAL AUTHORITY

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