

Permit¹

Environmental Protection Act 1994

Environmental authority

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

Permit¹ number: EPML00564113

Environmental authority takes effect on 26-OCT-2015.

The anniversary date of this environmental authority remains 26 July. An annual return and the payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

Name	Registered address
David Oriel Industries Pty Ltd	20 Commerce Street WAUCHOPE NSW 2446

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
Mining - ML other metal ore - 19, Site Specific	ML20633

Additional information for applicants

Environmentally relevant activities

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

An environmental authority authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the authority 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 if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being,

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



contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.



Signature

Jodie Brackenbury
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

08 December 2015

Date

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Obligations under the *Environmental Protection Act 1994*

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

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

Conditions of environmental authority

Conditions of approval for this environmental authority are site-specific.

SCHEDULE OF CONDITIONS

This environmental authority incorporates the following Schedules:

<u>Schedule</u>	<u>Issue</u>	<u>Page</u>
Schedule A	- General	4
Schedule B	- Air	9
Schedule C	- Land & Rehabilitation	10
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SCHEDULE A – GENERAL

Activity

- A1 This environmental authority authorises environmental harm referred to in the conditions herein. Where a condition in this environmental authority refers to environmental harm the condition is taken to authorise the environmental harm occurring in compliance with the condition. 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 Contaminants must not be released to a nominated waterway of high preservation area as identified in the *Archer Basin Wild River Declaration 2009*.
- A3 In carrying out the mining activity the holder of this environmental authority must comply with Schedule A – Table 1 (Authorised Mining Activities).

 Schedule A - Table 1 (Authorised Mining Activities)

Mine Domain	Mine Feature	Tenure	Maximum Surface Area of Significant Disturbance (ha)
Mining area	Alluvial extraction	ML20633	76.00 (maximum 2.00 at any one time)
Processing area	Processing plant	ML20633	1.25
Stockpiles	Ore, reject, topsoil	ML20633	1.35
Transport corridors	Haul roads and tracks	ML20633	3.00

- A4 Access to the licensed place via land authorised for that purpose by the *Mineral Resources Act 1989* is subject to the conditions of this environmental authority.

Code of Environmental Compliance for Mining Lease Projects

- A5 All mining activities carried out at the licensed place must comply with each of the standard environmental conditions contained within the most recent version of the *Code of Environmental Compliance for Mining Lease Projects*.
- A6 Where a condition of this environmental authority refers to a matter addressed in the *Code of Environmental Compliance for Mining Lease Projects*, the condition of the environmental authority prevails.

Maintenance of Measures, Plant and Equipment

- A7 The holder of this environmental authority must:
- (a) install 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.
- A8 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 and Reporting

- A9 Any management or monitoring plans, systems, programs or reports required to be developed and implemented by a condition of this environmental authority must be reviewed for effectiveness in minimising the likelihood of environmental harm on an annual basis and amended immediately if required. The review must be documented and completed by an appropriately qualified person.
- A10 Monitoring records or reports required under this environmental authority must be maintained and be readily accessible at the licensed place for a period of not less than seven (7) years.
- A11 The holder of this environmental authority must upon request from the administering authority, supply monitoring records, plans and reports in the form and by the means requested by the administering authority within five (5) business days.
- A12 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 the manufacturer's specifications.
- A13 All analyses and tests required to be conducted under this environmental authority must be carried out by a laboratory that has NATA certification for such analyses and tests, except as otherwise authorised by the administering authority.

Access to Monitoring Locations

- A14 The holder of this environmental authority must make reasonable efforts to provide safe and all-weather access to all monitoring locations required under this environmental authority. This must include providing the necessary site infrastructure required to gain safe all-weather access to monitoring locations during reasonably foreseeable events. The holder of this environmental authority must also develop and implement contingency plans to facilitate sampling during extreme events where provision of site infrastructure is not practical.

Financial Assurance

- A15 The holder of this environmental authority must provide a financial assurance of an amount and in a form acceptable to the administering authority in accordance with the most recent edition of the administering authority's guideline for calculating financial assurance.
- A16 The amount of financial assurance may be reviewed by the administering authority at any time including when a Plan of Operations is amended or replaced, the environmental authority is amended, or new information is obtained from an audit or other sources.
- A17 The financial assurance must remain in force until the administering authority is satisfied no claim on the financial assurance will be made.

Emergency Response/Contingency

- A18 By no later than 1 August 2012 the holder of this environmental authority must develop and implement an emergency response/contingency plan to respond to emergency events and incidents.
- A19 The emergency response/contingency plan under condition A18 must address the following matters as a minimum:
- (a) response procedures to be implemented to prevent or minimise the risk of environmental harm arising from emergency events and incidents;
 - (b) response procedures to minimise the extent and duration of environmental harm caused by an emergency event or incident;
 - (c) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused by any emergency events and incidents;
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- (d) the resources to be used in response to an emergency event or incident;
- (e) procedures to investigate the cause of any emergency events and incidents and where necessary, implement remedial actions to reduce the likelihood of recurrence of similar emergency events and incidents;
- (f) the provision and availability of documented procedures to staff attending any emergency event or incident to enable them to effectively respond;
- (g) training of staff that will be called upon to respond to emergency events or incidents to enable them to effectively respond;
- (h) timely and accurate reporting of the circumstance and nature of emergency events or incidents to the administering authority in accordance with conditions of this environmental authority;
- (i) procedures for accessing monitoring points during emergency events or incidents; and
- (j) procedures to notify any potentially impacted stakeholder who may be affected by the emergency event or incident.

