

Permit

Environmental Protection Act 1994

Environmental authority EPML00900713

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

Environmental authority number: EPML00900713

Environmental authority takes effect on 26 October 2020

Environmental authority holder(s)

Name(s)	Registered address
SCONI MINING OPERATIONS PTY LTD	Level 34, 1 Eagle Street BRISBANE CITY QLD 4000 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 15: Mining nickel ore	ML10332
Ancillary 33 - Crushing, milling, grinding or screening Crushing, grinding, milling or screening more than 5000t of material in a year	ML10324
Ancillary 33 - Crushing, milling, grinding or screening Crushing, grinding, milling or screening more than 5000t of material in a year	ML10332
Schedule 3 15: Mining nickel ore	ML10324

Additional information for applicantsEnvironmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

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

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Sustainable Planning Act 2009* or an SDA Approval under the

Environmental authority

State Development and Public Works Organisation Act 1971), this EA will not take effect until the additional authorisation has taken effect.

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

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

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

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Date issued: 28 October 2020

Obligations under the *Environmental Protection Act 1994*

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

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

Location: ML10324 & ML10332

Relevant activity/ies:

- Resource Activity, Schedule 2A, 15: Mining nickel ore
- Resource Activity, Ancillary 33 - Crushing, milling, grinding or screening, Crushing, grinding, milling or screening more than 5000t of material in a year

This Environmental Authority incorporates the following schedules:

Schedule A	-	General
Schedule B	-	Air
Schedule C	-	Land and Rehabilitation
Schedule D	-	Regulated Dams
Schedule E	-	Waste
Schedule F	-	Noise and Vibration
Schedule G	-	Water
Schedule H	-	Definitions
Schedule I	-	Appendix 1 – Map of mine site layout
	-	Appendix 2 – Map of mine plan

SCHEDULE A – GENERAL**Activity**

- A1 This environmental authority authorises environmental harm referred to in the conditions. Where there is no condition or this Environmental Authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising environmental harm.
- A2 The activities approved under this environmental authority must be undertaken in accordance with plans/maps included in **Schedule I**.

Maintenance of measures, plant and equipment

- A3 The holder of this environmental authority must:
- (a) Install all **measures**, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;
 - (b) Maintain such **measures**, plant and equipment in a proper condition; and
 - (c) Operate such **measures**, plant and equipment in a proper manner.
- A4 No change, replacement or alteration of any plant or equipment is permitted if the change, replacement or alteration increases, or is likely to increase, the risk of environmental harm.

Monitoring

- A5 Except where specified otherwise in another condition of this environmental authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than 5 years.
- A6 The holder of this environmental authority must, when requested by the administering authority, supply monitoring records, plans and reports in the form and by the means requested by the administering authority within a timeframe nominated or agreed to by the administering authority.
- A7 All monitoring referred to in this environmental authority must be undertaken by an appropriately qualified person using monitoring equipment that is accurately calibrated and maintained in accordance with manufacturer's specifications.
- A8 Except as otherwise authorised by the **administering authority**, all analysis and tests required to be conducted under this environmental authority must be carried out by a laboratory that has **NATA** certification for such analysis and tests.

Financial assurance

- A9 The activity must not be carried out until the environmental authority **holder** has given financial assurance to the **administering authority** as security for compliance with this environmental authority and any costs or expenses, or likely costs or expenses, mentioned in section 298 of the Act.
- A10 The amount of financial assurance must be reviewed by the **holder** of this environmental authority when a plan of operations is amended or replaced or the authority is amended.

Risk management

- A11 The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (ISO31000:2009), or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management, by 29 January 2021.

Notification of emergencies, incidents and Releases

- A12 The holder of this environmental authority must notify the administering authority by written notification within 24 hours, after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this environmental authority.
- A13 Within 10 business days following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following:
- a) results and interpretation of any samples taken and analysed;
 - b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm;
 - c) proposed actions to prevent a recurrence of the emergency or incident.
- A14 The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority within 10 business days of completion of the investigation, or no later than 10 business days after the end of the timeframe nominated by the administering authority to undertake the investigation.

Complaints

- A15 The holder of this environmental authority must record all environmental complaints received about the mining activities including:

- (a) name, address and contact number of the complainant;
- (b) time and date of complaint;
- (c) reasons for the complaint;
- (d) investigations undertaken;
- (e) conclusions formed;
- (f) actions taken to resolve the complaint;
- (g) any abatement **measures** implemented; and
- (h) person responsible for resolving the complaint.

Third party auditing

- A16 The holder of this environmental authority must:
- a) By 30 June 2020, obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority
 - b) obtain further such reports at regular intervals, not exceeding 3 yearly intervals, from the completion of the report referred to above; and
 - c) provide each report to the administering authority within 90 days of its completion.

Exploration

- A17 All exploration activities carried out on the mining leases must comply with each of the Standard Environmental Conditions contained in the most recent version of the Code of Environmental Compliance for exploration and **mineral** development projects (the code). Where a condition in this Environmental Authority refers to a matter addressed in the code, the condition of this Environmental Authority is taken to prevail.

Transition to Standards

- A18 Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority, the holder of this environmental authority must:
- a) comply with the amended or changed standard, policy or guideline within 2 years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures referred to in Schedule D – Regulated Dams, the time specified in that condition
 - b) until compliance with the amended or changed standard, policy or guideline is achieved, continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.

SCHEDULE B – AIR

General

- B1 Unless authorised by this environmental authority, the release of **noxious** or **offensive** odour, dust or any other airborne **contaminant** resulting from the mining activities must not cause environmental harm at any **sensitive place** or **commercial place**.
- B2 **The holder** of this environmental authority must ensure that motor vehicles (including trains) used for transporting bulk materials have appropriate load preparation to prevent the spillage and / or loss of material, particulate matter and / or windblown dust during transport.

Nuisance Limits for Dust and Particulates

- B3 The holder of this environmental authority must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by mining activities do not cause exceedances of the following levels when measured at any sensitive or commercial place.
- (a) Dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with the most recent version of Australian Standard AS3580.10.1 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method and Australian Standard AS/NZS3580.1.1:2007 “Methods for siting and analysis of ambient air, Part 1.1: Guide for siting air monitoring equipment” (or more recent versions as they become available).

