

Permit

Environmental Protection Act 1994

Environmental authority EPML01611813

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

Environmental authority number: EPML01611813

Environmental authority takes effect 28 February 2017.

The anniversary date of this environmental authority is 1 May. An annual return and the payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

Name(s)	Registered address
Volga Elderberry Pty Ltd	C/- Malachite Resources Ltd Suite 2, Level 10, 8-10 Loftus Street SYDNEY NSW 2000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Mining - ML gold ore - 16, Site Specific	ML7147
31-(2a) Mineral processing 1,000-100,000t/yr	ML90192
	ML90193
	ML90194
	ML90195
	ML90196

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

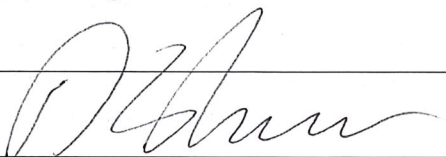
Please note that, in accordance with section 200 of the EP Act, an EA has effect:

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

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Sustainable Planning Act 2009* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

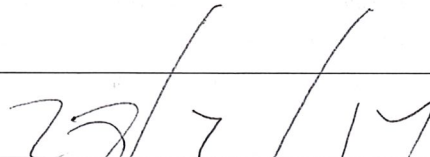
If this EA takes effect when the additional authorisation takes effect, you must provide the administering authority written notice within 5 business days of receiving notification of the related additional authorisation taking effect.

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



Signature

Dean Sharpe
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994



Date

Enquiries:
Minerals Business Centre
PO Box 7230, Cairns QLD 4870
Phone: (07) 4222 5334
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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)

Other permits required

This permit only provides an approval under the *Environmental Protection Act 1994*. In order to lawfully operate you may also require permits / approvals from your local government authority, other business units within the department and other State Government agencies prior to commencing any activity at the site. For example, this may include permits / approvals with your local Council (for planning approval), the Department of Transport and Main Roads (to access state controlled roads), the Department of Natural Resources and Mines (to clear vegetation), and the Department of Agriculture and Fisheries (to clear marine plants or to obtain a quarry material allocation).

Conditions of environmental authority

Locations: ML7147; ML90192; ML90193; ML90194; ML90195; ML90196

Relevant activities: Mining - ML gold ore - 16, Site Specific and 31-(2a) Mineral processing 1,000-100,000t/yr

The environmentally relevant activities conducted at the locations as described above must be conducted in accordance with the following site specific conditions of approval.

This **environmental authority** incorporates the following schedules:

Schedule A – General

Schedule B – Air

Schedule C – Waste

Schedule D – Noise

Schedule E – Groundwater

Schedule F – Water

Schedule G – Regulated Structures

Schedule H – Land and Rehabilitation

Schedule I – Definitions

Schedule J – Figures

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 does not authorise environmental harm.
- A2 In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with Schedule J – Figure J1 (Project Infrastructure and Site Layout)
- 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 and efficient condition
 - (c) operate such measures, plant and equipment in a proper and efficient manner
 - (d) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.

Monitoring

- A4 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 and be made available on request.
- A5 All determinations of groundwater quality and biological monitoring in accordance with the conditions of this environmental authority must be performed by an appropriately qualified person.

Financial Assurance

- A6 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.
- A7 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

- A8 The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (ISO31000:2009), or the latest edition of an Australian standard for risk management, to the extent relevant to the environmental management by 30 August 2014.

Notification of emergencies, incidents and exceptions

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

- A10 Within 10 business days following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following:
- (a) results and interpretation of any samples taken and analysed;
 - (b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and
 - (c) proposed actions to prevent a recurrence of the emergency or incident.

Complaints

- A11 The holder of this environmental authority must record all environmental complaints received about the mining activities including the following details:
- (a) name, address and contact number for of the complainant;
 - (b) time and date of complaint;
 - (c) reasons for the complaint;
 - (d) investigations undertaken;
 - (e) conclusions formed;
 - (f) actions taken to resolve the complaint;
 - (g) any abatement measures implemented; and
 - (h) person responsible for resolving the complaint.
- A12 The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority within 10 business days of completion of the investigation, or no later than 10 business days after the end of the timeframe nominated by the administering authority to undertake the investigation.

Third Party Reporting

- A13 The holder of this environmental authority must:
- (a) within 1 year of the commencement of this environmental authority, obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority
 - (b) obtain further such reports at regular intervals, not exceeding 3 years, from the completion of the report referred to above; and
 - (c) provide each report to the administering authority within 90 days of its completion.
- A14 Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority, the holder of this environmental authority must:
- (a) comply with the amended or changed standard, policy or guideline within 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 conditions of Schedule G, the time specified in the conditions
 - (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.
- A15 All explosives, flammable or corrosive substances, hazardous chemicals, toxic substances, gases and dangerous goods must be stored and handled in accordance with:
- a) The current Australian Standard where applicable;

- b) Where no relevant Australian Standard exists, store such materials within an on-site containment system sufficient to prevent release to the receiving environment.

END OF CONDITIONS FOR SCHEDULE A

Schedule B – Air

General

- B1 Unless authorised by this environmental authority, the release of noxious or offensive odours or any other airborne contaminants from the mining activities must not cause environmental harm at any sensitive place or commercial place.

Dust and Particulate Matter Monitoring

- B2 The Proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the 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 1 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.
 - (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 24-hour averaging time, for no more than 5 exceedances recorded each year, when monitored in accordance with the most recent version of either:
 - 1. Australian Standard AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM₁₀ high volume sampler with size-selective inlet – Gravimetric method; or
 - 2. Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination
 - (c) A concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1 year averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—Total suspended particulate matter (TSP)—High volume sampler gravimetric method.
- B3 The Proponent must monitor for contaminants stated in Schedule B – Table B1 (Air Quality and Dust Deposition Contaminant Trigger Levels and Limits) at the boundary of the site.
- B4 If monitoring results indicate an exceedance of any trigger value specified in Schedule B – Table B1 (Air Quality and Dust Deposition Contaminant Trigger Levels and Limits), the environmental authority holder must notify the administering authority as soon as practicable and:
- (a) Complete an investigation to identify the potential cause of the exceedance;
 - (b) If the investigation demonstrates that the exceedance is not attributable to the mining activities, then no further action is required; or
 - (c) If the cause of the exceedance is inconclusive or attributable to the mining activities, provide a written report to the administering authority within 3 months of the date of receiving the monitoring results showing an exceedance, outlining:
 - (i) All pertinent details of the investigation carried out; and
 - (ii) Actions taken or planned to minimise environmental harm.