Notification of Incidents, Exceedences and Releases

- A20 The holder of this environmental authority must notify the administering authority by telephone and email as soon as practicable but within twenty-four (24) hours, after becoming aware of any incident, exceedence or release of contaminants not in accordance, or reasonably expected to be not in accordance, with the conditions of this environmental authority.
- A21 The notification in condition A20 must include, but not be limited to, the following:
- (a) the environmental authority number and name of the holder of this environmental authority;
 - (b) the name and telephone number of the designated contact person;
 - (c) the location of the incident, exceedence or release;
 - (d) the date and time of the incident, exceedence or release;
 - (e) the time the holder of this environmental authority became aware of the incident, exceedence or release;
 - (f) where known:
 - (i) the estimated quantity and type of substances involved in the incident, exceedence or release;
 - (ii) the actual or potential cause of the incident, exceedence or release;
 - (iii) a description of the nature and effects of the incident, exceedence or release including environmental risks, and any risks to public health or livestock;
 - (g) any sampling conducted or proposed, relevant to the incident, exceedence or release;
 - (h) immediate actions taken to prevent or mitigate any further environmental harm caused by the incident, exceedence or release; and
 - (i) what notification of stakeholders who may be affected by the incident, exceedence or release has occurred/is being undertaken.
- A22 The holder of this environmental authority must notify the occupiers or registered owners of affected land and any other potentially impacted stakeholder as soon as reasonably practicable after becoming aware of incident, exceedence or release that has the potential to impact on environmental values or breaches any condition of this environmental authority concerning releases of contaminants to the environment.
- A23 The notification in condition A22 must include the following:
- (a) the location of the incident, exceedence or release;
 - (b) the date and time of the incident, exceedence or release;
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- (c) the estimated quantity and type of any substances involved in the incident, exceedence or release;
 - (d) the potential impacts to environmental values caused by the incident, exceedence or release; and
 - (e) where there is potential impact on livestock or human health, precautionary measures that will be taken.
- A24 Within ten (10) business days following the initial notification of an incident, exceedence or release, further written advice must be provided to the administering authority, including the following:
- (a) results and interpretation by an appropriately qualified person of any samples taken and analysed;
 - (b) outcomes of actions taken at the time of the incident, release or exceedence to prevent or minimise unlawful environmental harm; and
 - (c) proposed actions to prevent a recurrence of the incident, exceedence or release.
- A25 As soon as practicable, but not more than ten (10) business days following the conduct of any environmental monitoring performed in relation to the incident, exceedence or release, which results in the release of contaminants not in accordance with, or reasonably expected to be not in accordance with the conditions of this environmental authority, written advice must be provided to the administering authority detailing the results and interpretation by an appropriately qualified person of any such monitoring performed.

Complaints

- A26 The holder of this environmental authority must record all complaints received about the mining activity including the following details:
- (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.
- A27 When requested by the administering authority, the holder of this environmental authority must undertake relevant specified monitoring within a timeframe nominated 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 implemented must be provided to the administering authority within ten (10) business days of completion of the investigation, or no later than ten (10) business days after the end of the timeframe nominated by the administering authority to undertake the investigation.

Exploration

- A28 All exploration activities carried out at the licensed place 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*.
- A29 Where a condition of this environmental authority refers to a matter addressed in the *Code of Environmental Compliance for Exploration and Mineral Development Projects*, the conditions of this environmental authority prevails.
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Transition to New Standards

- A30 Where a condition of this environmental authority requires compliance with a standard, guideline or relevant legislation published externally to this environmental authority and the standard, guideline or relevant legislation is amended or changed subsequent to the issues of this environmental authority the holder of this environmental authority, unless otherwise agreed to by the administering authority, must:
- (a) comply with the amended or changed standard, guideline or relevant legislation within twelve (12) months of the amendment or change being made, unless a different period is specified in the amended standard, guideline or relevant legislation; and
 - (b) continue to remain in compliance with the previous standard, guideline or relevant legislation until compliance with the amended or changed standard or guideline is achieved.

Regard for Comment

- A31 Where comments are provided by the administering authority with respect to any plans, systems or programs, required to be developed by a condition of this environmental authority, then the holder of this environmental authority must have due regard for these comments and incorporate these comments into the plans, systems or programs.

END OF CONDITIONS FOR SCHEDULE A

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 activity must not cause environmental harm.

Transport of Bulk Material

- B2 The holder of this environmental authority must ensure that vehicles used for transporting bulk materials on or from the licensed place, have appropriate load preparation to prevent the spillage and/or loss of particulate matter and/or windblown dust during transport.

Environmental Nuisance

- B3 In the event of a complaint made to the administering authority (which in the opinion of an authorised officer is considered neither frivolous nor vexatious) about airborne contaminants generated in carrying out the mining activities, dust and particulate matter must not exceed any 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);
- (b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM₁₀) suspended in the atmosphere of 50 micrograms per cubic metre over a twenty-four (24) hour averaging time*, when monitored in accordance with the most recent version of Australian Standard AS3580.9.6 *Determination of suspended particulate matter – PM (sub) 10 high volume sampler with size-selective inlet – Gravimetric method*; and

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

- (c) a concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a one (1) year averaging time, when monitored in accordance with any method for measuring TSP as recommended in the most recent version of Australian Standard AS/NZS3580.9.3:2003 *Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method*.

- B4 If monitoring indicates the levels in condition B3 have been exceeded as a result of a mining activity, then the holder of this environmental authority must promptly implement dust abatement measures so that dust emissions generated by mining activities no longer exceed the levels specified in condition B3.

Air Quality Monitoring Requirements

- B5 Samples taken for air quality monitoring specified in this environmental authority must be collected and analysed in accordance with the requirements of the administering authority's latest edition of the *Air Quality Sampling Manual*, or more recent editions or supplements to that document as are published by the administering authority, unless otherwise agreed by the administering authority in writing.