Note: Five (5) days of exceedances allowed each year including natural causes.

Meteorological monitoring

- B4 The holder of this Environmental Authority must compile, evaluate and keep all monitoring records obtained from a nearby **permanent meteorological station** that has weather conditions similar to the weather conditions at the mine site.

SCHEDULE C – LAND

Rehabilitation Objectives

- C1 **Land** disturbed by mining must be rehabilitated in accordance with **Table C1 -Rehabilitation Requirements**.

Table C1 - Rehabilitation Requirements

Environmental authority

Mine Domain and tenure	Mine Feature Name	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Dams ML10324 ML10332	Sediment Dam 1 Sediment Dam 2	All land subject to mining activities must be rehabilitated to meet the requirements of the administering authority guideline for Rehabilitation of Mining Projects and must be defined in the Post Mine Land Use Plan (PMLUP).	To be provided in the PMLUP in accordance with Condition C4	To be provided in the PMLUP in accordance with Condition C4	To be provided in the PMLUP in accordance with Condition C4
Waste ML10324 ML10332	Overburden Dumps				
Run of Mine (ROM) ML10324 ML10332	ROM pad Low grade ore stockpiles				
Ancillary Infrastructure ML10324 ML10332	Workshop Office Fuel storage Roads & Tracks Diesel Backup				
Voids ML10324 ML10332	Circular Laterite Pit Dingo Dam Pit				
Exploration ML10324 ML10332	Circular Laterite South East Extension				
Mining area ML10324 ML10332	Topsoil Dumps				
Services ML10332	Waste Disposal Trench				

C2 **Rehabilitation** must commence progressively as areas become available and in accordance with the Plan of Operations.

Topsoil

- C3 Topsoil and subsoils must be stripped and stockpiled ahead of mining to a depth determined from soil surveys to ensure that useable soil resources are preserved for **rehabilitation**.

Post Mine Land Use Plan

- C4 The **holder** must develop and submit to the **administering authority** a Post Mine Land Use Plan (PMLUP) and update and resubmit the plan with each subsequent Plan of Operations. The PMLUP must describe how the **rehabilitation** objectives in Table C1 – Rehabilitation requirements will be achieved. On acceptance of the PMLUP by the **administering authority**, **rehabilitation** objectives, indicators and completion criteria must be specified in the environmental authority.

The Post Mine Land Use Plan must include:

- (a) **residual void** investigation in accordance with Condition (C9);
- (b) schematic representation of final land form inclusive of drainage features;
- (c) slope design;
- (d) cover design;
- (e) drainage design;
- (f) erosion controls proposed on reformed **land**;
- (g) description of experimental design for monitoring of analogue and rehabilitated areas inclusive of statistical design;
- (h) proposed revegetation methods inclusive of plant species selection, re-profiling, resspreading soil, soil ameliorants/amendments, surface preparation and method of propagation;
- (i) materials balance including available top soil and low permeability capping material;
- (j) geotechnical, geochemical and hydrological studies;
- (k) chemical, physical and biological properties of soil and water;
- (l) performance criteria for the cover system; and
- (m) a **rehabilitation** monitoring program.

Post Closure Management Plan

- C5 A Post Closure Management Plan for the site must be prepared at least thirty six (36) months prior to final production onsite and implemented for a nominal period of:
- (a) At least thirty (30) years following final production on site; or
 - (b) A shorter period if the site is proven to be geo-technically and geo-chemically **stable** and it can be demonstrated to the satisfaction of the **administering authority** that no release of **contaminants** from the site will result in environmental harm and be prepared at least 18 months prior to final production onsite.

C6 The Post Closure Management Plan must include the following elements:

- (a) Operation and maintenance of:
 - (i) wastewater collection and reticulation systems;
 - (ii) wastewater treatment systems;
 - (iii) the groundwater monitoring network;
 - (iv) final cover systems; and
 - (v) vegetative cover.
- (b) Monitoring of:
 - (i) surface **water quality**;
 - (i) groundwater quality;
 - (ii) seepage rates;
 - (iii) erosion rates;
 - (vi) the integrity and effectiveness of final cover systems; and
 - (iv) the health and resilience of vegetative cover.

Residual Void Outcome

C7 **Residual voids** must not cause any serious environmental harm to **land**, surface **waters** or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the **residual void** itself, and subject to any other condition within this Environmental Authority.

C8 The **holder** of this Environmental Authority must manage mining **voids** during the operation and decommissioning phases to maximise the potential post mine beneficial uses, by consideration of the following:

- (a) limiting sulphide exposures in **void** walls; and
- (b) capping of sulphide exposures in **void** base; and
- (c) limiting period of exposure of sulphides in **void** walls and base to oxidising conditions; and
- (d) managing catchment into the **void**.; and
- (e) geo-technical stability of final **void**.

C9 Decommissioning strategies for the final **voids** must be provided in the Post Mine Land Use Plan including the following information:

- (a) final potential wall and base rock exposure quality in terms of acid producing potential and levels of environmentally relevant salts and metals; and
- (b) expected periods of exposure for wall and base rock with acid producing potential; and
- (c) management options for maximising final **void water quality**; and
- (d) assessment of potential final **void water quality**.

Saline, Acid and Metalliferous Drainage

- C10 The **holder** of this environmental authority must ensure effective **measures** are taken to avoid or otherwise minimise the generation and/or release of saline, acid and/or metalliferous mine drainage.
- C11 Only waste rock that is characterised as unreactive/benign material that will not cause environmental harm (such as acid, neutral or saline mine drainage) may be used for the construction of temporary or permanent structures within the operation areas.

Infrastructure

- C12 All buildings, structures, mining equipment and plant erected and/or used for the mining activities must be removed from the site prior to surrender, except where agreed in writing by the landowner.

Chemicals and flammable or combustible liquids

- C13 All explosives, hazardous chemicals, corrosive substances, toxic substances, gases, flammable or combustible liquids and dangerous goods must be stored and handled in accordance with the current, relevant Australian Standard where such is applicable.

Contaminated Land

- C14 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**.