Schedule B – Table B1 (Air Quality and Dust Deposition Contaminant Trigger Levels and Limits)

Contaminant	Averaging Period	Trigger Level	Air Quality Limit ³
Particulates matter with an aerodynamic diameter of less than 10 microns (PM ₁₀) ⁵	24 hour average ^{2,5}		50 µg/m ³
Total suspended particulate matter (TSP) ⁶	24 hour average ⁶		90 µg/m ³
Arsenic and its compounds measured as the total metal content in (PM ₁₀) ^{1,4,5}	Annual average		0.006 µg/m ³
Cadmium and its compounds measured as the total metal content in (PM ₁₀) ^{1,4,5}	Annual average		0.005 µg/m ³
Lead and its compounds measured as the total metal content in total suspended particulates (TSP) ^{1,4,6}	Annual average		0.5 µg/m ³
Nickel and its compounds measured as the total metal content in (PM ₁₀) ^{1,4,5}	Annual average		0.02 µg/m ³
Dust Deposition⁷			
Arsenic and its compounds as arsenic ⁴	Annual average	4 µg/m ² /day	
Cadmium and its compounds as cadmium ⁴	Annual average	2 µg/m ² /day	
Lead and its compounds as lead ⁴	Annual average	100 µg/m ² /day	250 µg/m ² /day
Copper and its compounds as copper ⁴	Annual average	330 µg/m ² /day	
Dust deposition (total insoluble matter)	Monthly average		120 mg/m ² /day

- 1 The holder of this approval may elect to monitor these contaminants as the total metal content in total suspended particulates and meet the same limit.
- 2 Note: Five (5) days of exceedence allowed each year including exceedences attributed to natural causes.
- 3 Air Quality Objectives, Schedule 1, Environmental Protection (Air) Policy 2008.
- 4 Metal analysis must be carried out in accordance with a methodology sufficient to produce representative results capable of comparison against the respective limits & trigger values.
- 5 Monitored in accordance with the most recent version of the relevant Australian Standard for measuring 10 micrometres (PM₁₀) suspended.
- 6 Monitored in accordance with any method for measuring TSP as recommended in the most recent version of the relevant Australian Standard for measuring TSP.
- 7 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.*

END OF CONDITIONS FOR SCHEDULE B



Schedule C – Waste

Waste Management

- C1 All general and regulated waste must be removed from the licensed place to a facility that is lawfully able to accept the waste.
- C2 Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.

Tailings disposal

- C3 Tailings must be managed in accordance with procedures contained within the current plan of operations. These procedures must include provisions for:
- (a) containment of tailings
 - (b) the management of seepage and leachates both during operation and the foreseeable future
 - (c) the control of fugitive emissions to air
 - (d) a program of progressive sampling and characterisation to identify acid producing potential and metal concentrations of tailings
 - (e) maintaining records of the relative locations of any other waste stored within the tailings
 - (f) rehabilitation strategy
 - (g) monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of tailings, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover.
- C4 The Tailings storage facility must be constructed using only non-acid forming material and the holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline, acid and/or metalliferous mine drainage.

Waste Rock

- C5 Waste rock and spoil disposal must not occur until the holder of this environmental authority has developed, implemented and submitted to the administering authority a waste rock and spoil management plan with the initial Plan of Operations. The waste rock and spoil management plan must include where relevant, at least:
- (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 to validate pre-mine waste rock and spoil characterisation. the waste rock sampling program must include validation of salinity, acid and alkali producing potential and metal concentrations including arsenic, aluminium, cadmium, chromium, copper, iron, lead, manganese, silver, nickel and zinc;
 - (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 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;

- (g) how often the performance of the plan will be assessed;
- (h) a rehabilitation strategy which meets the rehabilitation objectives specified in Schedule H;
- (i) 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.

Sewage

- C6 All sewage and effluent generated on site must be contained in a manner that prevents any unauthorised release of contaminants to the receiving environment.
- C7 The sewage containment must be periodically pumped out by an appropriately licenced contractor and disposed of at an appropriately licenced sewage treatment facility.

END OF CONDITIONS FOR SCHEDULE C



Schedule D – Noise

Noise limits

- D1 The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in Schedule D - Table D1 (Noise limits) to be exceeded at a sensitive place or commercial place.

Schedule D – Table D1 (Noise limits)

Sensitive Place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and Public Holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
LAeq, adj, 15 mins	CV = 50 AV = 5	CV = 45 AV = 5	CV = 40 AV = 0	CV = 45 AV = 5	CV = 40 AV = 5	CV = 35 AV = 0
LA1, adj, 15 mins	CV = 55 AV = 10	CV = 50 AV = 10	CV = 45 AV = 5	CV = 50 AV = 10	CV = 45 AV = 10	CV = 40 AV = 5
Commercial Place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and Public Holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	7am to 6pm	6pm to 10pm	10pm to 7am
LAeq, adj, 15 mins	CV = 55 AV = 10	CV = 50 AV = 10	CV = 45 AV = 5	CV = 50 AV = 10	CV = 45 AV = 10	CV = 40 AV = 5

Table D1 – Noise limits notes:

- CV = Critical Value
- AV = Adjustment Value
- To calculate noise limits in Table D1:
 - If $bg \leq (CV - AV)$:
Noise limit = $bg + AV$
 - If $(CV - AV) < bg \leq CV$:
Noise limit = CV
 - If $bg > CV$:
Noise limit = $bg + 0$
- In the event that measured bg (LA90, adj, 15 mins) is less than 30 dB(A), then 30 dB(A) can be substituted for the measured background level
- bg = background noise level (LA90, adj, 15 mins) measured over 3-5 days at the nearest sensitive receptor
- If the project is unable to meet the noise limits as calculated above alternative limits may be calculated using the processes outlined in the "Planning for Noise Control" guideline.

Airblast overpressure nuisance

- D2 The holder of this environmental authority must ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in Table D2 – Blasting noise limits to be exceeded at a sensitive place or commercial place.

Schedule D – Table D2 (Blasting noise limits)

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

Monitoring and reporting

- D3 Noise monitoring and recording must include the following descriptor characteristics and matters:
- (a) LAN,T (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins)
 - (b) background noise LA90
 - (c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels
 - (d) atmospheric conditions including temperature, relative humidity and wind speed and directions
 - (e) effects due to any extraneous factors such as traffic noise
 - (f) location, date and time of monitoring
 - (g) if the complaint concerns low frequency noise, Max LpLIN,T and one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range.

END OF CONDITIONS FOR SCHEDULE D



Schedule E – Groundwater

Contaminant release

E1 The holder of this environmental authority must not release contaminants to groundwater.

Monitoring and reporting

E2 Groundwater quality and levels must be monitored at the locations and frequencies defined in Table –
E1 Groundwater monitoring locations and frequency for quality characteristics identified in Table E2 -
Groundwater quality triggers and limits.

Schedule E – Table E1 (Groundwater monitoring locations and frequency)

Monitoring Point*	Location		Surface RL (m) ²	Monitoring Frequency ¹
	Latitude (GDA94)	Longitude (GDA94)		
Reference Bores ³				
4R	- 20.72333	140.63870	12	Prior to commencement of operations one (1) sample every six (6) months for groundwater quality; Upon commencement of operations one (1) sample every three (3) months for groundwater quality; and One (1) sample every month for groundwater level.
21R	- 20.71656	140.63545	12	
Compliance Bores				
5C	- 20.72474	140.64243	12	Prior to commencement of operations one (1) sample every six (6) months for groundwater quality; Upon commencement of operations one (1) sample every three (3) months for groundwater quality; and One (1) sample every month for groundwater level.
6C	-20.726	140.64829	13	
13C	- 20.71913	140.64517	14	
22C	- 20.72013	140.64867	12	
3C	- 20.71802	140.64245	18	
10C	- 20.71572	140.65017	15	
1C	- 20.71534	140.63655	18	

* Monitoring locations depicted in Schedule J – Figure J3 (Groundwater Monitoring Locations)

1. Monitoring is not required where a bore has been removed as a direct result of the mining activity.

2. RL must be measured to the nearest 5cm from the top of the bore casing.

3. Reference sites must:

(a) have a similar flow regime;

(b) be from the same bio-geographic and climatic region;

(c) have similar geology, soil types and topography; and

(d) not be so close to the test sites that any disturbance at the test site also results in a change at the reference site.