END OF CONDITIONS FOR SCHEDULE B

SCHEDULE C – LAND & REHABILITATION

General

- C1 Unless authorised by this environmental authority, contaminants that will or may cause environmental harm must not be directly or indirectly released to land.
- C2 Any spillage of wastes, contaminants or other materials must be cleaned up promptly. Such spillages must be cleaned up using dry methods that minimise the impact of the release of wastes, contaminants or materials to land.

Rehabilitation Objectives

- C3 Land disturbed by the mining activity must be rehabilitated in accordance with Schedule C - Table 1 (Rehabilitation Requirements).

Schedule C - Table 1 (Rehabilitation Requirements)

Mine Domain & Tenure	Mine Feature	Rehabilitation Goal	Rehabilitation Objectives ²	Indicators	Completion Criteria
Mining area	Alluvial extraction	All land subject to the mining activity must be rehabilitated to meet the requirements of the administering authority's Guideline - Rehabilitation requirements for Mining Projects and will be defined in the Post Mine Land Use Plan	TBD ¹	TBD ¹	TBD ¹
Processing area	Processing plant area		TBD ¹	TBD ¹	TBD ¹
Stockpiles	Transfer and fines		TBD ¹	TBD ¹	TBD ¹
Transport corridors	Haul roads and tracks		TBD ¹	TBD ¹	TBD ¹

1. Post mine land use, rehabilitation indicators and completion criteria are to be nominated in accordance with condition (C11).
 2. Table 2 of the Land Suitability Techniques – Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

- C4 Rehabilitation must commence progressively as areas become available and in accordance with the Plan of Operations.

Topsoil

- C5 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.
- C6 Topsoil and subsoil stockpiles must be managed to ensure stability and minimise the release of contaminants. Measures must include:
- (a) vegetating stockpiles;
 - (b) minimising the height of stockpiles; and
 - (c) re-using stockpiles as soon as possible.

Post Mine Land Use Plan

- C7 By no later than 1 August 2012, the holder of this environmental authority 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 Schedule C - Table 1 (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) drainage design;
- (b) erosion controls;
- (c) description of experimental design for monitoring of analogue and rehabilitated areas inclusive of statistical design;
- (d) proposed revegetation methods inclusive of plant species selection, re-profiling, respreading soil, soil ameliorants/amendments, surface preparation and method of propagation; and
- (e) a rehabilitation monitoring program.

Rehabilitation Monitoring Program

- C8 A rehabilitation monitoring program must be implemented by an appropriately qualified person upon commencement of rehabilitation identified in Schedule C – Table 1 (Rehabilitation Requirements).
- C9 The holder of this environmental authority must conduct rehabilitation monitoring in accordance with the program developed in condition C8 at least once a year including sufficient spatial and temporal replication to enable scientifically justifiable conclusions to be made, as established in the rehabilitation monitoring program.
- C10 Verification of rehabilitation success is to be carried out for each domain. Monitoring must be carried out for each domain at a minimum sampling intensity of 1:15,000 and must include sufficient replication to enable statistical analysis of results at an acceptable power as established in the rehabilitation monitoring program.

Infrastructure

- C11 All buildings, structures, mining equipment and plant erected and/or used for the mining activity must be removed from the licensed place prior to surrender, except where agreed to in writing by the administering authority and the landowner.

Chemicals and Flammable or Combustible Liquids

- C12 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.
 - C13 Notwithstanding the requirements of any applicable Australian Standard, any liquids stored on the licensed place that have the potential to cause environmental harm must be stored in and serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land.
 - C14 Where no relevant Australian Standard is available, the following must be applied:
 - (a) storage tanks must be bunded such that the capacity and construction of the bund is sufficient to contain at least 110% of a single storage tank or 110% of the largest storage tank plus 10% of the second largest storage tank in multiple storage areas; and
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- (b) drum storages must be ~~bunded~~ such that the capacity and construction of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.

C15 All containment systems must be designed to minimise rainfall collection within the system.

Contaminated Land

C16 Prior to making an application for surrender or approval for progressive rehabilitation the holder of this environmental authority must undertake a contaminated land assessment/investigation of the relevant areas of the licensed place in accordance with the administering authority's *Guideline for the Assessment & Management of Contaminated Land in Queensland*.

Disturbance to Land

C17 The holder of this environmental authority must conduct a field assessment of flora and fauna prior to the commencement of vegetation clearing.

C18 When carrying out the mining activity the holder of this environmental authority must:

- (a) avoid, minimise or mitigate (in order of preference) any impacts on areas of sensitive vegetation or other areas of ecological value;
- (b) minimise the risk of injury, harm, or entrapment to wildlife and stock;
- (c) minimise disturbance to land that may otherwise result in land degradation;
- (d) prior to carrying out any disturbance activities, make all relevant staff, contractors or agents carrying out those activities, aware of the location of any Category A, B or C Environmentally Sensitive Area (ESA) and the relevant requirements of this environmental authority;
- (e) if significant disturbance to land is unavoidable, the holder of this environmental authority must clear native vegetation in a way which minimises fragmentation; and
- (f) manage cleared native vegetation so that it is stockpiled in a manner that facilitates salvage or respreading and does not impede vehicle, stock or wildlife movements.

C19 A qualified spotter/catcher is to be engaged to work ahead of site clearing works at the commencement of vegetation clearing to ensure the protection of species that may be of conservation significance.

Note: This environmental authority does not authorise the taking of protected animals or the tampering with an animal breeding place that is being used by a protected animal to incubate or rear the animal's offspring.

C20 In the event of identification of rare or threatened species on the licensed place, a diagrammatic representation of the species occurrence relative to the mining activity together with a management and monitoring strategy for species conservation must be prepared to the satisfaction of the administering authority and submitted with the Plan of Operations.

