Permit

Environmental Protection Act 1994

Environmental authority EPVL00864413

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

Environmental authority number: EPVL00864413

Environmental authority takes effect on 7 March 2022

Environmental authority holder(s)

Name(s)	Registered address
MGT MINERALS PTY LTD	First Floor, Suite 6 119A John Street CABRAMATTA NSW 2166

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
ERA 31 - Mineral processing 2: Processing, in a year, the following quantities of mineral products, other than coke (a) 1000t to 100,000t Schedule 3 19: Mining metal ore, other than a metal ore mentioned in itms 11, 12, 14, 15, 16,17 or 18	ML20547, ML4349

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-on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

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

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.

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

Enquiries:
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Date issued: 7/3/22

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

Schedule A - General

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 Contaminants with the potential to cause environmental harm must not be released directly or indirectly to the receiving environment, except as permitted under the conditions of this environmental authority.

A3 The environmental authority holder must ensure that the activity is carried out in accordance with **Table A1 – Authorised mining activities and locations** and the locations detailed in **Schedule I – Map 1 Location of authorised disturbance** and **Map 2 - Location of authorised disturbance around the TSF**.

Table A1 – Authorised mining activities and locations

Mine Domain	Mine feature name	Location (centroid) (MGA94 Zone 55)		Maximum disturbance area (ha)
		Latitude	Longitude	
Mine area	Dalcouth Pit	17"34.582'S	145"9.241'E	4.7
	Summerhill Pit	17"34.605'S	145"9.942'E	3.79
	Waste Dump	17"34.622'S	145"9.179'E	6.0
	Work area between pit and waste dump	17"34.610'S	145"9.206'E	0.9
	Transport infrastructure	17"34.651'S	145"9.230'E	0.3
	Office and Camp	17"34.726'S	145"9.281'E	0.5
	Process Plant	17"34.771'S	145"9.378"E	1.6
	ROM Pad	17"34.757'S	145"9.454'E	0.6
Tailings Storage Facility (TSF)	Existing TSF	17"34.797'S	145"9.280E	4.6
	New TSF	17"34.708'S	145"9.524'E	4.5
Haul and Access Roads	Haul road	17"34.625'S	145"9.223'E	0.1
	Other access roads	17"34.648'S	145"9.278'E	0.3
Water infrastructure	Clean water dam 1	17"34.531'S	145"9.574'E	7.1
	Clean water dam 2	17"34.642'S	145"9.334'E	14.4
	Process water ponds	17"34.688'S	145"9.452'E	0.2
	Settling pond	17"34.676'S	145"9.467'E	0.5
	Plant pond	17"34.795'S	145"9.342'E	0.4
Total				**50.49**

A4 The holder of this environmental authority must install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;

(a) Maintain such measures, plant and equipment in a proper and efficient condition;

(b) Operate such measures, plant and equipment in a proper and efficient manner; and

(c) 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

A5 Except where specified in another condition of this environmental authority, all monitoring data, records and reports required by this environmental authority or related to environmental management of the activities must be:

(a) Carried out by an appropriately qualified person;

(b) Kept for a period of not less than five years; and

(c) Provided to the administering authority in the specified format within 10 business days of a request.

A6 The following information must be recorded in relation to all monitoring required under the conditions of the environmental authority:

(a) The date and time at which the sample was taken;

(b) The location or monitoring point at which the sample was taken;

(c) The results of all monitoring and details of any exceedances of the conditions of this environmental authority;

(d) Any other pertinent details of relevance to interpreting the sampling results (i.e stream flow, wind conditions or any unusual observations such as odour or colouration).

Financial assurance

A7 Financial assurance must be lodged with the administering authority in the amount, the form and within the time required by the administering authority.

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 environmental management, 3 months prior to the commencement of mining activities.

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.

Complaints

A10 The holder of this environmental authority must record all environmental complaints received about the mining activities including:

(a) Name, address and contact number of the complainant;

(b) Time and date of complaint;

(c) Reasons for the complaint;

(d) Investigations undertaken;

(e) Conclusions formed;

(f) Actions taken to resolve the complaint;

(g) Any abatement measures implemented; and

(h) Person responsible for resolving the complaint.