Schedule E – Table E2 (Groundwater quality triggers and limits)

Parameter ¹	Contaminant Triggers (mg/L unless otherwise specified)	Contaminant Limit (mg/L unless otherwise specified)
pH (pH units)	6.0 – 7.5 ²	Greater than 4, less than 9 ⁶
EC (µS/cm)	250 ² or 80th percentile ⁴ of reference site concentration whichever is higher	5970 ⁷ or 95th percentile of reference site concentration whichever is lower
Sulphate	80th percentile ⁴ of reference site concentration	1000 ⁷ or 95th percentile of reference site concentration whichever is lower
Arsenic ⁵	0.013 ³ or 80th percentile ⁴ of reference site concentration whichever is higher	0.5 ⁷ or 95th percentile of reference site concentration whichever is lower
Cadmium	0.0002 ³ or percentile ⁴ of reference site concentration whichever is higher	0.01 ⁷ or 95th percentile of reference site concentration whichever is lower
Copper	0.0014 ³ or 80th percentile ⁴ of reference site concentration whichever is higher	1 ⁷ or 95th percentile of reference site concentration whichever is lower
Cyanide (WAD) ⁸	Not applicable	0.5 ⁹
Cyanide (as un-ionised HCN, measured as [CN])	0.007 ³ or 80th percentile ⁴ of reference site concentration whichever is higher	0.004 ¹⁰
Fluoride	Default Value ⁵ or 80th percentile ⁴ of reference site concentration	2 ⁷ or 95th percentile of reference site concentration whichever is lower
Manganese	1.9 ³ or 80th percentile ⁴ of reference site concentration whichever is higher	95th percentile of reference site
Nickel	0.011 ³ or 80th percentile ⁴ of reference site concentration whichever is higher	1 ⁷ or 95th percentile of reference site concentration whichever is lower
Zinc	0.008 ³ or 80th percentile ⁴ of reference site concentration whichever is higher	20 ⁷ or 95th percentile of reference site concentration whichever is lower

- All metals and metalloids must be measured and reported as dissolved (field filtered) and total levels.
- ANZECC value for aquatic ecosystems indicative of slightly-to-moderately disturbed tropical Australian upland river ecosystems Table 3.3.5 for EC
- 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.
- WQOs based on 80th percentiles of reference site concentrations derived in accordance with ANZECC/ARMCANZ (2000).
- Routine analysis for this parameter is based on combined/total species of the element, where the exceedance of the WQO is identified, an additional sample must be taken and analysed as soon as practicable to determine and quantify speciated forms of this element. This does not apply to sediment analysis.
- Page 4.2-15 of ANZECC & ARMCANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4-9".
- Contaminant limit based on ANZECC & ARMCANZ (2000) stock water quality guidelines.
- WAD CN is Weak Acid Dissociable Cyanide, measured as an indicator of the bio-available cyanide.
- The International Cyanide Management Code (2009), Section 4.5
- ANZECC/ARMCANZ (2000) value for 99% species protection aquatic ecosystem, Table 3.4.1

Exceedance Investigation

- E3 If quality characteristics of groundwater from compliance bores identified in Table E1 - Groundwater monitoring locations and frequency exceed any of the trigger levels stated in Table E2 - Groundwater quality triggers and limits, the holder of this environmental authority must compare the compliance

monitoring bore results to the reference bore results and complete an investigation in accordance with the ANZECC and ARMCANZ 2000.

- E4 Results of monitoring of groundwater from compliance bores identified in Table E1 - Groundwater monitoring locations and frequency, must not exceed any of the limits defined in Table E2 - Groundwater quality triggers and limits.

Bore construction and maintenance and decommissioning.

- E5 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.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – Water

Release to Waters

- F1 The release of contaminants to waters must:
- (a) only occur during flow events where the water flow volume in the respective receiving water is at least 20 times the volume prior to the release of contaminants to receiving waters;
 - (b) only occur from a release point specified in Schedule F– Table F1 (Release Points); and
 - (c) be monitored at the release point and at the monitoring frequency specified in Schedule F – Table F1 (Release Point) for the total daily volume of water released and for each parameter specified in Schedule F – Table F3 (Receiving Waters and Sediment Quality Objectives).

Schedule F – Table F1 (Release Points)

Release Point*	Description of Release	Receiving Water	Coordinates (GDA94)		Monitoring frequency
			Latitude	Longitude	
RP1	Plant Runoff Dam	North drainage line to Pumpkin Gully	-20.71717	140.64583	For all parameters, 1 sample must be taken within 12 hours of a release event commencing and for release events with duration of greater than 24 hours, samples must be taken daily for 1 week and once a week thereafter until the release event ceases.
RP2	WRD North Dam	To WRD South Dam	-20.71958	140.64737	
RP3	WRD South Dam	To Fisher Creek via south east drainage line	-20.72126	140.64892	
RP4	TSF Sediment Dam	To pit or north drainage line to Pumpkin Gully	-20.71868	140.64458	
RP5	Process Water Dam	North drainage line	-20.71764	140.64741	
RP6	TSF	To TSF sediment dam	-20.71933	140.64542	

* Monitoring locations depicted in Schedule J – Figure J2 (Spill Locations/ Release Points)

- F2 End of pipe quality objectives for water contaminated by mining activities when monitored at the location and frequency defined in Schedule F – Table F1 (Release Point) must not exceed the release quality objectives defined in Schedule F – Table F2 (Release Quality Objectives).

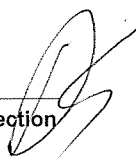
Schedule F – Table F2 (Release Quality Objectives)

Parameter ¹	Release Quality Objectives (mg/L unless otherwise specified)
pH (pH units)	6.0 or 20 th percentile of reference site concentration, whichever is lower. 7.5 or 80 th percentile of reference site concentration, whichever is higher.
EC (µS/cm)	5000 ³
Dissolved oxygen	For interpretative purposes only
Sulphate	20 x 80 th percentile of reference site concentration
Fluoride	Default value ⁶ or 20 x 80 th percentile of reference site concentration