SCHEDULE D – REGULATED DAMS

- D1 Regulated structures as defined under *Guideline Structures which are dams or levees constructed as part of environmentally relevant activities (ESR/2016/1934)* must not be constructed or operated at the site.
- D2 After decommissioning, all significantly disturbed land caused by the carrying out of the environmentally relevant activity(ies) must be rehabilitated to meet the following final **acceptance criteria**:
- a) the landform is safe for humans and fauna;
 - b) the landform is stable with no subsidence or erosion gullies for at least three (3) years;
 - c) any **contaminated** land (e.g. **contaminated** soils) is remediated and rehabilitated;
 - d) not allowing for **acid mine drainage**; or
 - e) there is no ongoing contamination to **waters** (including groundwater);

- f) rehabilitation is undertaken in a manner such that any actual or potential acid sulfate soils on the area of significant **disturbance** are treated to prevent or minimise environmental harm in accordance with the Instructions for the treatment and management of acid sulfate soils (2001);
- g) all significantly disturbed land is reinstated to the pre-disturbed soil suitability class;
- h) for land that is not being cultivated by the landholder:
 - a. groundcover, that is not a declared pest species is established and self-sustaining
 - b. vegetation of similar **species richness** and **species diversity** to pre-selected **analogue sites** is established and self-sustaining, and
 - c. the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its **disturbance** caused by carrying out the mining activity(ies).
- i) for land that is to be cultivated by the landholder, cover crop is revegetated, unless the landholder will be preparing the site for cropping within 3 months of mining activities being completed.

SCHEDULE E – WASTE

Waste Disposal

- E1 The only waste that can be disposed of on site is waste that is generated on site. Waste generated on site is limited to:
- (a) waste rock; and
 - (b) **general waste** (including construction, demolition waste, green waste, putrescible and domestic wastes).

Regulated waste

- E2 **Regulated waste**, other than that authorised to be disposed of on-site under this environmental authority, must only be removed and transported from the site by a person who holds a current environmental authority to transport such wastes to a facility that is lawfully able to accept the waste under the *Environmental Protection Act 1994*.
- E3 **Regulated waste** generated in the mining activity can be temporarily stored on site awaiting removal provided it is stored to ensure there is minimal risk of causing fire or contamination to land or **waters**.
- E4 Each container of **regulated waste** stored awaiting movement off-site must be clearly marked to identify the contents.

Tyre storage and disposal

- E5 Tyres stored awaiting disposal or transport for take-back and recycling or waste-to-energy options – must be stockpiled in volumes less than 3m in height and 200m² and at least 10m from any other tyre storage area.
- E6 Fire Prevention **measures** must be implemented including the removal of all combustible materials, including grass and vegetation, within a 10m radius of any tyre storage area.
- E7 Subject to demonstrating to the **administering authority** that no other use higher in the waste management hierarchy can be practicably implemented, waste tyres generated from mining activities may be disposed of on site in non-acid forming waste rock dumps or underground stopes.

Waste rock disposal

- E8 The holder of this environmental authority must develop, implement and submit to the administering authority a waste rock management plan and the plan must be maintained to reflect current conditions and operations at the site.
- E9 The waste rock management plan must include:
- (a) characterisation of the waste rock and spoil to predict the quality of runoff and seepage generated, including salinity, acidity, alkalinity, dissolved metals, metalloids and non-metallic inorganic substances;
 - (b) a program of progressive sampling program to validate pre-mine waste rock characterisation. The waste rock sampling program must include validation of salinity, acid and alkali producing potential and metal concentrations including (to be provided by proponent by 31 May 2012);
 - (c) where the **acid rock drainage** potential / neutral mine drainage potential of waste rock material has not been conclusively determined, geochemical kinetic testing must be conducted to indicate oxidation rates, potential reaction products and effectiveness of control strategies;
 - (d) records must be maintained of all waste rock characterisation and disposal including contingency planning for the management of acid rock / neutral mine drainage;
 - (e) a materials balance and disposal plan demonstrating how potentially acid forming and acid forming waste rock will be selectively placed and/or encapsulated to minimise the generation of **acid mine drainage**;
 - (f) a materials balance and disposal plan demonstrating how waste rock that has a potential to generate neutral and/or saline mine drainage will be selectively placed and managed to minimise the generation of neutral and/or saline mine drainage;
 - (g) a sampling program to verify encapsulation and/or placement of potentially acid forming / acid forming waste rock ./ waste rock that has a potential to generate neutral mine drainage;
 - (h) how often the performance of the plan will be **assessed**;
 - (i) a **Rehabilitation** strategy which meets the **rehabilitation** objectives specified in **Table C1 Rehabilitation Requirements**; and

- (j) monitoring or **rehabilitation**, research and/or trials to verify the requirements and methods for decommissioning and final **rehabilitation** of the placed materials, including the prevention and management of **acid mine drainage**, erosion minimisation and establishment of vegetation cover.

E10 The waste rock dump must be constructed to prevent any water other than incidental rainfall from entering the waste rock dump.

SCHEDULE F – NOISE

Noise Monitoring

F1 Where requested by the administering authority, the holder of this environmental authority must undertake noise monitoring in accordance with condition F2 and ensure that noise generated by the mining activities does not cause the criteria in **Table F1 – Noise Limits** to be exceeded at any **sensitive place** or **commercial place**.

Table F1 - Noise Limits

Sensitive place or commercial place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and public holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
L_{A10} , adj, 10 mins	BG+5	BG+5	BG+3	BG+5	BG+5	BG+0
L_{A1} , adj, 10 mins	BG+10	BG+10	BG+5	BG+10	BG+10	BG+5

Note: In the event that the measured **background** noise level (BG) is less than 25 dB(A), then 25 dB(A) can be substituted for the measured **background** level.

Note: The method of measurement and reporting of noise levels must comply with the latest edition of the **administering authority's** Noise Measurement Manual or the most recent version of AS1055 Acoustics – Description and measurement of environmental noise.

F2 Noise monitoring and recording must include the following descriptor characteristics and matters:

- (i) $L_{A,N,T}$ (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins);

- (ii) **Background** noise $L_{A90,T}$;
- (iii) The level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;
- (iv) Atmospheric conditions including temperature, relative humidity and wind speed and directions;
- (v) Effects due to any extraneous factors such as traffic noise;
- (vi) Location, date and time of monitoring;
- (vii) If the complaint concerns low frequency noise, $\text{Max } L_{p,LIN,T}$; and
- (viii) If the complaint concerns low frequency noise, one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range.