Third-party reporting

A11 The holder of this environmental authority must:

(a) Within one 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 three-yearly intervals, from the completion of the report referred to above; and

(c) Provide each report to the administering authority within 90 days of its completion.

Exploration

A12 All exploration activities carried out on the mining leases must comply with each of the standard environmental conditions contained in the latest version of the *Eligibility criteria and standard conditions for exploration and mineral development projects.*

End of Conditions for Schedule A

Schedule B – Air

General

B1 Air emissions resulting from mining activities must not cause environmental harm to any sensitive place or commercial place.

Dust and particulate matter monitoring

B2 The environmental authority holder shall ensure that 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 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*.

(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 five exceedances recorded each year, when monitored in accordance with the most recent version of either:

i. *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

ii. *Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 low volume sampler—Gravimetric method*.

(c) A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres (PM2.5) suspended in the atmosphere of 25 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the most recent version of *AS/NZS3580.9.10 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM (sub)2.5 (/sub) low volume sampler—Gravimetric method*.

(d) 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*.

End of Conditions for Schedule B

Schedule C – Waste Management

General

C1 All general waste generated in conducting the mining activities must be disposed of in a lawful manner at an off-site facility, with the exception of waste rock and tailings, which must be characterised, handled and disposed of in accordance with the Waste Management Plan (WMP).

C2 By **1 July 2020**, the environmental authority holder must develop and implement a Waste Management Plan (WMP), which includes:

(a) Effective characterisation of mine waste to predict under the proposed placement and disposal strategy the quality of runoff and seepage generated concerning potentially environmentally significant effects including salinity, acidity, alkalinity and dissolved metals, metalloids and non-metallic inorganic substances;

(b) A program of progressive sampling and characterisation to identify dispersive and non-dispersive material, salinity, acid and alkali producing potential, and metals concentrations of mine waste;

(c) A material balance and disposal plan demonstrating how potentially acid forming mine waste will be identified, selectively placed and/or encapsulated to minimise potential generation of acid and metalliferous drainage;

(d) Where relevant, a sampling program to verify encapsulation and/or placement of potentially acid forming mine waste;

(e) How often the performance of the plan will be assessed;

(f) The indicators or other criteria of which the performance of the plan will be assessed; and

(g) A rehabilitation strategy for mine waste.

C3 All mine waste with the potential to generate contaminants, including potentially acid forming material must be:

(a) Identified, quantified and selectively disposed of in a manner that minimises the potential generation and/or release of contaminants to the receiving environment;

(b) Where there is uncertainty as to whether mine waste is potentially acid forming, this material must be treated as potentially acid forming until demonstrated otherwise; and

(c) Details pertaining to meeting the requirements of this condition must be recorded and retained until this environmental authority is surrendered.

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 **Table D1 – Noise limits** to be exceeded at a sensitive place or commercial place.

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**
$L_{Aeq, adj, 15 mins}$	CV = 50 AV = 5	CV = 45 AV = 5	CV = 40 AV = 0	CV = 45 AV = 5	CV = 40 AV = 5	CV = 35 AV = 0
$L_{A1, adj, 15 mins}$	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**
$L_{Aeq, adj, 15 mins}$	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:

1. *CV = Critical Value*
2. *AV = Adjustment Value*
3. *bg = background noise level (**LA90, adj, 15 mins**) measured over 3-5 days at the nearest sensitive receptor*
4. *To calculate noise limits in Table D1:*
   If bg ≤ (CV – AV):
   Noise limit = bg + AV
   If (CV – AV) < bg ≤ CV:
   Noise limit = CV
   If bg > CV:
   Noise limit = bg + 0
5. *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*
6. *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 Blasting must:

(a) Only be undertaken between 7am to 6pm; and

(b) Not cause an exceedance of the limit for air blast overpressure or ground vibration peak particle velocity specified in **Table D2 – Blasting noise limits** at a sensitive place or commercial place.