Parameter ¹	Release Quality Objectives (mg/L unless otherwise specified)
Major cations	For interpretive purposes only
Major anions	
Aluminium	1.1 ² or 20 x 80 th percentile of reference site concentration whichever is higher
Antimony	20 x 80 th percentile of reference site concentration
Arsenic ⁴	0.26 ² or 20 x 80 th percentile of reference site concentration whichever is higher
Cadmium	0.004 ² or 20 x 80 th percentile of reference site concentration whichever is higher
Chromium ⁴	0.02 ² or 20 x 80 th percentile of reference site concentration whichever is higher
Cobalt	0.028 ² or 20 x 80 th percentile of reference site concentration
Copper	0.028 ² or 20 x 80 th percentile of reference site concentration whichever is higher
Cyanide (WAD) ⁷	0.5 ⁸ or 80 th percentile ⁴ of reference site concentration whichever is higher
Cyanide (as un-ionised HCN, measured as [CN])	0.14 ² or 80 th percentile ⁴ of reference site concentration whichever is higher
Lead	0.068 ² or 20 x 80 th percentile of reference site concentration whichever is higher
Manganese	38 ² or 20 x 80 th percentile of reference site concentration whichever is higher
Molybdenum	0.68 ² or 20 x 80 th percentile of reference site concentration
Nickel	0.22 ² or 20 x 80 th percentile of reference site concentration whichever is higher
Selenium	0.02 ⁵ or 20 x 80 th percentile of reference site concentration whichever is higher
Tungsten	80 th percentile of reference site concentration
Zinc	0.16 ² or 20 x 80 th percentile of reference site concentration whichever is higher
Total Hardness	For interpretive purposes only
Total petroleum hydrocarbons	No detectable film or odour

- For water quality objectives parameters, all metals and metalloids must be measured and reported as both total (unfiltered) and dissolved (field filtered) levels.
- Twenty times 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.
- Twenty times higher than ANZECC/ARMCANZ (2000) values for aquatic ecosystems indicative of slightly-to-moderately disturbed tropical Australian upland river ecosystems Table 3.3.5 for EC.
- Routine analysis for this parameter is based on combined/total species of the element, where the exceedance of the WQO is identified, an additional sample must be taken and analysed as soon as practicable to determine and quantify speciated forms of this element.
- Based on ANZECC (2000) stock water quality guidelines.
- A trigger value for Fluoride (for which no default value is provided in Table 3.4.1) derived using the methods described in ANZECC 2000 Section 8.3.4.4.
- WAD CN is Weak Acid Dissociable Cyanide, measured as an indicator of the bio-available cyanide.
- The International Cyanide Management Code (2009), Section 4.5.

F3 The release of contaminants from the authorised activity to surface waters must not exceed the water quality objectives stated in Schedule F – Table F3 (Receiving Water and Sediment Quality Objectives) when measured at the compliance point stated in Schedule F – Table F4 (Receiving Waters Monitoring Locations).



Schedule F – Table F3 (Receiving Water and Sediment Quality Objectives)

Parameter ¹	Water Quality Objective (mg/L unless otherwise specified)	Sediment Quality Objective ² (mg/kg dry wt, unless otherwise specified)
pH (pH units)	6.0 ³ or 20 th percentile of reference site concentration, whichever is lower. 7.5 ³ or 80 th percentile of reference site concentration, whichever is higher.	Not applicable
EC (µS/cm)	250 ⁴ or 80 th percentile of reference site concentration whichever is higher	
Dissolved oxygen	For interpretative purposes only	
Sulphate	80 th percentile of reference site concentration	2 x the reference site concentration
Fluoride	Default Value ⁷ or 80 th percentile of reference site concentration	2 x the reference site concentration
Major cations	For interpretative purposes only	Not applicable
Major anions		
Aluminium	0.055 ³ or 80 th percentile of reference site concentration whichever is higher	2 x the reference site concentration
Antimony	80 th percentile of reference site concentration	2 x the reference site concentration
Arsenic ⁵	0.013 ³ or 80 th percentile of reference site concentration whichever is higher	70 ⁶ or 2 x the reference site concentration or whichever is higher
Cadmium	0.0002 ³ or 80 th percentile of reference site concentration whichever is higher	106 or 2 x the reference site concentration or whichever is higher
Chromium ⁵	0.001 ³ or 80 th percentile of reference site concentration whichever is higher	3706 or 2 x the reference site concentration or whichever is higher
Cobalt	80 th percentile of reference site concentration	2 x the reference site concentration
Copper	0.0014 ³ or 80 th percentile of reference site concentration whichever is higher	270 ⁶ or 2 x the reference site concentration or whichever is higher
Cyanide (WAD) ⁸	0.5 ⁹ or 80 th percentile ⁴ of reference site concentration whichever is higher	Not applicable
Cyanide (as un-ionised HCN, measured as [CN])	0.007 ³ or 80 th percentile ⁴ of reference site concentration whichever is higher	Not applicable
Lead	0.0034 ³ or 80 th percentile of reference site concentration whichever is higher	220 ⁶ or 2 x the reference site concentration or whichever is higher
Manganese	1.9 ³ or 80 th percentile of reference site concentration whichever is higher	2 x the reference site concentration
Molybdenum	80 th percentile of reference site concentration	2 x the reference site concentration
Nickel	0.011 ³ or 80 th percentile of reference site concentration whichever is higher	52 ⁶ or 2 x the reference site concentration or whichever is higher
Selenium	0.011 ³ or 80 th percentile of reference site concentration whichever is higher	2 x the reference site concentration
Tungsten	80 th percentile of reference site concentration	2 x 80 th percentile of reference site concentration
Zinc	0.008 ³ or 80 th percentile of reference site concentration whichever is higher	410 ⁶ or 2 x the reference site concentration or whichever is higher
Total Hardness	For interpretative purposes only	Not applicable
Particle size distribution	Not applicable	For interpretative purposes only
Total petroleum hydrocarbons	No detectable film or odour	Not applicable

1. For water quality objectives parameters, all metals and metalloids must be measured and reported as both total (unfiltered) and dissolved (field filtered) levels.
2. All stream sediment sampling must be undertaken in accordance with AS 5667.12 *Guidance on Sampling of Bottom Sediments of 1998*.
3. 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.
4. ANZECC/ARMCANZ (2000) values for upland and lowland rivers Table 3.3.5.
5. Routine analysis for this parameter is based on combined/total species of the element, where the exceedance of the WQO is identified, an additional sample must be taken and analysed as soon as practicable to determine and quantify speciated forms of this element. This does not apply to sediment analysis.
6. ANZECC (2000) Interim Sediment Quality Guidelines – ISQG – high values based on total sediments (dry weight).
7. A trigger value for Fluoride (for which no default value is provided in Table 3.4.1) derived using the methods described in ANZECC 2000 Section 8.3.4.4.
8. WAD CN is Weak Acid Dissociable Cyanide, measured as an indicator of the bio-available cyanide.
9. The International Cyanide Management Code (2009), Section 4.5.

Note: Where the 80th percentile of a water quality objective (WQO)/sediment quality objective (SQO) is exceeded at a receiving water site and the reference site also exceeds this concentration during the release/flow event, the value of the reference site applies as the WQO/SQO for the duration of the event.