SCHEDULE G – WATER

General

- G1 **Contaminants** that will, or have the potential to cause environmental harm, must not be released directly or indirectly to any **waters** except as permitted under the conditions of this Environmental Authority.

Contaminant Release to Waters

- G2 The release of **contaminants** to **waters** must only occur from the release points specified in **Table G1 - Contaminant release points**. These points are depicted in the plans/maps in **Schedule I**.

Table G1 - Contaminant release points

Release Point	Latitude (GDA94)	Longitude (GDA94)	Contaminant Source and Location, and Description of Release Point	Monitoring Point, including description and Longitude or easting (GDA94)	Receiving Waters Description
Sediment Dam 1	-19.476024	145.691493	Sediment Dam 1/ Stormwater Dam Spillway Overflow	Dam Spillway	Snake Creek

- G3 The release of **contaminants** to **waters** from the release points must be monitored at the locations specified in **Table G1 - Contaminant release points** for each quality characteristic and at the frequency specified in **Table G2 - Contaminant release limits**.

Table G2 - Contaminant release limits

Quality Characteristic	Release Limit	Monitoring Frequency
Electrical conductivity ($\mu\text{S}/\text{cm}$)	1000 or 95th percentile ¹ of reference, whichever is lower.	Daily during release (first sample must be taken within 24 hours of commencement of release)
pH (pH units)	6.0 (minimum) 9.0 (maximum)	
Turbidity (NTU)	For interpretation purposes only	
Suspended Solids (mg/L)	For interpretation purposes only	

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Quality Characteristic	Release Limit	Monitoring Frequency
Sulphate (SO_4^{2-}) (mg/L)	1000 ² or 95th percentile ¹ of reference, whichever is lower	
Aluminium (mg/L)	5 ² or 95th percentile ¹ of reference, whichever is lower.	
Arsenic (mg/L)	0.5 ² or 95th percentile ¹ of reference, whichever is lower.	
Cadmium (mg/L)	0.01 ² or 95th percentile ¹ of reference, whichever is lower.	
Chromium (mg/L)	1 ² or 95th percentile ¹ of reference, whichever is lower.	
Copper (mg/L)	1 ² or 95th percentile ¹ of reference, whichever is lower.	
Cobalt (mg/L)	1 ² or 95th percentile ¹ of reference, whichever is lower.	
Lead (mg/L)	0.1 ² or 95th percentile ¹ of reference, whichever is lower.	
Nickel (mg/L)	1 ² or 95th percentile ¹ of reference, whichever is lower.	
Zinc (mg/L)	20 ² or 95th percentile ¹ of reference, whichever is lower	

1. Reference site concentration determined from reference site specified in Table G5 - Receiving water reference sites and downstream monitoring points.
2. ANZECC/ARMCANZ (2000) values for livestock drinking water quality Table 4.3.2.
3. ANZECC/ARMCANZ (2000) major ions of concern for livestock drinking water quality Section 4.3.3.4 – Volume 1
4. **Contaminant** limits are based on total amounts

Note: Where the 95th percentile of reference is exceeded and the reference site also exceeds the value during the same event, the value of the reference for the same event applies.

*Note: The method of sampling of waters must comply with that set out in the latest edition of the **administering authority's** Water Quality Sampling Manual.*

- G4 The release of **contaminants** to **waters** must not exceed the contaminant release limits stated in **Table G2 - Contaminant release limits** for each quality characteristic.

Stream Flow Monitoring

- G5 The release to waters must only occur when there is continuous water flows in the receiving water.
- G6 The daily volume of **contaminants** released from each release point must be estimated and recorded at the monitoring points in **Table G1 - Contaminant release points** whilst a release is occurring.

Note: The administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition G6 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.

- G7 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**.
- G8 The **environmental authority holder** must take reasonable action to provide all weather access to the **receiving environment** and **background** monitoring locations defined in **Table G5 - Receiving water reference sites and downstream monitoring points**.

Onsite Water Storages

- G9 Water storages stated in **Table G3 - Water Storage Monitoring** must be monitored for the **water quality** characteristics specified in **Table G4 - Onsite water storage contaminant limits** at the monitoring locations and at the monitoring frequency specified in **Table G3 - Water storage monitoring**.

Table G3 - Water storage monitoring

Water Storage Description	Latitude (GDA94)	Longitude (GDA94)	Monitoring Location	Frequency of Monitoring
Sediment Dam 1	-19.476024	145.691493	Dam Spillway	Annually

Environmental authority

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- G10 In the event that water storages defined in **Table G3 - Water storage monitoring** exceed the **contaminant** limits defined in **Table G4 - Onsite water storage contaminant limits**, the holder of the environmental authority must implement measures, where practicable, to prevent access to waters by livestock.

Table G4 - Onsite Water Storage Contaminant Limits

Quality Characteristic	Test Value	Contaminant Limit ³
pH (pH unit)	Range	Greater than 4, less than 9 ²
EC (µS/cm)	Maximum	5970 ¹
Sulphate (mg/L)	Maximum	1000 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

Notes:

¹**Contaminant** limit based on ANZECC & ARMCANZ (2000) stock water quality guidelines.

²Page 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".

³Total measurements (unfiltered) must be taken and analysed.

Receiving environment monitoring and contaminant trigger levels

- G11 The quality of the **receiving waters** must be monitored at the locations specified in **Table G5 - Receiving water reference sites and downstream monitoring points** for each quality characteristic and at the frequency stated in **Table G6 - Receiving waters contaminant trigger and contaminant limit levels**, and **Table G7 - Stream sediment trigger and contaminant levels**.