Table D2 – Blasting noise limits

Parameter	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) $L_{AN,T}$ (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 – Water

Receiving surface water environment monitoring

E1 The receiving waters must be monitored at the locations specified in **Table E1 - Receiving waters reference and compliance monitoring sites**

Table E1 - Receiving waters reference and compliance monitoring sites

Monitoring sites	Monitoring site description	Location	
		Easting (GDA94 – Zone 55)	Northing (GDA94 – Zone 55)
Reference sites			
SW10	Upstream Copper Creek	304127	8056133
SW4	Upstream Males Gully	305869	8057008
SW4a	Upstream Mayday Creek	305630	8055650
SW11	Upstream Males Gully	305190	8056045
Compliance sites			
SW3	Copper Creek	303550	8055710
SW1	Spillway of the existing tailings storage facility (TSF)	304105	8055230
SW8	Compliance point downstream of the existing TSF	303898	8055283
SW9	Boundary compliance point	303366	8055166
SW12	Un-named watercourse	305077	8055840

E2 The receiving waters must be monitored at the frequency specified in **Table E2 - Receiving waters quality objectives.**

E3 The receiving waters must be monitored for the contaminants listed in **Table E2 - Receiving waters quality objectives.**

E4 Water quality in the receiving environment must not exceed any water quality objective specified in **Table E2 - Receiving Waters Quality Objectives.**

Table E2 - Receiving Waters Quality Objectives

Contaminant[1]	Unit	Water quality objective (dissolved)	Water quality objective (total)	Monitoring Frequency
pH	pH units	6 -7.5[3]		Monthly
Electrical conductivity	µS/cm	106[3]		
Turbidity	NTU	71		
Sulfate	mg/L	2[3]		
Fluoride	mg/L	0.417		
Aluminium	mg/L	2.7	-	
Arsenic	mg/L	0.013[4]	0.01[2]	
Cadmium	mg/L	0.0002[4]	0.002[2]	
Chromium	mg/L	0.001[4]	0.05[2]	
Cobalt	mg/L	0.002	-	
Copper	mg/L	0.03[3]	1[2]	
Lead	mg/L	0.0034[4]	0.1[2]	
Manganese	mg/L	0.02	-	
Mercury (inorganic)	mg/L	0.0006[4]	0.001[2]	
Nickel	mg/L	0.011[4]	0.02[2]	
Selenium	mg/L	0.011[4]	0.011[2]	
Silver	mg/L	0.00005[4]	-	
Zinc	mg/L	0.02[3]	3[2]	
Hardness	mg/L	For interpretation purposes only		
Major cations and Anions	mg/L			

[1]All samples for metals/metalloids must be analysed for both the total (from analysis of an unfiltered sample) and dissolved (from analysis of a field filtered sample) fractions.
[2]Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy (2011)
[3]Environmental Protection (Water) Policy 2009 Herbert River Basin Environmental Values and Water Quality Objectives.
[4]ANZECC (2000) trigger levels for 95% aquatic ecosystem protection for slightly to moderately disturbed ecosystems.

E5 Monitoring and sampling must be carried out in accordance with written procedures and must address the requirements of the latest version of the following documents unless otherwise approved by the administering authority:

(a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual 2009 – Environmental Protection (Water) Policy 2009

(b) for groundwater, Groundwater Sampling and Analysis – A Field Guide (2009:27 GeoCat#6890.1) and Australian Standard AS/NZS 5667.11:1998 Water Quality – Sampling – Guidance on sampling of groundwaters;

(c) for subterranean aquatic fauna, the Guideline for the Environmental Assessment of Subterranean Aquatic Fauna.

Groundwater

E6 The holder of this environmental authority must not release contaminants to groundwater.

E7 Groundwater quality and standing water level must be monitored at the locations and frequencies specified in **Table E3 - Groundwater monitoring locations and frequency.**

Table E3 – Groundwater monitoring locations and frequency

Monitoring Bore	Co-ordinate (MGA94 Zone 55)		Surface RL (m)[1]	Screened interval RL (m)	Monitoring Frequency
	Easting	Northing			Standing Water Level and Groundwater Quality
Monitoring bores					
MB1	303565	8055354	707	16 - 22	Quarterly
MB2	305195	8056085	742	16 – 22	
MB3	307009	8055921	762	25 – 31	
MB4	306163	8056927	777	40 - 52	
MB5	303911	8055490	729	35 - 48	
MB6	303850	8056032	727	13 - 19	
MB7	303916	8055778	726	18 - 40	
MB8	304080	8055641	740	30 - 42	
MB9	304319	8055592	731	5 - 7	
MB10	304019	8055944	733	23 - 47	
MB11	304176	8055858	756	36 - 48	
MB12	304292	8056030	749	31 - 42	
MB13	305110	8055880	752	25 - 35	
Shallow Groundwater bores					
SB01	304384	8055540	735	4 - 10	Quarterly
SB02	304408	8055568	734	3 - 6	
SB03	304424	8055595	731	4 - 7	
SB04	304483	8055609	734	1.5 - 5	
SB05	304503	8055586	738	2 - 6	

[1] RL must be measured at the top of the bore casing to the nearest 5cm.