Schedule F – Table F4 (Receiving Waters Monitoring Locations)

Monitoring Point	Description	Coordinates (GDA94)	
		Latitude	Longitude
Compliance Point ¹			
14C	Surface Water Monitoring Point. Ephemeral creek north of the mine site.	-20.71621	140.64706
18C	Surface Water Monitoring Point. Ephemeral creek south of the mine site.	-20.72273	140.64907
Receiving Water Points ²			
Fisher Creek			
RZ2	Surface Water Monitoring Point. South east of the mine site	-20.72645	140.65203
RZ4	Surface Water Monitoring Point. South east of the mine site	-20.72592	140.66496
Pumpkin Gully			
RZ8(BAAM2)	Surface Water Monitoring Point. North of the mine site	-20.70982	140.64770
RZ9	Surface Water Monitoring Point. North west of the mine site	-20.72256	140.64764
Reference Points ³			
Fisher Creek			
RZ0a	Surface Water Monitoring Point. West of RZ9.	-20.72290	140.63145
Pumpkin Gully			
20R	Surface Water Monitoring Point. North east of 1C GW.	-20.71438	140.63834

1. Compliance Points: Compliance points must be nominated after the mixing zone of the release but within or at the boundary of the Mining Lease.
2. Receiving water points: Receiving water points are generally sites within 15km downstream of the relevant compliance points. These points are used as part of the Receiving Environment Monitoring Program (REMP).
3. Reference Sites: A suitable reference site for each potentially impacted water course must be identified.

Receiving Environment Monitoring Program (REMP)



- F4 By 30 June 2014 the environmental authority holder must develop and implement a 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. The REMP must also include the condition of recording and monitoring the effects of the release of contaminants on the receiving environment and whilst the contaminants are being released from the licensed place.

For the purposes of the REMP, the receiving environment is the waters of the Fisher Creek and connected or surrounding waterways within 15km downstream of the release. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

- F5 A REMP design document that addresses the requirements of the REMP must be prepared and made available to the administering authority upon request.
- F6 A report outlining the findings of the REMP, including all monitoring 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.

END OF CONDITIONS FOR SCHEDULE F

Schedule G – Regulated Structures

Assessment of Hazard Category

- G1 The hazard category of any structure must be assessed by a suitably qualified and experienced person:
- (a) In accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*; and
 - (b) In any of the following situations:
 - (i) Prior to the design and construction of the regulated structure; or
 - (ii) Prior to any change in its purpose or the nature of its stored contents.
- G2 A hazard assessment report and certification must be prepared for any regulated structure assessed and the report may include a hazard assessment for more than one regulated structure.
- G3 The holder of this environmental authority must, on receipt of a hazard assessment report and certification, provide to the administering authority one paper copy and one electronic copy of the hazard assessment report and certification.
- G4 Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.
- G5 The holder of this environmental authority must take reasonable and practical measures so that each regulated structure associated with the mining activity is designed, constructed, operated and maintained in accordance with accepted engineering standards and is fit for the purpose for which it is intended.

Design and Construction of a Regulated Structure

- G6 All regulated structures must be designed by and constructed under the supervision of a suitably qualified and experienced person in accordance with the requirements of the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.
- G7 Construction of a regulated structure is prohibited unless the holder of this environmental authority has:
- (a) Submitted a hazard category assessment report and certification to the administering authority;
 - (b) Commissioned a suitably qualified and experienced person to prepare a design plan for the regulated structure; and
 - (c) Received the certification from a suitably qualified and experienced person for the design plan and the associated operating procedures in compliance with the relevant conditions of this environmental authority.
- G8 Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan, in the form set out in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.
- G9 Regulated structures must:
- (a) be designed and constructed in accordance with and conform to the requirements of the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*; and
 - (b) be designed and constructed with due consideration given to ensuring that the design integrity will not be compromised on account of:
 - (i) floodwaters from entering the regulated structure from any watercourse or drainage line; and
 - (ii) wall failure due to erosion by floodwaters arising from any watercourse or drainage line.

- G10 The design plan for a regulated structure must include, but is not limited to:
- (a) certification that the design plan;
 - (i) is in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, including subsidiary certifications if necessary; and
 - (ii) addresses the requirements in condition G10 (b) to (h).
 - (b) a design report which provides:
 - (i) a description of all the documents which constitute the design plan;
 - (ii) a statement of:
 - a) the applicable standards including engineering criteria, industry guidelines, relevant legislation and regulatory documents, relied upon in preparing the design plan;
 - b) all relevant facts and data used in preparing the design plan, including any efforts made to obtain necessary facts and data, and any limitations or assumptions to facts and data used in preparing the design plan;
 - c) the hazard category of the regulated structure; and
 - d) setting out the reasoning of the suitably qualified and experienced person who has certified the design plan, as to how the design plan provides the necessary required performance.
 - (iii) documentation of hydrological analyses and estimates required to determine all elements of the design including volumes and flow capacities;
 - (iv) detailed criteria for the design, operation, maintenance and decommissioning of the regulated structure, including any assumptions; and
 - (v) design, specification and operational rules for any related regulated structures and systems used to prevent failure scenarios;
 - (c) drawings showing the lines and dimensions, and locations of built regulated structures and land forms associated with the regulated structure;
 - (d) consideration of the interaction of the pit design with the regulated structure design;
 - (e) an operational plan that includes:
 - (i) normal operating procedures and rules (including clear documentation and definition of process inputs in the Design Storage Allowance (DSA); and
 - (ii) contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure.
 - (f) a plan for the decommissioning and rehabilitation of the regulated structure at the end of its operational life;
 - (g) details of reports on investigations and studies done in support of the design plan; and
 - (h) any other matter required by the suitably qualified and experienced person.
- G11 Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that:
- (a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure; and
 - (b) construction of the regulated structure is in accordance with the design plan.
- G12 Where a regulated structure is to be managed as part of an integrated containment system and the DSA volume is to be shared across the integrated containment system, the design and operating rules for the system as a whole must be documented in a system design plan that is certified by a suitably qualified and experienced person.
- G13 The system design plan must contain:

- (a) the design plans;
- (b) the 'as constructed' plans;
- (c) the operational rules for each individual regulated structure that forms part of the integrated system;
- (d) the standards of serviceability and accessibility of water transfer equipment or regulated structures; and
- (e) the operational rules for the system as a whole.

Operation of a Regulated Structure

G14 Operation of a regulated structure is prohibited unless:

- (a) the holder of this environmental authority has submitted to the administering authority:
 - (i) one paper copy and one electronic copy of the design plan and certification of the design plan in accordance with condition G11;
 - (ii) a set of 'as constructed' drawings and specifications;
 - (iii) certification of those 'as constructed drawings and specifications' in accordance with condition G12; and
 - (iv) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan in accordance with condition G13.
- (b) the requirements of this environmental authority relating to the construction of the regulated structure have been met; and
- (c) relevant details for the regulated structure have been included in Schedule G - Table G1 (Location of Regulated Structures) and Schedule G - Table G2 (Basic Details of Regulated Structures) of this environmental authority.