Biodiversity Offsets Policy

C21 An assessment must be undertaken to identify the presence of any potential state significant biodiversity values as identified by the *Queensland Biodiversity Offset Policy*. The assessment report must be provided to the administering authority at least two (2) months prior to the commencement of any mining activity.

C22 If the assessment required by condition C21 shows that mining activities are found to potentially impact on a state significant biodiversity value, the holder of this environmental authority must demonstrate to the administering authority that it has met the requirements of the *Queensland Biodiversity Offset Policy* through provision of a site specific Biodiversity Offset Strategy.

- C23 The Biodiversity Offset Strategy must include at a minimum:
- (a) demonstration that the mining activity has avoided or minimised impacts to state significant biodiversity values;
 - (b) where impacts cannot be avoided, a detailed description and mapping of the surveyed locations of the state significant biodiversity values at the licensed place;
 - (c) a flora and fauna assessment of the affected area to determine if the operations will directly impact on any state significant biodiversity values detailed in Appendix 1 of the *Queensland Biodiversity Offset Policy*;
 - (d) the proposed offset delivery mechanism; and
 - (e) an ecological equivalence assessment where required by the *Queensland Biodiversity Offset Policy*.
- C24 Impacts on state significant biodiversity values must not occur until the holder of this environmental authority has in accordance with the *Queensland Biodiversity Offset Policy*:
- (a) provided a legally secured offset; or
 - (b) entered into a Deed of Agreement (Offset Transfer) with the administering authority; or
 - (c) provided an offset payment.

END OF CONDITIONS FOR SCHEDULE C

SCHEDULE D – NOISE

General

- D1 Noise from the mining activity must not cause environmental harm at any sensitive place or commercial place.
- D2 In the event of a complaint made to the administering authority (which is neither frivolous or vexatious) about noise generated in carrying out the licensed activity and the noise is considered by the administering authority to be an unreasonable noise, the holder of this environmental authority must take action to ensure that it is no longer an unreasonable noise.

Noise Monitoring

- D3 When requested by the administering authority, noise monitoring and recording must be undertaken within a timeframe nominated by the administering authority to investigate any complaint of environmental nuisance at any sensitive place or commercial place, and the results must be provided to the administering authority within ten (10) business days following completion of monitoring.
- D4 Noise monitoring and recording must include the following descriptor characteristics and matters:
- (a) $L_{AN,T}$ (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins);
 - (b) Background noise L_{A90} ;
 - (c) The level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;
 - (d) Atmospheric conditions including temperature, relative humidity and wind speed and directions;
 - (e) Effects due to any extraneous factors such as traffic noise;
 - (f) Location, date and time of monitoring;
 - (g) If the complaint concerns low frequency noise, $Max L_{DUN,T}$; and
 - (h) If the complaint concerns low frequency noise, one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range.
- D5 The method of measurement and reporting of noise levels must comply with the most recent edition of the administering authority's Noise Measurement Manual or the most recent version of Australian Standard AS1055.1 *Acoustics – Description and measurement of environmental noise*.

END OF CONDITIONS FOR SCHEDULE D

SCHEDULE E – WATER

General

- E1 Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters.
- E2 The maintenance and cleaning of vehicles and any other equipment or plant must not be carried out in areas from which contaminants can be released into any waters, roadside gutter or stormwater drainage system.
- E3 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.
- E4 Reference site monitoring data used to establish trigger levels and contaminant limits specified in Schedule E of this environmental authority, and the relevant trigger levels and contaminant limits must be provided to the administering authority no later than ten (10) business days after the data becomes available.
- E5 By 1 June each year the holder of this environmental authority must provide the administering authority an update of monitoring data and associated trigger levels and contaminant limits specified in Schedule E of this environmental authority, incorporating monitoring data obtained during the previous twelve (12) months.
- E6 All determinations of water quality/sample analysis required under a condition of this environmental authority must be:
- (a) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements;
 - (b) made in accordance with methods prescribed in the latest edition of the administering authority's *Monitoring and Sampling Manual*;
 - (c) carried out on representative samples;
 - (d) collected from the monitoring locations identified in this environmental authority, within two (2) hours of each other where possible; and
 - (e) for laboratory determinations, carried out in a laboratory accredited (e.g. NATA) for the method of analysis being used.
- E7 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 when requested:
- (a) the date and time when the sample was taken;
 - (b) the monitoring point where the sample was taken;
 - (c) the results of all monitoring and details of any exceedences with the conditions of this environmental authority; and
 - (d) all water quality monitoring data.

Onsite Water Storages

- E8 Water storages stated in Schedule E - Table 1 (Onsite Water Storage Monitoring Locations) must be monitored for the water quality characteristics specified in Schedule E - Table 2 (Onsite Water Storage Contaminant Limits) at the monitoring locations and at the monitoring frequency specified in Schedule E - Table 1 (Onsite Water Storage Monitoring Locations).

Schedule E - Table 1 (Onsite Water Storage Monitoring Locations)

Water Storage Description	Northing (GDA94)	Easting (GDA94)	Monitoring Location	Frequency of Monitoring
Settling dam 1	TBA ¹	TBA ¹	TBA ¹	Quarterly
Settling dam 2	TBA ¹	TBA ¹	TBA ¹	Quarterly

¹ Detail to be provided to the administering authority prior to issue of the Environmental Authority.

- E9 In the event that waters storages defined in Schedule E - Table 1 (Onsite Water Storage Monitoring Locations) exceed the contaminant limits defined in Schedule E - Table 2 (Onsite Water Storage Contaminant Limits) the holder of this environmental authority must implement measures to prevent access to waters by all livestock and minimise access by native fauna.