E8 Groundwater quality must be monitored for the quality characteristics identified in **Table E4 – Groundwater Quality Objectives**.

Table E4 – Groundwater Quality Objectives

Monitoring Bores Water Quality Objectives[1]																	
Quality Characteristic	**Unit**	**MB1**		**MB2**		**MB3 and MB8**		**MB4 and MB5**		**MB6 and MB10**		**MB7 and MB11**		**MB12 and MB13**		**MB9**	
		Limit A	Limit B	Limit A	Limit B	Limit A	Limit B	Limit A	Limit B	Limit A	Limit B	Limit A	Limit B	Limit A	Limit B	Limit A	Limit B
pH	pH units	6.9 - 7.9[2]		6.9 - 7.9[2]		6.9 - 7.9[2]		6.9 - 7.9[2]		6.9 - 7.9[2]		6.9 - 7.9[2]		6.9 - 7.9[2]		6.9 - 7.9[2]	
EC	µS/cm	-	997[2]	1380[4]	1400[5]	810[4]	829[5]	-	997[2]	1400[4]	1600[5]	-	1200[5]	-	1200[5]	444[4]	512[5]
Sulfate	mg/L	8.9[4]	9.7[5]	12[2]	13.5[5]	7.4[4]	8.0[5]	5.8[4]	6.5[5]	45	72[5]	23[4]	25.9[5]	37.0[4]	38.3[5]	1.5[4]	3.8[5]
Aluminium	mg/L	-	0.055[3]	-	0.055[3]	-	0.055[3]	-	0.055[3]	0.052[3]	0.245[5]	-	0.055[3]	-	0.055[3]	0.06[4]	0.075[5]
Arsenic	mg/L	-	0.013[3]	-	0.013[3]	0.011[3]	0.017[5]	0.039[4]	0.093[5]	0.065[4]	0.084[5]	0.022[4]	0.036[5]	0.017[4]	0.022[5]	-	0.013[3]
Cadmium	mg/L	0.0005[4]	0.0007[5]	0.0002[3]	0.0004[5]	-	0.0002[3]	0.0003[4]	0.0004[5]	-	0.0002[3]	0.0003[3]	0.0004[5]	0.0002[3]	0.0004[5]	-	0.0002[3]
Chromium	mg/L	-	0.001[3]	-	0.001[3]	-	0.001[3]	-	0.001[3]	-	0.001[3]	-	0.001[3]	-	0.001[3]	-	0.001[3]
Cobalt	mg/L	-	0.001[3]	-	0.002[5]	0.004[3]	0.006[5]	0.001[3]	0.002[5]	0.006[3]	0.008[5]	-	0.001[3]	-	0.002[5]	-	0.001[3]
Copper	mg/L	-	0.02[2]	-	0.02[2]	-	0.02[2]	-	0.02[2]	-	0.02[2]	-	0.02[2]	-	0.02[2]	-	0.02[2]
Fluoride	mg/L	2.60[4]	2.64[5]	3.70[4]	4.15[5]	3.34[4]	3.69[5]	2.70[4]	3.10[5]	2.70[4]	2.9[5]	3.54[4]	4.04[5]	4.20[4]	4.66[5]	0.40[4]	0.45[5]
Lead	mg/L	-	0.0034[3]	-	0.0034[3]	-	0.0034[3]	-	0.0034[3]	-	0.0034[3]	-	0.0034[3]	-	0.0034[3]	-	0.0034[3]
Manganese	mg/L	-	0.037[3]	0.19[4]	0.20[5]	0.364[4]	0.453[5]	0.412[4]	0.491[5]	1.10[4]	1.70[5]	0.240[4]	0.440[5]	1.00[4]	1.10[5]	0.248[4]	0.330[5]
Mercury (inorganic)	mg/L	-	0.006[3]	-	0.006[3]	-	0.006[3]	-	0.006[3]	-	0.006[3]	-	0.006[3]	-	0.006[3]	-	0.006[3]
Nickel	mg/L	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]
Selenium	mg/L	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]	-	0.011[3]
Silver	mg/L	-	0.00005[3]	-	0.00005[3]	-	0.00005[3]	-	0.00005[3]	-	0.00005[3]	-	0.00005[3]	-	0.00005[3]	-	0.00005[3]
Zinc	mg/L	-	0.054[3]	-	0.054[3]	-	0.054[3]	-	0.054[3]	-	0.054[3]	-	0.054[3]	-	0.054[3]	-	0.054[3]
Other major ions	mg/L	**For interpretive purpose**															