Schedule G – Table G1 (Location of Regulated Structures)

Name of Regulated Structure	Location (GDA94) ¹		Description
	Latitude	Longitude	
Plant Runoff Dam	-20.71727	140.64604	To the west of the plant site
	-20.71812	140.64581	
	-20.71804	140.64555	
Process Water Dam	-20.71790	140.64765	To the east of the heap leach pad and plant site
	-20.71767	140.64763	
	-20.71766	140.64727	
WRD North Dam	-20.71889	140.64700	Directly south of the office on southern side of access road
	-20.71953	140.64602	
	-20.71981	140.64743	
WRD South Dam	-20.72160	140.64910	Between the WRD and clay stockpile on northern side of lower lease road
	-20.72123	140.64877	
	-20.72178	140.64759	
TSF Sediment Dam	-20.71892	140.64509	Northern boundary of TSF on southern side of access road
	-20.71921	140.64498	
	-20.71909	140.64335	
TSF	-20.17875	140.64533	South of TSF Sediment Dam
	-20.72007	140.64292	
	-20.71929	140.64397	

1. A minimum of three (3) control points are required to constrain the location of all activities associated with the regulated structure. Additional infrastructure which forms part of any regulated structure (which is not required to be located within the control points) may include appurtenant works consisting of dried process residue discharge pipelines, seepage collection systems, runoff diversion bunds, containment systems, pressure relief wells, decant and recycle water systems.
2. Detail to be provided to the administering authority by 30 August 2014.

Schedule G — Table G2 (Basic Details of Regulated Structures)

Name of regulated structure	Hazard Category ¹	Surface area at spillway (ha)	Maximum volume at spillway (m ³)	Maximum depth at spillway (m)	Spillway Level (mAHD)	Use
Plant Runoff Dam	Low	0.1944	2600	2.5	212.5	To receive runoff waters from the plant
Process Water Dam	Significant	0.2500	6250	2.5	215.0	To store water used by the process plant
WRD North Dam	Low	0.5300	9063	2.5	212.3	To receive northern runoff waters from the WRD
WRD South Dam	Low	0.5050	8470	2.5	204.0	To receive southern runoff waters from the WRD
TSF Sediment Dam	Low	0.4900	5200	1.5	213.5	To receive sediment waters from the TSF dam
TSF	High	2.83	185,790	6.6	220.4	To store tailings produced from the processing plant

1. To be determined in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

- G15 Each regulated structure must be maintained and operated in a manner that is consistent with the current design plan, the current operational plan, and the associated certified 'as constructed' drawings for the duration of its operational life until decommissioned and rehabilitated.
- G16 The holder of this environmental authority must take reasonable and practicable control measures to prevent harm to persons, livestock or wildlife through the construction and operation of a regulated structure. Reasonable and practicable measures may include, but are not limited to:
- (a) the secure use of fencing, bunding or screening; and
 - (b) escape arrangements for trapped livestock and fauna.

Mandatory Reporting Level

- G17 The mandatory reporting level (MRL) must be marked on a regulated structure in such a way that during routine inspections of that regulated structure, it is clearly observable.
- G18 The holder of this environmental authority must, as soon as practical and within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated structure reaches the MRL.
- G19 The holder of this environmental authority must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated structure.

Annual Inspection Report

- G20 Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
- G21 At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed:
- (a) against the most recent hazard assessment report and design plan (or system design plan);
 - (b) against recommendations contained in previous annual inspection reports;
 - (c) against recognised regulated structure safety deficiency indicators;
 - (d) for changes in circumstances potentially leading to a change in hazard category;
 - (e) for conformance with the conditions of this environmental authority;
 - (f) for conformance with the 'as constructed' drawings;
 - (g) for the adequacy of the available storage in each regulated structure, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the regulated structure (or network of linked containment systems); and
 - (h) for evidence of conformance with the current operational plan.
- G22 A suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include recommended actions to ensure the integrity of the regulated structure.
- G23 The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams.
- G24 The holder of this environmental authority must:
- (a) upon receipt of the annual inspection report, consider the report and its recommendations and take action to ensure that the regulated structure will safely perform its intended function; and
 - (b) within twenty (20) business days of receipt of the annual inspection report, notify the administering authority in writing, of the recommendations of the inspection report and the actions being taken to ensure the integrity of each regulated structure.
- G25 A copy of the annual inspection report must be provided to the administering authority upon request within ten (10) business days.

Design Storage Allowance

- G26 On 1 November of each year, storage capacity must be available in each regulated structure (or network of linked containment systems with a shared DSA volume), to meet the DSA volume for the regulated structure (or network of linked containment systems).
- G27 The holder of this environmental authority must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated structure (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.
- G28 The holder of this environmental authority must, immediately on becoming aware that a regulated structure (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated structure or linked containment systems.

Performance Review

- G29 The holder of this environmental authority must assess the performance of each regulated structure or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated structure or linked containment system taken prior to 1 July of each year.
- G30 The holder of this environmental authority must take action to modify its water management or linked containment system so as to ensure that the regulated structure or linked containment system will perform in accordance with the requirements of this environmental authority, for the subsequent November to May period.

Transfer Arrangements

- G31 The holder of this environmental authority must provide a copy of any reports, documentation and certifications prepared under this environmental authority, including but not limited to any Register of Regulated Structures, hazard assessment, design plan and other supporting documentation, to a new holder of this environmental authority and the administering authority on transfer of this environmental authority.

Decommissioning and Rehabilitation

- G32 Prior to the cessation of the mining activity, each regulated structure must be decommissioned such that:
- (a) ongoing environmental harm is minimised by the regulated structure by:
 - (i) becoming a safe site for humans and animals at the completion of rehabilitation;
 - (ii) becoming a stable landform, that no longer contains flowable substances and minimises erosion impacts;
 - (iii) not allowing for acid mine drainage; and
 - (iv) being approved or authorised under relevant legislation for a beneficial use; or
 - (v) being a void authorised by the administering authority to remain after decommissioning.
 - (b) the regulated structure is compliant with all other relevant rehabilitation requirements of this environmental authority.

Regulated Structures Location and Performance

- G33 Each regulated structure named in column 1, of Schedule G – Table G1 (Location of Regulated Structures) must be wholly located within the control points noted in columns 2 and 3 of Schedule G – Table G1 (Location of Regulated Structures).
- G34 Each regulated structure named in column 1 of Schedule G— Table G2 (Basic Details of Regulated Structures), must be consistent with the details noted in columns 2 through to and including column 7 of Schedule G — Table G2 (Basic Details of Regulated Structures).
- G35 Each regulated structure named in column 1 of Schedule G – Table G1 (Location of Regulated Structures), must meet the hydraulic performance criteria noted in columns 2 through to and including column 4 of Schedule G – Table G3 (Hydraulic Performance of Regulated Structures).

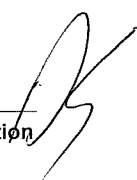


Schedule G – Table G3 (Hydraulic Performance of Regulated Structures)

Name of Regulated Structure	Spillway Capacity (AEP)	Design Storage Allowance (m ³)	Mandatory Reporting Level – Dam Level (mAHD)
Plant Runoff Dam	1:20 AEP 2 month wet season 100% runoff	1102	211.650
Process Water Dam	1:20 AEP 2 month wet season 100% runoff	1025	214.010
WRD North Dam	1:20 AEP 2 month wet season 100% runoff	4090	210.910
WRD South Dam	1:20 AEP 2 month wet season 100% runoff	5263	202.230
TSF Sediment Dam	1:20 AEP 2 month wet season 100% runoff	500	212.880
TSF Stage 3	1:100 AEP 100% runoff	34,860	219.200

1. Detail to be determined in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

END OF CONDITIONS FOR SCHEDULE G



Schedule H – Land and Rehabilitation

Land and Rehabilitation Objectives

H1 Land disturbed by mining must be rehabilitated in accordance with Schedule H Table H1 - Rehabilitation Requirements.