 **Schedule E - Table 2 (Onsite Water Storage Contaminant Limits)**

Quality Characteristic	Test Value	Contaminant Limit
pH (pH unit)	Range	4.0 (minimum) 9.0 (maximum) ²
EC (µS/cm)	Maximum	5970 ¹
Sulphate (mg/L)	Maximum	1000 ¹
Arsenic (mg/L)	Maximum	0.5 ¹
Cadmium (mg/L)	Maximum	0.01 ¹
Copper (mg/L)	Maximum	1 ¹
Lead (mg/L)	Maximum	0.1 ¹
Mercury (mg/L)	Maximum	0.002 ¹
Nickel (mg/L)	Maximum	1 ¹
Zinc (mg/L)	Maximum	20 ¹

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

² Page 4.2-15 of ANZECC (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4-9".

Note: All metals and metalloids must be measured as total (unfiltered).

Receiving Waters Monitoring

- E10 Receiving waters must be monitored at the locations specified in Schedule E - Table 3 (Receiving Water Reference Sites and Downstream Monitoring Points) and identified on Schedule G - Figure 1 (Surface Water Monitoring Locations) for each quality characteristic and at the frequency stated in Schedule E - Table 4 (Receiving Waters Contaminant Limits) and Schedule E - Table 5 (Receiving Waters Contaminant Trigger Levels).

Schedule E - Table 3 (Receiving Water Reference Sites and Downstream Monitoring Points)

Monitoring Location	Receiving Waters Location	Latitude	Longitude
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	Description		
Reference Sites¹			
Monitoring Point WS1A	Tin Creek on western boundary of ML20633	-13.364503°	142.984458°
Downstream Monitoring Points			
Monitoring Point WS2A	Downstream from Dam and within Tin gully	-13.362843°	142.987709°
Monitoring Point WS3A	Upstream from dam and on track intersection, within Tin Gully	-13.365421°	142.996069°
Monitoring Point WS4A	Overland flow from plant site	-13.366408°	142.993131°
Monitoring Point WS5A	Tin gully	-13.370797°	142.003236°

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

- E11 The release of contaminants must not result in an ~~exceedance~~ of the receiving waters contaminant limits stated in Schedule E - Table 4 (Receiving Waters Contaminant Limits).
- E12 If the quality characteristics of receiving waters at the downstream monitoring points exceed any of the trigger levels specified in Schedule E - Table 5 (Receiving Waters Contaminant Trigger 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 result 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 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 part (b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

Schedule E - Table 4 (Receiving Waters Contaminant Limits)

Quality Characteristic ¹	Contaminant Limit			Monitoring Frequency
	Initial	Interim	Final	
Hardness (CaCO ₃)	For interpretation purposes			Monthly
pH (pH units)	6.0 (minimum) 9.0 (maximum)			
Electrical conductivity (µS/cm)	1000 ⁵ or reference ^{2,3,4} , whichever is lower	1000 ⁵ or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is lower	1000 ⁵ or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is lower	
Total Suspended Solids (mg/L)	Reference ^{2,3,4}	95 th percentile ^{9,10} of reference ^{2,3,5}	95 th percentile ^{9,10} of reference ^{2,3,6}	
Turbidity	Reference ^{2,3,4}	95 th percentile ^{9,10} of reference ^{2,3,5}	95 th percentile ^{9,10} of reference ^{2,3,6}	
Oils and greases	No visible film			
Arsenic (mg/L)	0.5 ^{1,7} or reference ^{2,3,4} , whichever is lower	0.5 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is lower	0.5 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is lower	
Cadmium(mg/L)	0.01 ^{1,7} or reference ^{2,3,4} , whichever is lower	0.01 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is lower	0.01 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is lower	
Copper (mg/L)	1 ^{1,7} or reference ^{2,3,4} , whichever is lower	1 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is lower	1 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is lower	
Iron (mg/L)	Reference ^{2,3,4}	95 th percentile ^{9,10} of reference ^{2,3,5}	95 th percentile ^{9,10} of reference ^{2,3,6}	
Lead (mg/L)	0.1 ^{1,7} or reference ^{2,3,4} , whichever is lower	0.1 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is lower	0.1 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is lower	
Mercury (mg/L)	0.002 ^{1,7} or reference ^{2,3,4} , whichever is lower	0.002 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is lower	0.002 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is lower	
Nickel (mg/L)	1 ^{1,7} or reference ^{2,3,4} , whichever is lower	1 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is lower	1 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is lower	
Tin (mg/L)	Reference ^{2,3,4}	95 th percentile ^{9,10} of reference ^{2,3,5}	95 th percentile ^{9,10} of reference ^{2,3,6}	

Quality Characteristic ¹	Contaminant Limit			Monitoring Frequency
	Initial	Interim	Final	
Zinc (mg/L)	20 ^{1,7} or reference ^{2,3,4} , whichever is lower	20 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is lower	20 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is lower	

1. All metals and metalloids must be measured as total (unfiltered) concentrations.
 2. Reference sites as specified in Schedule E – Table 3 (Receiving Water and Stream Sediment Reference Sites and Downstream Monitoring Points).
 3. Trigger level must be based on reference samples taken during the same sampling event.
 4. The initial trigger level is based on a single sampling event and is the reference value obtained at the time of a release and applies until sufficient data is acquired to develop interim trigger levels.
 5. The interim contaminant trigger levels are based on the results of between 8 and 17 consecutive samples (calculated in accordance with ANZECC 2000) and apply until sufficient data is acquired to develop final trigger levels.
 6. The final trigger level is based on twenty four (24) consecutive samples (calculated in accordance with ANZECC 2000 (18 at a minimum)).
 7. For protection of stock drinking water, based on ANZECC 2000 stock watering guidelines.
 8. Based on information resulting from review of water quality in the Fitzroy Basin.
 9. 95th percentiles are calculated using ANZECC 2000 methodology.
 10. Based on results from the Receiving Environment Monitoring Program.
- NOTES
- (a) All dissolved (filtered) samples must be obtained from field filtered grab samples.