[1] All metals and metalloids must be measured as 'dissolved' (from analysis of a field filtered sample).

[2] 80th percentile (moderate depth) - Table 4.3 Water quality objectives to protect aquatic ecosystem EVs for Groundwater Chemistry Group (refer to Plan WQ1083) – Sodic – 10 Granitic uplands and slopes, Environmental Protection (Water) Policy 2009 Herbert River Basin Environmental Values and Water Quality Objectives.

[3] ANZECC (2000) trigger levels for 95% aquatic ecosystem protection for slightly to moderately disturbed ecosystems.

[4] 80th percentile bore data

[5] 95th percentile bore data

E9 Groundwater measured from any monitoring bore specified in **Table E3 - Groundwater monitoring locations and frequency** must not exceed the corresponding Limit A specified in **Table E4 – Groundwater quality objectives** on any **five** consecutive sampling occasions**.**

E10 Groundwater measured from any monitoring bore specified in **Table E3 - Groundwater monitoring locations and frequency** must not exceed the corresponding Limit B specified in **Table E4 – Groundwater quality objectives** on any **three** consecutive sampling occasions**.**

E11 If groundwater measured from any monitoring bore specified in **Table E3 - Groundwater monitoring locations and frequency** exceeds the corresponding Limit B specified in **Table E4 – Groundwater quality objectives** on any one sampling occasion the environmental authority holder must resample the groundwater within the bore for all exceeding parameters within ten business days of receipt of results.

Groundwater Management Program

E12 By **1 May 2020** a Groundwater Management Program must be developed, documented and implemented by appropriately qualified persons.

E13 The Groundwater Management Program must:

(a) identify potential sources of contamination to groundwater from the activity; and

(b) ensure that all potential groundwater impacts due to the activity are identified, monitored and mitigated; and

(c) document sampling and monitoring methodology; and

(d) ensure that adequate groundwater monitoring and data analysis is undertaken to achieve the following objectives:

i. detect any impacts to groundwater levels due to the activity;

ii. detect any impacts to groundwater quality due to the activity;

iii. determine compliance with condition E8; and

iv. determine trends in groundwater quality; and

(e) include an appropriate quality assurance and quality control program; and

(f) include a conceptual groundwater model; and

(g) include a review process to identify improvements to the program that includes addresses any comments provided by the administering authority.

E14 The Groundwater Management Program must be reviewed and updated to ensure it meets the requirements specified in condition E13 on an annual basis by an appropriately qualified person.

E15 The construction, maintenance and decommissioning of groundwater monitoring bores must be undertaken in a manner that:

(a) prevents contaminants entering the groundwater; and

(b) ensures the integrity of the bores to obtain representative groundwater samples from the target aquifer; and

(c) maintains the hydrogeological environment within the aquifer.

E16 A bore drill log must be kept for each groundwater monitoring bore which includes:

(a) bore identification reference and geographic coordinate location;

(b) specific construction information including but not limited to depth of bore, depth and length of casing, depth and length of screening and bore sealing details;

(c) standing groundwater level and water quality parameters including physical parameters and results of laboratory analysis for the possible trigger parameters;

(d) lithological data and stratigraphic interpretation by an appropriately qualified person to identify important features associated with groundwater monitoring; and

(e) target aquifer formation of the bore.