Schedule H – Table H1 (Rehabilitation Requirements)

Mine Domain	Mine Feature Name	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Dams	Plant Runoff Dam	1. Safe 2. Non-polluting 3. Stable 4. Self-sustaining	(a) Site safe for humans and animals (b) Acid mine drainage will not cause environmental harm (c) Minimise erosion (d) Describe post mine land use of land suitability or land capability	Soil contamination parameters including metals, hydrocarbons and cyanide indicate no soil contamination is present. Surface water and groundwater chemistry parameters reflect baseline values collected prior to operation commencement (Depth, pH, EC, TDS, Sulphate, Chloride, Cations, Trace metals, Hydrocarbons and Cyanide). Flora species (diversity), vegetation communities, fauna habitat extent and condition, and vegetation density have been assessed as within expected ranges for the area.	The site reflects the natural drainage and topography of the area. There is no evidence of harmful levels of soil contamination. Vegetation is self sustaining and flora species diversity and vegetation density is within expected ranges recorded form baseline assessment. Fauna habitat extent and condition is within expected ranges measured against baseline assessment of the area of operations. The site can be used for pastoral activity integrated with native habitat that supports flora and fauna values of the region.
	WRD North Dam				
	WRD South Dam				
	TSF Sediment Dam				
	TSF			Surface water and groundwater chemistry parameters reflect baseline values collected prior to operation commencement (Depth, pH, EC, TDS, Sulphate, Chloride, Cations, Trace metals, Hydrocarbons and Cyanide). Surface erosion rates (depth and volume of sediment) and erosion type are trending down and are within ranges predicted by initial soil characterisation outlined in the Mining Activity Application Report. Flora species (diversity), vegetation communities, fauna habitat extent and condition, and vegetation density have been assessed as within expected ranges for the area.	The Tailings Storage Facility is capped, revegetated and non-polluting and has encapsulated all toxic materials. There are no changes to baseline groundwater and surface water chemistry resulting from TSF seepage. A geotechnical assessment indicates a safe and stable landform. Surface erosion rates have stabilised and are within expected ranges for the rock and soil type of the area. Vegetation is self sustaining and flora species diversity and vegetation density is within expected ranges recorded form baseline assessment. Fauna habitat extent and condition is within expected ranges measured against baseline assessment of the area of operations.
Waste Rock Dump	Waste Rock Dump			A geotechnical assessment of rock type, rock properties,	A geotechnical assessment indicates a safe and stable landform.

				landform design, ground conditions indicates that the risk of instability is very low. Surface erosion rates (depth and volume of sediment) and erosion type are trending down and are within ranges predicted by initial soil characterisation outlined in the Mining Activity Application Report.	Surface erosion rates have stabilised and are within expected ranges for the rock and soil type of the area.
Infrastructure				A site inventory indicates no plant, infrastructure or equipment remains on site. Soil contamination parameters including metals, hydrocarbons and cyanide indicate no soil contamination is present. Flora species (diversity), vegetation communities, fauna habitat extent and condition, and vegetation density have been assessed as within expected ranges for the area.	No Mine related infrastructure remaining on site post closure. The site reflects the natural drainage and topography of the area. There is no evidence of harmful levels of soil contamination. Flora species diversity and vegetation density is within expected ranges recorded from baseline surveys. Fauna habitat extent and condition is within expected ranges when measured against baseline assessment of area of operations. The area can be used for pastoral activity integrated with native habitat that supports flora and fauna values of the region.
Voids				A geotechnical assessment examining the rock type, rock properties, landform design (including abandonment bund), and ground conditions indicates the final void is safe.	Abandonment bunds that are compliant to regulatory requirements have been constructed around the open pit and any other high risk sites. The pit ramp has been blocked. Warning signage is in place to discourage access to the site.
Roads				Flora species (diversity), vegetation communities, fauna habitat extent and condition, and vegetation density have been assessed as within expected ranges for the area.	The site reflects the natural drainage and topography of the area. Flora species diversity and vegetation density is within expected ranges recorded from baseline surveys. Fauna habitat extent and condition is within expected ranges when measured against baseline assessment of the area of operations. The area can be used for pastoral activity integrated with native habitat that supports flora and fauna values of the region.

1. Information to be provided to the administering authority within 6 months from the grant of this environmental authority.

H2 Rehabilitation must commence progressively in accordance with the plan of operations.

Contaminated land

- H3 Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.
- H4 Before applying for progressive rehabilitation certification for an area, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the area the subject of the application which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.

H5 Minimise the potential for contamination of land by hazardous contaminants.

Infrastructure

H6 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 administering authority and the landowner.

Mineral Concentrate Storage and Handling

1. H7 Mineral concentrate storage, handling and loading infrastructure including the exterior of all vehicles, including trailers and rail-wagons must be constructed, maintained and operated in a manner that prevents any unauthorised release of contaminants to the receiving environment.

END OF CONDITIONS FOR SCHEDULE H

Schedule I – Definitions

Definitions

Key terms and/or phrases used in this document are defined in this section. 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.

“administering authority” means:

- (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 - the local government; or,
- (b) for another matter - the chief executive.

“AHD” means ‘Australian Height Datum’ which is the Australian national standard of geodetic datum for altitude measurements and is measured in meters (m). The level of 0.0 meters (m) AHD approximates the mean sea level (as previously measured for the period 1966-1968).

“ambient (or total) noise” at a place, means the level of noise at the place from all sources (near and far), measured as the Leq for an appropriate time interval.

“ANZECC (2000)” means *the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)* published by the *Australian and New Zealand Environment and Conservation Council* and the *Agriculture and Resource Management Council of Australia and New Zealand* or any equivalent update/replacement 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.

“assessed” and **“assessment”** 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 assessment has been based;
- (c) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
- (d) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

“associated works” in relation to a dam, means:

- (a) operations of any kind and all things constructed, erected or installed for that dam; and
- (b) any land used for those operations.

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

“certification”, means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, including design plans, ‘as constructed’ drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy “Certification by RPEQs (ID: 1.4 (2A)).

"certifying", "certify" or "certified" have a corresponding meaning as 'certification'.

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

"chief executive" means the chief executive of the Department of Environment and Heritage Protection or its successor.

"commercial place" means a place used as an office or for business or commercial purposes, other than a place within the boundaries of the operational land.

"dam" means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void. 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.

"Design Storage Allowance" or "DSA" means an available volume, estimated in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* published by the Department of Environment and Heritage Protection, that must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedence probability (AEP) specified in that Manual.

"designer" for the purposes of a regulated dam, means the certifier of the design plan for the regulated dam.

"environmental authority" means a licence or approval issued pursuant to the *Environmental Protection Act 1994*.

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

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

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

"Geo-technically Stable" means not producing seepage, leachate or contamination that is likely or has the potential to cause environmental harm.

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

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

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

"in situ" in relation to water quality monitoring, means sampling a population variable (e.g., the concentration of an aquifer groundwater quality parameter) as close as possible to its origin. Unless otherwise specified under a condition of this environmental authority, in situ water quality parameters must include pH, electrical conductivity, dissolved oxygen (% saturation) and total suspended solids.