Schedule E - Table 5 (Receiving Waters Contaminant Trigger Levels)

Quality Characteristic ¹	Trigger Level			Monitoring Frequency
	Initial	Interim	Final	
Hardness (CaCO ₃)	For interpretation purposes			Monthly
pH (pH units)	6.5 ¹² (minimum) 7.5 ¹² (maximum)			
Electrical conductivity (µS/cm)	125 ⁵ or reference ^{2,3,4} , whichever is higher	125 ⁵ or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	125 ⁵ or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is higher	
Total Suspended Solids (mg/L)	Reference ^{2,3,4}	80 th percentile ^{9,10} of reference ^{2,3}	80 th percentile ^{9,10} of reference ^{2,3,6}	
Turbidity	15 ¹³ or reference ^{2,3,4} , whichever is higher	15 ¹³ or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	15 ¹³ or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is higher	

Quality Characteristic ¹	Trigger Level			Monitoring Frequency
	Initial	Interim	Final	
Oils and greases	No visible film			
Arsenic ¹¹ (mg/L)	0.013 ^{1,7} or reference ^{2,3,4} , whichever is higher	0.013 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	0.013 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is higher	
Cadmium (mg/L)	0.0002 ^{1,7} or reference ^{2,3,4} , whichever is higher	0.0002 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	0.0002 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is higher	
Copper (mg/L)	0.0014 ^{1,7} or reference ^{2,3,4} , whichever is higher	0.0014 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	0.0014 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is higher	
Iron (mg/L)	Reference ^{2,3,4}	80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	80 th percentile ^{9,10} of reference ^{2,3,6}	
Lead (mg/L)	0.0034 ^{1,7} or reference ^{2,3,4} , whichever is higher	0.0034 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	0.0034 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is higher	
Mercury (mg/L)	0.0006 ^{1,7} or reference ^{2,3,4} , whichever is higher	0.0006 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	0.0006 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is higher	
Nickel (mg/L)	0.011 ^{1,7} or reference ^{2,3,4} , whichever is higher	0.011 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	0.011 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is higher	
Tin (mg/L)	Reference ^{2,3,4}	80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	80 th percentile ^{9,10} of reference ^{2,3,6}	
Zinc (mg/L)	0.008 ^{1,7} or reference ^{2,3,4} , whichever is higher	0.008 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,5} , whichever is higher	0.008 ^{1,7} or 80 th percentile ^{9,10} of reference ^{2,3,6} , whichever is higher	

1. All metals and metalloids must be measured as dissolved (filtered) concentrations.

2. Reference sites as specified in Schedule E – Table 3 (Receiving Water and Stream Sediment Reference Sites and Downstream Monitoring Points).

3. Trigger level must be based on reference samples taken during the same sampling event.
4. The initial trigger level is based on a single sampling event and is the reference value obtained at the time of a release and applies until sufficient data is acquired to develop interim trigger levels.
5. The interim contaminant trigger levels are based on the results of between 8 and 17 consecutive samples (calculated in accordance with ANZECC 2000) and apply until sufficient data is acquired to develop final trigger levels.
6. The final trigger level is based on twenty four (24) consecutive samples (calculated in accordance with ANZECC 2000 (18 at a minimum)).
7. For aquatic ecosystem protection, based on ANZECC 2000, Table 3.4.1, 95% ecosystem protection.
8. For aquatic ecosystem protection, Table G. 4, Cape York zone of the Queensland Water Quality Guidelines, 2009.
9. 80th percentiles are calculated using ANZECC 2000 methodology (section 7.4.4.1).
10. Based on results from the Receiving Environment Monitoring Program.
11. Speciated arsenic concentrations for As (III) and As (V) only required if 0.013 mg/L is exceeded - note that the sample bottle requirements for As (total species) and As (speciated) may differ.
12. Trigger value based on ANZECC 2000, Table 3.3.4, Upland River.
13. Trigger value based on ANZECC 2000, Table 3.3.5, Upland River

NOTES

- (b) All dissolved (filtered) samples must be obtained from field filtered grab samples.

Stream Sediment Monitoring

- E13 Sediment quality of receiving waters and reference waters must be monitored twice a year (once at the end of the wet season and once at the end of the dry season) at the monitoring locations defined in Schedule E - Table 3 (Receiving Water Reference Sites and Downstream Monitoring Points) and identified on Schedule G - Plan 1 (Surface Water Monitoring Locations) and for the parameters defined in Schedule E - Table 6 (Stream Sediment Contaminant Trigger Levels and Contaminant Limits).
- E14 The release of contaminants must not result in an ~~exceedance~~ of the sediment contaminant limits stated in Schedule E - Table 6 (Stream Sediment Contaminant Trigger Levels and Contaminant Limits).