Receiving environment monitoring program

E17 The environmental authority holder must develop, document and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to environmental values of receiving waters by **1 May 2020**. The REMP must include at minimum:

(a) Monitoring the effects of the mining activities on the receiving environment periodically under natural flow conditions and while contaminants are being released (if applicable);

(b) Encompass the waters of Herbert River and connected or surrounding waterways within 2.5km downstream of the mining activities;

(c) Identification of all environmental values of receiving waters;

(d) An assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current environmental authority conditions to protect downstream environmental values; and

(e) Application of biological monitoring if required to determine whether the mining activities are being conducted in a manner that enhances or protects the environmental values of receiving waters;

E18 A report outlining the findings of the REMP, including all monitoring results and any interpretations or assumptions relied upon, must be prepared by an appropriately qualified person annually and submitted to the Administering Authority on request.

Water Management

E19 A Water Management Plan must be developed by an appropriately qualified person, documented and implemented for all stages of the mining activity. The Water Management Plan should be developed in accordance with Department of Environment and Science guideline *Preparation of water management plans for mining activities* and include:

(a) a study of the source of contaminants

(b) a water balance model for the site

(c) a water management system for the site

(d) measures to manage and prevent saline drainage

(e) measures to manage and prevent acid rock drainage

(f) contingency procedures for emergencies

(g) a program for monitoring and review of the effectiveness of the water management plan.

Erosion and Sediment Control

E20 An Erosion and Sediment Control Plan must be developed, documented and implemented by an appropriately qualified person for all stages of the mining activities to minimise erosion and the release of sediment to receiving waters.

End of Conditions for Schedule E

Schedule F – Land and rehabilitation

F1 Land disturbed by mining activities must be rehabilitated in accordance with **Table F1 - Rehabilitation requirements**.

Table F1 - Rehabilitation requirements

Mine domain	Rehabilitation goal	Rehabilitation objectives	Indicators[1]	Completion criteria[1]
Open cut pit	Safe	No hazardous materials and structurally sound with limited slopes.	TBA	TBA
	Non-polluting	No groundwater contamination or overflow.	TBA	TBA
	Stable	Long term geotechnical stability of the low and high walls.	TBA	TBA
	Able to sustain an agreed post mining land use	Native vegetation and habitat.	TBA	TBA
Waste Rock Dump	Safe to humans and wildlife	Structurally safe with no hazardous materials; and site is safe now and for foreseeable future.	TBA	TBA
	Non-polluting	Contaminants contained onsite; and no release of contaminants to the receiving environment.	TBA	TBA
	Stable	Landform design achieves appropriate erosion rates.	TBA	TBA
	Able to sustain an agreed post-mining land use	Native vegetation and habitat.	TBA	TBA
Mine infrastructure	Safe to humans and wildlife	Structurally safe with no hazardous materials; and site is safe now and for foreseeable future.	TBA	TBA
	Non-polluting	No residual contaminants that could be released to the receiving environment.	TBA	TBA
	Stable	No erosion and sediment loss.	TBA	TBA
	Able to sustain an agreed post mining land use	Native vegetation and habitat.	TBA	TBA
Water infrastructure (dams and drains)	Safe to humans and wildlife	Structurally safe with no hazardous materials and safe for the foreseeable future.	TBA	TBA
	Non-polluting	No residual contaminants that could be released to the receiving environment.	TBA	TBA
	Stable	Landform design achieves appropriate erosion rates.	TBA	TBA
	Able to sustain an agreed post mining land use	Rehabilitate and return to native vegetation and habitat; or water storage where landholder statement for ongoing use has been provided.	TBA	TBA

Haul Road	Safe to humans and wildlife	Structurally safe with no hazardous materials and safe for the foreseeable future.	TBA	TBA
	Non-polluting	No residual contaminants that could be released to the receiving environment.	TBA	TBA
	Stable	No erosion and sediment loss.	TBA	TBA
	Able to sustain an agreed post mining land use	Rehabilitate and return to native vegetation and habitat.	TBA	TBA
New TSF	Safe to humans and wildlife	Structurally safe with no hazardous materials and safe for the foreseeable future.	TBA	TBA
	Non-polluting	Residual contaminants are contained and contaminant release to the receiving environment is prevented.	TBA	TBA
	Stable	Vegetation cover to minimise erosion	TBA	TBA
	Able to sustain an agreed post mining land use	Rehabilitate and return to native vegetation and habitat.	TBA	TBA
Existing TSF	Safe to humans and wildlife	Structurally safe with no hazardous materials and safe for the foreseeable future.	TBA	TBA
	Non-polluting	Residual contaminants are contained and contaminant release to the receiving environment is prevented.	TBA	TBA
	Stable	Vegetation cover to minimise erosion	TBA	TBA
	Able to sustain an agreed post mining land use	Remove all tailings and place in New TSF, decommission and return to native vegetation and watercourse.	TBA	TBA

[1] Rehabilitation indicators and completion criteria must be provided to the administering authority within 2 years from the commencement of mining **a**s an environmental authority amendment application.