Table G5 - Receiving water reference sites and downstream monitoring points

Monitoring Points	Receiving Waters Location Description	Latitude (GDA94)	Longitude (GDA94)
Reference ¹ Monitoring Points – a minimum 2 sites must be nominated			
Reference #1 - LBUS1	Snake Creek approximately 800	-19.476129	145.684473

Environmental authority

Monitoring Points	Receiving Waters Location Description	Latitude (GDA94)	Longitude (GDA94)
Sediment & Receiving waters	metres upstream of the release point		
Reference #2 – LBUS2	Snake Creek approximately 500 metres upstream of the release point	-19.475612	145.688002
Sediment & Receiving waters			
Downstream Monitoring Points			
Downstream #1 – LBDS1	Snake Creek approximately 1000 metres downstream of RP1 (Sediment Dam 1)	-19.47549	145.69960
Sediment & Receiving waters			
Downstream #2 – LBDS2	Snake Creek approximately 2000 metres downstream of RP1 (Sediment Dam 1)	-19.476218	145.709432
Sediment & Receiving waters			

¹ Reference sites must:

1. be from the same bio-geographic and climatic region;
2. have similar geology, soil types and topography;
3. contain a range of habitats similar to those at the test sites;
4. have a similar flow regime; and
5. not be so close to the test sites that any **disturbance** at the test site also results in a change at the reference site.

Notes:

1. The reference monitoring points should be within 300m of the release point.
2. The downstream point should not be greater than 500m from the release point.
3. The data from reference monitoring points must not be used where they are affected by releases from other mines.
4. Sampling locations must be provided in plans/maps in Schedule I by 30 December 2014.

Table G6 - Receiving waters contaminant trigger and contaminant limit levels

Parameter	Trigger Level	Limit	Limit Type	Monitoring Frequency
pH	6.0 – 8.6 ¹	6 – 9.0 ⁷	Range	Daily during the release
EC	888 ¹ or 80 th percentile of reference ² value whichever is higher	1000 or 95 th percentile of reference ² value or whichever is lower	Maximum	Daily during the release
Aluminium (mg/L)	0.055 ³ or 80 th percentile of reference ² value whichever is higher	5 ⁵ or 95 th percentile of reference value or whichever is lower	Maximum	Daily during the release

Environmental authority

Parameter	Trigger Level	Limit	Limit Type	Monitoring Frequency
Arsenic (mg/L)	0.013 ³ or 80 th percentile of reference ² value whichever is higher	0.5 ⁵ or 95 th percentile of reference ² value whichever is lower	Maximum	Daily during the release
Cadmium (mg/L)	0.0002 ³ or 80 th percentile of reference ² value whichever is higher	0.01 ⁵ or 95 th percentile of reference ² value whichever is lower	Maximum	Daily during the release
Chromium (mg/L)	0.001 ³ or 80 th percentile of reference ² value whichever is higher	1 ⁵ or 95 th percentile of reference ² value whichever is lower	Maximum	Daily during the release
Cobalt (mg/L)	0.0014 ³ or 80 th percentile of reference ² value whichever is higher	1 ⁵ or 95 th percentile of reference ² value whichever is lower	Maximum	Daily during the release
Copper (mg/L)	0.0014 ³ or 80 th percentile of reference ² value whichever is higher	1 ⁵ or 95 th percentile of reference ² value whichever is lower	Maximum	Daily during the release
Lead (mg/L)	0.0034 ³ or 80 th percentile of reference ² value whichever is higher	0.1 ⁵ or 95 th percentile of reference ² value whichever is lower	Maximum	Daily during the release
Nickel (mg/L)	0.011 ³ or 80 th percentile of reference ² value whichever is higher	1 ⁵ or 95 th percentile of reference ² value whichever is lower	Maximum	Daily during the release
Sulphate (mg/L)	80 th percentile of reference ²	1,000 ⁵ or 95 th percentile of reference ² value whichever is lower	Maximum	Daily during the release
Zinc (mg/L)	0.008 ³	20 ⁵ or 95 th percentile of reference ² value whichever is lower	Maximum	Daily during the release

¹ Based on the 80th percentile of the data from Basalt River (refer to Appendix C, Volume 2, Table 1)

² Reference sites must:

6. be from the same bio-geographic and climatic region; and
7. have similar geology, soil types and topography; and
8. contain a range of habitats similar to those at the potentially impacted sites; and
9. have a similar flow regime; and
10. not be so close to the test sites that any **disturbance** at the test site also results in a change at the reference site

³ **Contaminant** trigger based on ANZECC (2000) values for Aquatic Ecosystems, Table 3.4.1 and are to be analysed as Dissolved Metals (field filtered).

⁴ Based on the maximum value in the data from Basalt River (refer to Appendix C, Volume 2, Table 1)

⁵ **Contaminant** limits based on ANZECC (2000) values for Livestock Drinking Water Quality, Table 4.3.1 and 4.3.2 and are to be analysed as Total Metals (unfiltered).

⁶ Default trigger values – from ANZECC (2000) trigger levels for aquatic ecosystems indicative of slightly disturbed tropical Australian upland river ecosystems.

⁷ Based on ANZECC (2000) value for Livestock Drinking Water Quality, section 4.2.10.1– Volume 1

Note: This does not apply to **dams** containing **hazardous waste**

G12 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in **Table G6 - Receiving waters contaminant trigger and contaminant limit levels**, the **holder** of this environmental authority must compare the downstream results to the reference site results in the **receiving waters** and:

- (a) where the downstream result is the same or a lower value than the reference site value for the quality characteristic during the same sampling event then no action is to be taken; or
- (b) where the downstream results exceed the reference site complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the **administering authority** within 3 months, outlining:
 - (i) details of the investigations carried out; and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with this G12(b) condition, no further reporting is required for subsequent trigger events for that quality characteristic during the reporting period.

G13 Results of monitoring of receiving waters from downstream monitoring points identified in **Table G5 - Receiving water reference sites and downstream monitoring points**, must not exceed any of the contaminant limits in **Table G6 - Receiving waters contaminant trigger and contaminant limit levels**.

Stream Sediment

G14 Sediment quality must be monitored annually (once at the end of the wet season) at the monitoring locations defined in **Table G5 - Receiving water reference sites and downstream monitoring points** and for the parameters defined in **Table G7 - Stream sediment trigger and contaminant levels**. These points are depicted on plans/maps in **Schedule I**.