Schedule E - Table 6 (Stream Sediment Contaminant Trigger Levels and Contaminant Limits)

Parameter	Unit	Trigger Level	Contaminant Limit
Arsenic	mg/kg	Reference value ^{1,4,5} or 20 ² , whichever is higher	70 ³ or 2 times the reference value ^{1,4,5} , whichever is higher
Cadmium	mg/kg	Reference value ^{1,4,5} or 1.5 ³ , whichever is higher	10 ³ or 2 times the reference value ^{1,4,5} , whichever is higher
Copper	mg/kg	Reference value ^{1,4,5} or 65 ² , whichever is higher	270 ³ or 2 times the reference value ^{1,4,5} , whichever is higher
Iron	mg/kg	Reference value ^{1,4,5}	2 times the reference value ^{1,4,5}
Lead	mg/kg	Reference value ^{1,4,5} or 50 ² , whichever is higher	220 ³ or 2 times the reference value ^{1,4,5} , whichever is higher
Mercury	mg/kg	Reference value ^{1,4,5} or 0.15 ² , whichever is higher	1 ³ or 2 times the reference value ^{1,4,5} , whichever is higher
Nickel	mg/kg	Reference value ^{1,4,5} or 21 ² , whichever is higher	52 ³ or 2 times the reference value ^{1,4,5} , whichever is higher
Tin	mg/kg	Reference value ^{1,4,5}	2 times the reference value ^{1,4,5}
Zinc	mg/kg	Reference value ^{1,4,5} or 200 ² , whichever is higher	410 ³ or 2 times the reference value ^{1,4,5} , whichever is higher

- 1 Reference sites are defined in Table H6 - Receiving Water Reference Sites and Downstream Monitoring Points.
 2 ANZECC (2000) Interim Sediment Quality Guidelines – low values based on total sediments.
 3 ANZECC (2000) Interim Sediment Quality Guidelines – high values based on total sediments.
 4 An interim trigger value can be derived from ≥ 8 but ≤ 17 consecutive reference site samples, derived using administering authority (2006) methodology (section 3.4.3.1).
- Note: Sediment particle size distribution must be provided for interpretation purposes

- E15 If the quality characteristics of sediments exceed any of the trigger levels specified in Schedule E – Table 6 (Stream Sediment Contaminant Trigger Levels and Contaminant Limits), the holder of this environmental authority must compare the results of the downstream site to the data from reference monitoring sites and:
- (a) if the level of contaminants at the downstream site does not exceed the reference monitoring site data, then no action is to be taken; or
 - (b) if the level of contaminants at the downstream site is greater than the reference monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ (2000) methodology, into the potential for environmental harm and provide a written report to the administering authority within three (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 part (b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.

- E16 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.

Reporting Annual Water Quality Monitoring

- E17 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 results of all monitoring and details of any exceedances with the conditions of this environmental authority; and
 - (e) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

Water Management Plan

- E18 A water management plan must be developed and implemented before 1 October 2012 that provides for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity and to ensure compliance with the conditions of this environmental authority.
- E19 The water management plan must be developed in accordance with the most recent edition of the administering authority's *Preparation of Water Management Plans for Mining Activities* and must include at least the following components:
- (a) contaminant source study;
 - (b) site water balance;
 - (c) water management system;
 - (d) saline drainage prevention and management measures;
 - (e) acid rock drainage prevention and management measures;
 - (f) emergency and contingency planning; and
 - (g) monitoring and review.
- E20 The holder of this environmental authority must undertake a review of the water management plan before 1 November each year and a further review before 1 May the following year to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with the conditions of this environmental authority and that environmental harm is prevented or minimised.
- E21 A copy of the water management plan and/or a review of the water management plan must be provided to the administering authority on request.

Erosion and Sediment Control

- E22 An erosion and sediment control plan must be developed by an appropriately qualified person before 1 October 2012 and implemented for all stages of mining activities on the mining lease(s) to prevent or minimise erosion and the release of sediment to receiving waters and the contamination of stormwater.
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- E23 The erosion and sediment control plan must provide for at least the following stormwater management functions:
- (a) prevent or minimise the contamination of stormwater;
 - (b) diverting uncontaminated stormwater run-off around areas disturbed by mining activities or where contaminants or wastes are stored or handled;
 - (c) contaminated stormwater runoff, incident rainfall and leachate is collected; and treated, reused, or released in accordance with the conditions of this environmental authority;
 - (d) roofing or minimising the size of areas where contaminants or wastes are stored or handled;
 - (e) using alternate materials and or processes (such as dry absorbents) to clean up spills that will minimise the generation of contaminated waters;
 - (f) erosion and sediment control structures are placed to minimise erosion of disturbed areas and prevent the contamination of any waters;
 - (g) procedures to ensure that erosion and sediment control structures are maintained and adequate storage is available in sediment dams in accordance with design criteria; and
 - (h) training of staff that will be responsible for maintenance and operations of sediment and erosion control structures.
- E24 A copy of the erosion and sediment control plan and/or a review of the erosion and sediment control plan must be provided to the administering authority on request.
- E25 Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment and contamination of storm water.

END OF CONDITIONS FOR SCHEDULE E

SCHEDULE F – DEFINITIONS/ACRONYMS

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

“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 rock drainage (ARD)” means any contaminated release 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 the mining activity.

“administering authority” means the Department of Environment and Heritage Protection (formally Department of Environment and Resource Management) or its successor.

“affected land” means land on which an event has caused or threatens serious or material environmental harm.

“ANZECC 2000” means Australian and New Zealand Environment Conservation Council Marine and Freshwater Quality Guidelines.

“appropriately qualified person” means a person who has professional qualifications, training, skills and 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.

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

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

“CFU” means colony forming units.

“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.

“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.

"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.

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

"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*.

"flow event" means a surface water flow in a drainage feature or watercourse that occurs as a result of rainfall.

"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.

"holder of this environmental authority" means any person who is the holder of, or is acting under, that environmental authority.

"infrastructure" means water storage dams, roads and tracks, buildings and other structures built for the purpose and duration of the conduct of the environmentally relevant activities, but does not include other facilities required for the long term management of the impact of those activities or the protection of potential resources. Such other facilities include dams other than water storage dams, waste dumps, voids, or stockpiles and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of land.

"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.

"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 Pannikin Project carried out at the mining tenements detailed on page 1 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.

"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 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:

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

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

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

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

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

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

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

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

“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.

“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 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.

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

“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 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 centre or hospital; or
- (e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area; or
- (f) a public park or gardens.