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

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

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

"land" in the "land schedule" of this document means land excluding waters and the atmosphere.

"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.

"Mandatory Reporting Level" or "MRL" means a warning and reporting level determined in accordance with the criteria in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* published by the administering authority.

"major anions" in regards to water quality monitoring, includes at minimum the carbonate ion (CO_3^{2-}), bicarbonate ion (HCO_3^-) and chloride ion (Cl^-).

"major cations" in regards to water quality monitoring, includes at minimum the sodium ion (Na^+), potassium ion (K^+), magnesium ion (Mg^{2+}) and calcium ion (Ca^{2+}).

"modification" or "modifying" (see definition of "construction").

"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) magnetite;
- (c) metal or metalloid compounds, including but not limited to compounds containing gold, copper, silver, lead, nickel, and zinc.

- (d) foundry sand;
 - (e) 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;
 - (f) limestone if mined for use for its chemical properties;
 - (g) marble;
 - (h) mineral oil or gas extracted or produced from shale or coal by in situ processes;
 - (i) peat;
 - (j) salt including brine;
 - (k) shale from which mineral oil may be extracted or produced;
 - (l) silica, including silica sand, if mined for use for its chemical properties;
 - (m) rock mined in block or slab form for building or monumental purposes;
- but does not include—
- (n) living matter;
 - (o) petroleum within the meaning of the *Petroleum Act 1923*;
 - (p) 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;
 - (q) water.

"operational plan" for a dam means a document that amongst other things sets out procedures and criteria to be used for operating a dam during a particular time period. The operational plan as defined herein may form part of a plan of operations or plan otherwise required in legislation.

"QWQG (2009)" means the *Queensland Water Quality Guidelines 2009* published by the *Queensland Government* or any equivalent update/replacement guidelines.

"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 can be further defined as any waters beyond the licensed place.

"regulated dam" means any dam in the significant or high hazard category as assessed using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* published by the administering authority.

"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" means the discharge of water (whether intentional or due to failure to prevent) to the receiving environment from any area, structure or feature located on a mining lease listed on this environmental authority.

"sensitive place" means;

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

- a place used as a workplace, 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.

“stable” means land form dimensions are or will be stable within tolerable limits now and in the foreseeable future. Stability includes consideration of geotechnical stability, settlement and consolidation allowances, bearing capacity (traffic ability), erosion resistance and geochemical stability with respect to seepage and contaminant generation.

“structure” means dam or levee.

“suitably qualified and experienced person” in relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the Professional Engineers Act 2002, and has demonstrated competency and relevant experience:

- For regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design.
- For regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments.

Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.

“system design plan” means a plan that manages an integrated containment system that shares the required DSA volume across the integrated containment system.

“tolerable limits” means that a range of values could be accepted to achieve an overall environmental management objective (eg a range of settlement of a tailing capping could still meet the objective of draining the cap quickly, preventing pondage and limiting infiltration and percolation).

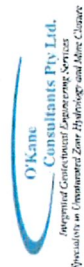
“watercourse” has the same meaning given in the *Water Act 2000*.

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

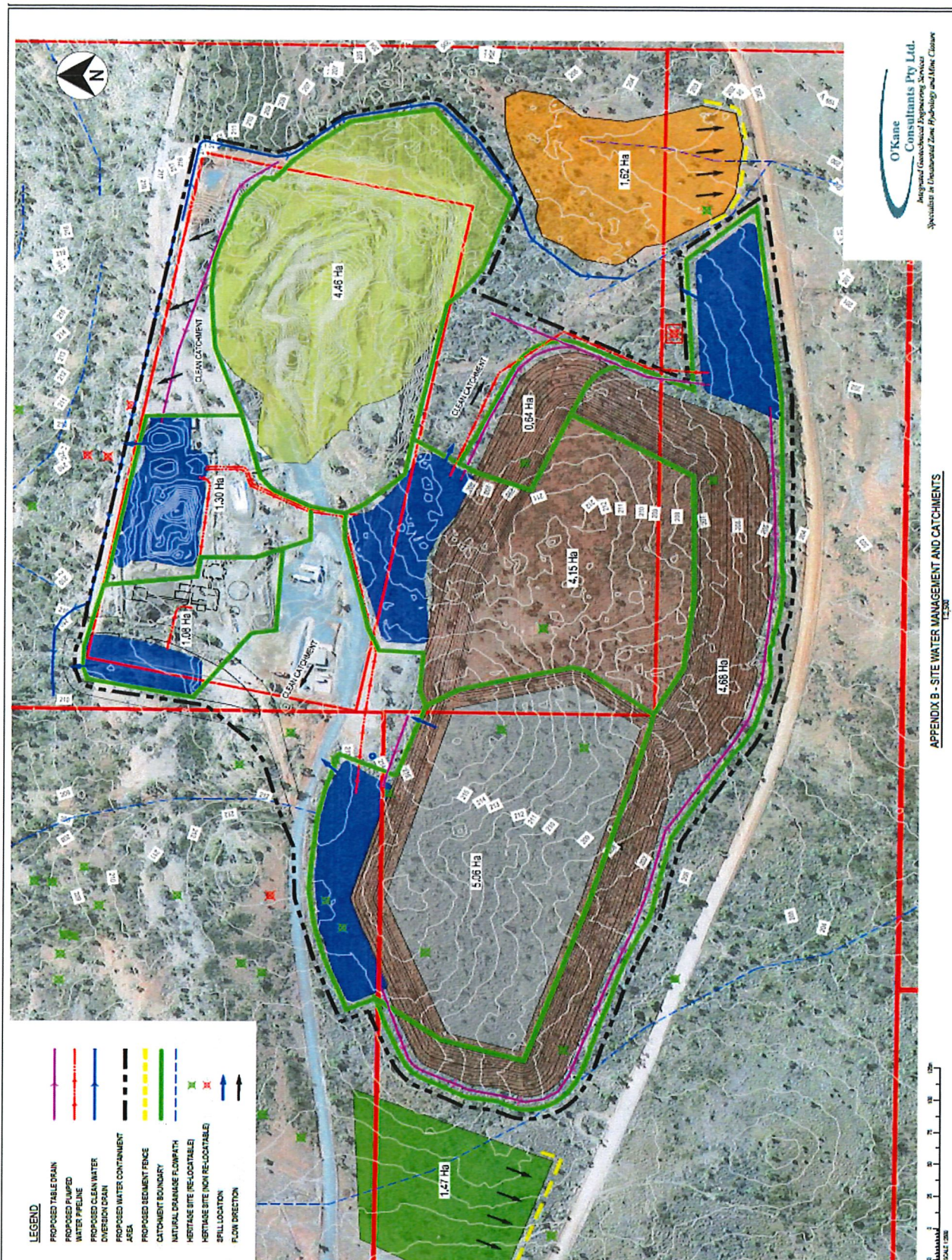
“wet season” means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.

END OF CONDITIONS FOR SCHEDULE I

Schedule J – Figure J1 (Project Infrastructure and Site Layout)



Schedule J – Figure J2 (Spill Locations / Release Points)



Note: release points symbolised by blue arrow (spill locations).

Schedule J – Figure J3 (Groundwater Monitoring Locations)



END OF ENVIRONMENTAL AUTHORITY