Post Mine Land-use Management Plan

F2 Two years from commencement of mining the environmental authority holder must develop and document a Post Mine Land-use Plan ('PMLUP') that describes how the rehabilitation objectives will be achieved. The PMLUP must at minimum include:

(a) Schematic representation of the proposed final land form inclusive of site drainage features;

(b) Details of proposed slope design and erosion and sediment controls;

(c) Proposed cover designs for encapsulation of waste material, including performance criteria;

(d) Proposed re-vegetation methods inclusive of plant species selection, propagation methods and establishment of suitable plant growth medium (i.e. top soil);

(e) Materials balance for all rehabilitation requirements including available top soil and material suitable for encapsulating waste in accordance with the proposed encapsulation methodology;

(f) Geotechnical, geochemical and hydrological studies necessary to demonstrate likely success of proposed rehabilitation methodology to achieve the required rehabilitation outcomes;

(g) An investigation of proposed residual voids including potential for generation/mobilisation of contaminants, potential pathways for release of contaminants to waters (including groundwater) and a long-term void water balance model; and

(h) A rehabilitation monitoring program sufficient to identify if required rehabilitation outcomes have been achieved.

Note: Commencement of mining is taken to be the date that extraction of material from the pit commences.

F3 The environmental authority holder must review and update the PMLUP in the following circumstances:

(a) The rehabilitation schedule changes with the mine plan schedule;

(b) Based on the outcomes of on-site revegetation trials; and

(c) Based on the outcomes of rehabilitation monitoring programs.

F4 Rehabilitation must commence progressively in accordance with the Plan of Operations.

Chemical and flammable or combustible liquids

F5 Spillage of all chemicals, waste oils and flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm.

F6 All piping and infrastructure associated with the loading and unloading of petroleum and diesel products must be designed, constructed and maintained in accordance with the latest edition of AS1940—The storage and handling of flammable and combustible liquids.

F7 All waste materials, explosives, hazardous chemicals, corrosive substances, toxic substances, gases and dangerous goods must be stored and handled in accordance with the current Australian standard. Where no relevant Australian Standard exists, all materials must be stored within an effective on-site containment system that prevents contamination of land or waters.

Impacts to Prescribed Environmental Matters

F8 Significant residual impacts to prescribed environmental matters, are not authorised under this environmental authority or the *Environmental Offsets Act 2014.*

F9 Records demonstrating that each impact to a prescribed environmental matter did not, or is not likely to, result in a significant residual impact to that matter must be:

(a) completed by an appropriately qualified person; and

(b) kept for the life of the environmental authority.

End of Conditions for Schedule F

Schedule G – Regulated Structures

G1 The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* at the following times:

(a) prior to the design and construction of the structure, if it is not an existing structure; or

(b) if it is an existing structure, prior to the adoption of this schedule; or

(c) prior to any change in its purpose or the nature of its stored contents.

G2 A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.

G3 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 Consequence Categories and Hydraulic Performance of Structures (EM635)*.

Design and construction of a regulated structure

G4 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 Consequence Categories and Hydraulic Performance of Structures (EM635)*.

G5 Construction of a regulated structure is prohibited unless:

(a) The holder has submitted a consequence category assessment report and

(b) Certification to the administering authority has been certified by a suitably qualified and experienced person for the design and design plan and the associated operating procedures in compliance with the relevant condition of this authority.

G6 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 Consequence Categories and Hydraulic Performance of Structures (EM635)*, and must be recorded in the Regulated Dams/Levees register.

G7 Regulated structures must:

(a) be designed and constructed in accordance with and conform to the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635);*

(b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of:

i. floodwaters from entering the regulated dam from any watercourse or drainage line; and

ii. possible erosion by floodwaters arising from any watercourse or drainage line.