Table G7 - Stream sediment trigger and contaminant levels

Parameter	Trigger Level	Limit	Limit type
Aluminium (mg/kg dry wt)	Reference value	2 x reference site concentration	Maximum

Environmental authority

Arsenic (mg/kg dry wt)	20 ¹ or reference value, whichever is higher	70 ² or 2 x reference site concentration, whichever is higher	Maximum
Cadmium (mg/kg dry wt)	1.5 ¹ or reference value, whichever is higher	10 ² or 2 x reference site concentration, whichever is higher	Maximum
Chromium (mg/kg dry wt)	80 ¹ or reference value whichever is higher	370 ² or 2 x reference site concentration, whichever is higher	Maximum
Copper (mg/kg dry wt)	65 ¹ or reference value, whichever is higher	270 ² or 2 x reference site concentration, whichever is higher	Maximum
Cobalt (mg/kg dry wt)	Reference value	2 x reference site concentration	Maximum
Lead (mg/kg dry wt)	50 ¹ or reference value, whichever is higher	220 ² or 2 x reference site concentration, whichever is higher	Maximum
Nickel (mg/kg dry wt)	21 ¹ or reference value, whichever is higher	52 ² or 2 x reference site concentration, whichever is higher	Maximum
Sulfate (mg/kg dry wt)	Reference value	2 x reference site concentration	Maximum
Zinc	200 ¹ or reference value, whichever is higher	410 ² or 2 x reference site concentration, whichever is higher	Maximum

¹ ANZECC (2000) values for Aquatic Ecosystems: ISQG Low trigger values, Table 3.5.1

² ANZECC (2000) values for Aquatic Ecosystems: ISQG High values, Table 3.5.1

Note: All stream sediment sampling must be undertaken in accordance with the most recent version of Australian Standard AS 5667.12 Guidance on Sampling of Bottom Sediments of 1998.

- G15 If quality characteristics of the sediment at the downstream monitoring points exceed any of the trigger levels specified in **Table G7 - Stream Sediment Trigger and Contaminant Levels**, the holder of this environmental authority must compare the results of the downstream sites to the data from reference monitoring sites and:
- if the level of **contaminants** at the downstream site does not exceed the reference monitoring site data, then no action is to be taken; or
 - if the level of **contaminants** at the downstream site is greater than the reference monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the **administering authority** within 3 months, outlining:

- i. details of the investigations carried out; and
- ii. actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with condition G15 (b), no further reporting is required for subsequent trigger events for that quality characteristic during the reporting period.

- G16 Results of monitoring of sediments from downstream monitoring points identified in **Table G5 - Receiving water reference sites and downstream monitoring points**, must not exceed any of the sediment contaminant limits in **Table G7 - Stream Sediment Trigger and Contaminant Levels**.

Receiving Environment Monitoring Program (REMP)

- G17 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 of the downstream environment and connected or surrounding waterways within 2 km 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.
- G18 A report outlining the design and findings of the REMP, including all monitoring methodologies, results and interpretations must be prepared annually and made available on request to the administering 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 General

- G19 The release of **contaminants** directly or indirectly to **waters** must not:
- (a) produce any visible discolouration of **receiving waters**; or
 - (b) 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.

Water Management Plan

- G20 A Water Management Plan must be developed by an appropriately qualified person and implemented by 1 November 2020.

- G21 Each year the holder of the Environmental Authority must undertake an annual review of the Water Management Plan prior to the wet season (i.e. by 1 November) to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with the conditions of this Environmental Authority and that environmental harm is prevented or minimised.

Groundwater

- G22 Groundwater quality and level must be monitored at the locations and frequencies defined in **Table G8 - Groundwater Monitoring Locations and Frequency**. These points are depicted on plans/maps in **Schedule I** for quality characteristics identified in **Table G9 - Groundwater quality triggers and limits**.
- G23 If quality characteristics of groundwater from Compliance bores identified in **Table G8 - Groundwater Monitoring Locations and Frequency** exceed any of the trigger levels stated in **Table G9 - Groundwater quality triggers and limits**, the holder of this Environmental Authority must compare the Compliance bore results to the reference bore results and:
- (a) if the level of **contaminants** at the compliance bore does not exceed the reference bore results, then no action is to be taken; and
 - (b) if the level of **contaminants** at the compliance bore is greater than the reference bore results, complete an investigation in accordance with the ANZECC & ARMCANZ 2000, into the potential for environmental harm and provide a written report to the **administering authority** within 3 months, outlining:
 - (i) details of the investigations carried out; and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with condition G24(b), no further reporting is required for subsequent trigger events for that quality characteristic during the reporting period.

- G24 Results of monitoring of groundwater from compliance bores identified in **Table G8 - Groundwater monitoring locations and frequency**, must not exceed any of the limits in **Table G9 - Groundwater quality triggers and limits**.
- G25 The construction, maintenance and management of groundwater bores (including groundwater monitoring bores) must be undertaken in a manner that prevents or minimises impacts to the environment and ensures the integrity of the bores to obtain accurate monitoring.
- G26 Annual groundwater monitoring reports analysing groundwater chemistry and hydro-geological status of all groundwater bores and groundwater conditions must be prepared and submitted to the **administering authority** with each annual return.

Table G8 - Groundwater monitoring locations and frequency

Monitoring Point	Latitude (GDA94)	Longitude (GDA94)	Surface RL ¹ (m)	Monitoring Frequency
Compliance Bores				
Compliance Bore #1 Spyglass Research Station, Manager's Residence	-19.492591	145.685579	390	Monthly
Compliance Bore #2 To be located at Gregory Development Road	(to be provided by proponent by 30 March 2015)	(to be provided by proponent by 30 March 2015)	(to be provided by proponent by 30 March 2015)	Monthly
Reference Bores²				
(to be provided by 30 December 2015 and subject to the groundwater monitoring program)	(to be provided by proponent by 1 June 2015)	(to be provided by proponent by 1 June 2015)	(to be provided by proponent by 1 June 2015)	Monthly

¹RL measurement to be taken from top of bore casing

²Reference sites must:

be from the same bio-geographic and climatic region; and

have similar geology, soil types and topography; and

contain a range of habitats similar to those at the potentially impacted sites; and

have a similar flow regime; and

not be so close to the test sites that any **disturbance** at the test site also results in a change at the reference site

Notes:

Compliance Bore #1 to be located at the manager's residence

Compliance Bore #2 to be located near Gregory Development Road

Table G9 - Groundwater quality triggers and limits

Environmental authority

Parameter	Contaminant trigger	Contaminant Limit	Trigger type
pH (pH units)	6.5-8.5 ¹	6.5-8.5 ¹	Range
Aluminium (mg/L)	0.055 ¹ or 80 th percentile of reference site concentration ^[6] whichever is higher	5 or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum
Arsenic (mg/L)	0.013 ¹ or 80 th percentile of reference site concentration ^[6] whichever is higher	0.5 or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum
Cadmium (mg/L)	0.0002 ^[2] or 80 th percentile of reference site concentration ^[6] whichever is higher	0.01 ^[3] or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum
Chromium (mg/L)	0.0033 ^[2] or 80 th percentile of reference site concentration ^[6] whichever is higher	1 ¹ or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum
Cobalt (mg/L)	0.0014 ^[2] or 80 th percentile of reference site concentration ^[6] whichever is higher	1 ^[3] or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum
Copper (mg/L)	0.0014 ^[2] or 80 th percentile of reference site concentration ^[6] whichever is higher	1 ^[3] or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum
Lead (mg/L)	0.0034 ^[2] or 80 th percentile of reference site concentration ^[6] whichever is higher	0.1 ^[3] or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum
Nickel (mg/L)	0.011 ^[2] or 80 th percentile of reference site concentration ^[6] whichever is higher	1 or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum
Sulphate (mg/L)	80 th percentile of reference site concentration ^[6] whichever is higher	1000 ^[4] or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum

Parameter	Contaminant trigger	Contaminant Limit	Trigger type
Zinc (mg/L)	0.008 ^[2] or 80 th percentile of reference site concentration ^[6] whichever is higher	20 ^[3] or 95 th percentile of reference site concentration ^[6] whichever is lower	Maximum

Note: For water quality objectives parameters, all metals and metalloids must be measured and reported as both total (unfiltered) and dissolved (field filtered) levels.

¹ Based on ANZECC (2000) value for Livestock Drinking Water Quality, section 4.2.10.1– Volume 1

² ANZECC/ARMCANZ (2000) values for aquatic ecosystems indicative of slightly-to-moderately disturbed tropical Australian upland river ecosystems Tables 3.3.4 and Table 3.4.1 (high reliability trigger values) and moderate or low reliability trigger values (Section 8.3) if no value available in Table 3.4.1.

³ ANZECC/ARMCANZ (2000) values for livestock drinking water quality Table 4.3.1 and Table 4.3.2.

⁴ ANZECC/ARMCANZ (2000) major ions of concern for livestock drinking water quality Section 4.3.3.4 – Volume 1.

⁵ ANZECC/ARMCANZ (2000) values for aquatic ecosystems indicative of slightly-to-moderately disturbed tropical Australian upland river ecosystems Table 3.3.5 for EC.

⁶ Reference value determined from reference bore specified in Table G8 - Groundwater monitoring locations and frequency.

Note: The method of sampling of waters must comply with that set out in the latest edition of the Environmental Protection Agency's Water Quality Sampling Manual.

SCHEDULE H – Definitions

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

acceptance criteria means the **measures** by which actions implemented are deemed to be complete. The acceptance criteria indicate the success of the decommissioning and **rehabilitation** outcomes or remediation of areas which have been significantly disturbed by the environmentally relevant activities. Acceptance criteria may include information regarding:

- (a) stability of final land forms in terms of settlement, erosion, weathering, pondage and drainage;
- (b) control of geochemical and **contaminant** transport processes;
- (c) quality of runoff **waters** and potential impact on **receiving environment**;
- (d) vegetation establishment, survival and succession;
- (e) vegetation productivity, sustained growth and structure development;
- (f) fauna colonisation and habitat development;
- (g) ecosystem processes such as soil development and nutrient cycling, and the recolonisation of specific fauna groups such as collembola, mites and termites which are involved in these processes;
- (h) microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration;
- (i) effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;
- (j) resilience of vegetation to disease, insect attack, drought and fire;
- (k) vegetation water use and effects on ground water levels and catchment yields.

acid mine drainage (AMD) means any **contaminated** discharge emanating from a mining operation formed through a series of chemical and biological reaction, when geological strata is disturbed and exposed to oxygen and moisture as a result of mining operations.

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 activities.

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

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

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

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.

assessed 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 of the assessment:

- (a) exactly what has been **assessed** and the precise nature of that determination;
- (b) the relevant legislative, regulatory and technical criteria on which the determination has been based;
- (c) the relevant data and facts on which the determination 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 determination has been based using the relevant data and facts, and the relevant criteria.

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

blasting means the use of explosive materials to fracture:

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

bunded means within bunding consistent with Australian Standard 1940.

certification, certifying 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 1997*; or
- (d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth; or
- (e) any substance used as, or intended for use as:
 - a. a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or
 - b. a surface active agent, including, for example, soap or related detergent; or

- c. a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or
- d. a fertiliser for agricultural, horticultural or garden use; or
- (f) a substance used for, or intended for use for:
 - (i) **mineral** processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or
 - (ii) manufacture of plastic or synthetic rubber.

commercial place means a work place used as an office or for business or commercial purposes, which is not part of the mining activity and does not include employees accommodation or public roads.

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

construction or constructed in relation to a regulated structure includes building a new regulated structure and lifting or otherwise modifying an existing regulated structure, but does not include investigations and testing necessary for the purpose of preparing a design plan.

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

contaminant(s) 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(s) means any action or activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level.

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. A **dam** does not mean a fabricated or manufactured tank or container, designed and **constructed** to an Australian Standard that deals with strength and structural integrity of that tank or container.

disturbance of land includes:

- (a) compacting, removing, covering, exposing or stockpiling of earth;
- (b) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion;
- (c) carrying out mining within a **watercourse**, waterway, wetland or lake;
- (d) the submersion of areas by tailings or hazardous contaminant storage and **dam**/structure walls;
- (e) temporary **infrastructure**, including any **infrastructure** (roads, tracks, bridges, culverts, **dam**/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after the mining activity has ceased; or

- (f) releasing of contaminants into the soil, or underlying geological strata.

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

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

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.