“significant disturbance” – includes land;

- (a) if it is contaminated land; or
- (b) it has been disturbed and human intervention is needed to rehabilitate it;
 - (i) to a state required under the relevant environmental authority; or
 - (ii) if the environmental authority does not require the land to be rehabilitated to a particular state – to its state immediately before the disturbance.

Some examples of disturbed land include:

- (a) areas where soil has been compacted, removed, covered, exposed or stockpiled;
- (b) areas where vegetation has been removed or destroyed to an extent where the land has been made susceptible to erosion; (vegetation and topsoil)
- (c) areas where land use suitability or capability has been diminished;
- (d) areas within a watercourse, waterway, wetland or lake where the mining activity occur;
- (e) areas submerged by tailings or hazardous contaminant storage and dam/structure walls in all cases;
- (f) areas under temporary infrastructure. Temporary infrastructure includes 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 have ceased; or
- (g) areas where land has been contaminated and a suitability statement has not been issued.

However, the following areas are not included:

- (a) areas off lease (e.g. roads or tracks which provide access to the mining lease);
 - (b) areas previously significantly disturbed which have achieved the rehabilitation outcomes;
 - (c) by agreement with the administering authority, areas previously significantly disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);
 - (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. The agreement to leave permanent infrastructure must be recorded in the Landowner Agreement and lodged with the administering authority;
 - (e) disturbances that pre-existed the grant of the tenure unless those areas are disturbed during the term of the tenure.
-

"spotter/catcher" services are a common requirement for most infrastructure and development projects across Queensland, where native vegetation is proposed to be cleared. The objective is to provide wildlife preservation efforts for significant species and general biodiversity during the disturbance of habitats associated with vegetation clearing. In order to achieve this it is imperative that Spotter Catchers are proficient in the handling of all wildlife species, understand the ecology of resident fauna and introduce a methodology that significantly limits interruption to machinery operators and fauna during the vegetation clearing process.

"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.

"µS/cm" means micro siemens per centimetre.

"void" means any constructed, open excavation in the ground.

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

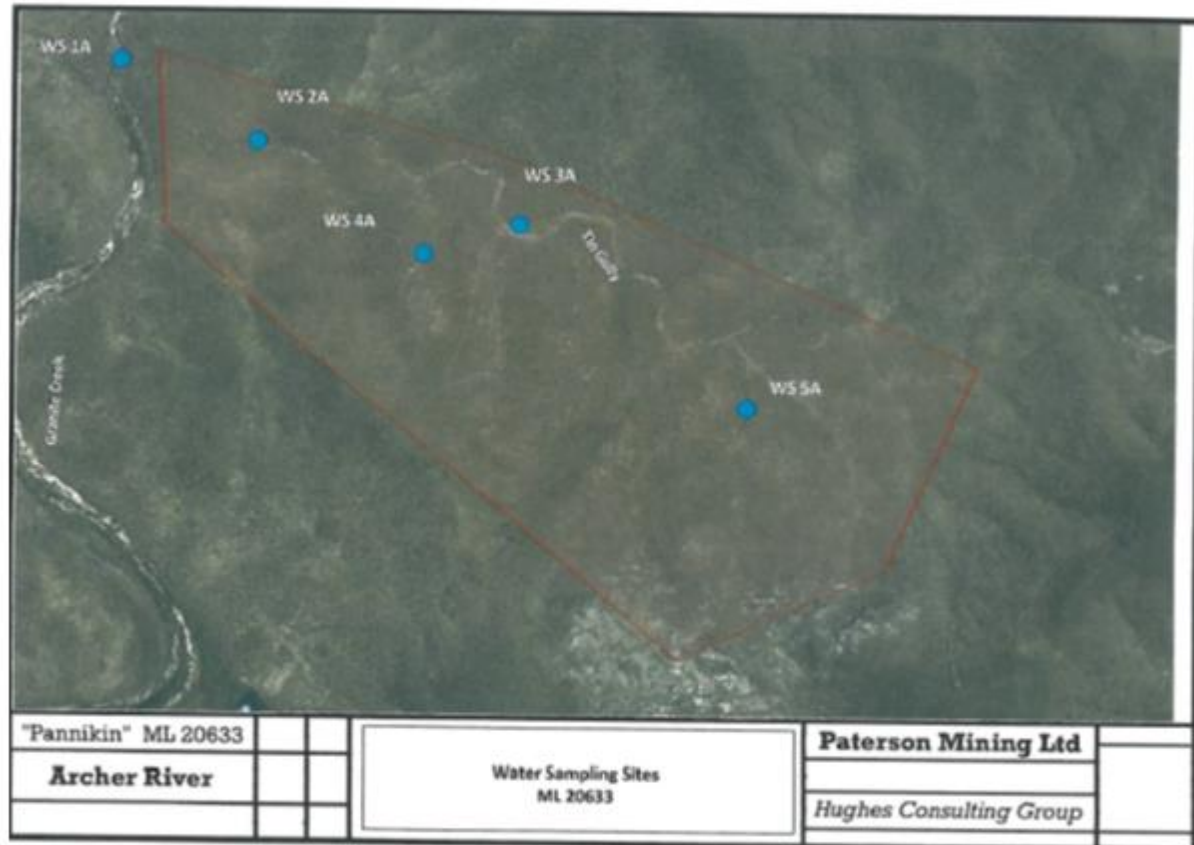
"watercourse" has the same meaning given in the *Water Act 2000*.

"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.

END OF DEFINITIONS FOR SCHEDULE G

SCHEDULE G – FIGURES

Schedule G - Plan 1 (Surface Water Monitoring Locations)



END OF SCHEDULE G

END OF ENVIRONMENTAL AUTHORITY