EC means electrical conductivity.

environmental authority holder means **the holder** of this environmental authority.

general waste means waste other than **regulated waste**.

hazard in relation to a **dam** as defined, means the potential for environmental harm resulting from the collapse or failure of the **dam** to perform its primary purpose of containing, diverting or controlling flowable substances.

hazard category means a category, either low significant or high, into which a **dam** is **assessed** as a result of the application of tables and other criteria in the "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams" published by the **administering authority**.

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.

the holder means **the holder** of this environmental authority

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

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

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.

licensed place means the mining activities carried out at the mining tenements detailed in Schedule A – Table A1 of this environmental authority.

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

m means metres.

mg/L means milligrams per litre.

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

- (a) clay if mined for use for its ceramic properties, kaolin and bentonite;
- (b) foundry sand;
- (c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of **mineral** oil therefrom;
- (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;
 - a. 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.

NATA means National Association of Testing Authorities, Australia.

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

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

offensive means causing reasonable offence or displeasure; is disagreeable to the sense; disgusting,

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

process water(s) means water used or produced during the **mineral** development activities.

receiving environment in relation to an activity that causes or may cause environmental harm, means the part of the environment to which the harm is, or may be, caused. The receiving environment includes (but is not limited to):

- (a) a **watercourse**;
- (b) groundwater; and
- (c) an area of land that is not specified in Schedule A – Table A1 (Authorised Activities) of this environmental authority.

The term does not include land that is specified in Schedule A – Table A1 (Authorised Activities) of this environmental authority.

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

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

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

representative means a sample set which covers the variance in monitoring or other data either due to natural changes or operational phases of the mining activities.

regulated structure means as defined under Guideline Structures which are dams or levees constructed as part of environmentally relevant activities (ESR/2016/1934).

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**.

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 means the movement of **waters**, **contaminated** with salts, as a result of the mining activity.

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 center or hospital; or
- (e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area; or

- (f) a public park or gardens.

stable in relation to **land**, means **land** form dimensions are and will remain within tolerable limits now and in the foreseeable future. Issues to be properly considered in regard to whether or not the landform is **stable** include geotechnical stability, settlement and consolidation allowances, bearing capacity (trafficability), erosion resistance and geochemical stability with respect to seepage, **leachate** and related **contaminant** generation.

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 2002*, or at the relevant time holds a 'deemed registration' within the meaning of the *Mutual Recognition (Queensland) Act 1992*; and 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 demonstrated expertise in the geomechanics of **dams** with particular emphasis on stability, geology and geochemistry, and
- (c) a total of five years of demonstrated expertise in three of the following categories:
 - investigation and design of **dams**.
 - **construction**, operation and maintenance of **dams**.
 - hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology.
 - hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes.
 - hydrogeology with particular reference to seepage, groundwater.
 - solute transport processes and monitoring thereof.
 - **dam** safety.

µS/cm means micro siemens per centimetre.

void(s) means any constructed, open excavation in the ground.

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

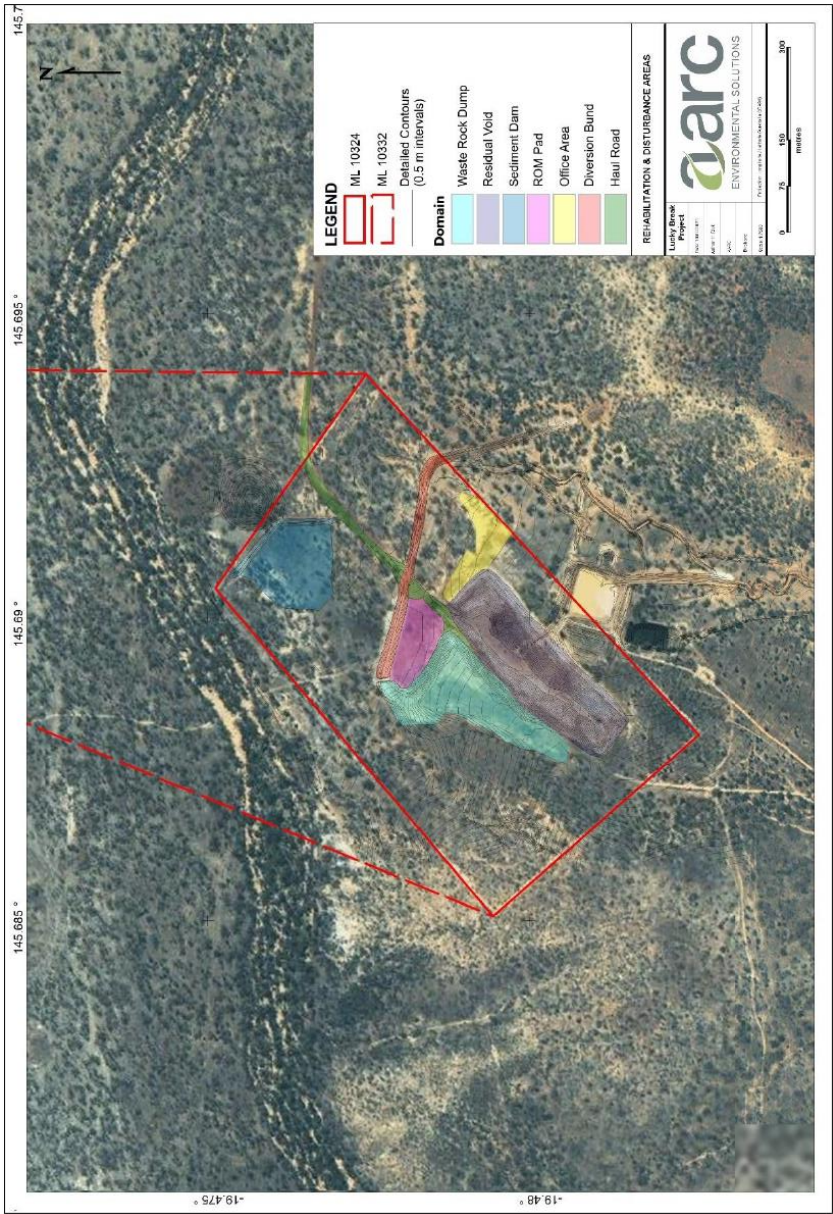
watercourse has the same meaning given in the Water Act 2000.

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

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

SCHEDULE I – MAPS

Appendix 1 - Map of mine site layout



Appendix 2 – Map of Mine Plan