G8 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;

(b) construction of the regulated structure is in accordance with the design plan.

Operation of a regulated structure

G9 Operation of a regulated structure**,** except for an existing structure, is prohibited unless the holder has submitted to the administering authority:

(a) one paper copy and one electronic copy of the design plan and certification of the 'design plan', and

(b) a set of 'as constructed' drawings and specifications, and

(c) certification of those 'as constructed drawings and specifications', and

(d) 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.

(e) the requirements of this authority relating to the construction of the regulated structure have been met;

(f) the holder has entered the details required under this authority, into a Register of Regulated Dams; and

(g) there is a current operational plan for the regulated structures.

G10 Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in a manner that is consistent with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.

Mandatory reporting level

G11 The Mandatory Reporting Level (the MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.

G12 The holder 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 dam reaches the MRL.

G13 The holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated structure.

G14 The holder must record any changes to the MRL in the Register of Regulated Structures.

Design storage allowance

G15 The holder 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 taken prior to **1 July** of each year.

G16 By **1 November** of each year, storage capacity must be available in each regulated structure, to meet the Design Storage Allowance (DSA) volume for the dam.

G17 The holder must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated structure will not have the available storage to meet the DSA volume on **1 November** of any year, notify the administering authority.

G18 The holder must, immediately on becoming aware that a regulated structure 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.

Annual inspection report

G19 Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.

G20 At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and 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.

G21 The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

G22 The holder must:

(a) Within 20 business days of receipt of the annual inspection report, provide to the administering authority:

i. The recommendations section of the annual inspection report; and

ii. If applicable, any actions being taken in response to those recommendations; and

(b) If, following receipt of the recommendations and (if applicable) actions, the administering authority requests a full copy of the annual inspection report from the holder, provide this to the administering authority within 10 business days of receipt of the request.

Transfer arrangements

G23 The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.

Decommissioning and rehabilitation

G24 Regulated structures must not be abandoned but be either:

(a) decommissioned and rehabilitated; or

(b) be left in-situ for a beneficial use(s) provided that:

i. it no longer contains contaminants that will migrate into the environment; and

ii. it contains water of a quality that is demonstrated to be suitable for its intended beneficial use(s); and

(c) The holder of the environmental authority and the landholder agree in writing that the:

i. dam will be used by the landholder following the cessation of the environmentally relevant activity(ies); and

ii. the landholder is responsible for the dam, on and from an agreed date.

G25 Before surrendering this environmental authority the site must be rehabilitated to achieve a safe, stable, non-polluting landform and final land use in accordance with condition **F1** of this environmental authority.

Hydraulic Performance of Regulated Structures

G26 All regulated structures must be specified in **Table G1 – Regulated structures hydraulic performance criteria.**

G27 Each regulated structure specified in **Table G1 – Regulated structures hydraulic performance criteria** must meet the applicable hydraulic performance criteria listed in **Table G1 – Regulated structures hydraulic performance criteria** for that structure.

Table G1 – Regulated structures hydraulic performance criteria

Regulated structure	Consequence category	Hydraulic performance criteria		
		Spillway Capacity	Design Storage Allowance (DSA)[1]	Mandatory Reporting Level (MRL)
New TSF	Significant	1: 1,000 AEP rainfall event	1:20 AEP 3 month wet season plus process inputs	1:10 AEP 72 hour duration storm event
Existing TSF	TBA[2]	TBA[2]	TBA[2]	TBA[2]

[1] Must be achieved on 1 November of each year.
[2] A consequence category assessment undertaken in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933) must be provided to the administering authority by **1 May 2020.**

G28 The New TSF must be constructed and operated in a manner that prevents the release of contaminants to receiving waters and includes at minimum a:

a) Low permeability liner system that prevents the release of contaminants from the New TSF; and

b) Leak detection system capable of identifying any release of seepage from the New TSF.

G29 The hydraulic performance criteria specified in this environmental authority are the minimum mandatory performance requirements, regulated structures must be managed in a manner that ensures compliance with all conditions of this environmental authority.

END OF CONDITIONS FOR SCHEDULE G

Schedule H – Definitions

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

Administering Authority is the agency that administers the environmental authority provisions under the *Environmental Protection Act 1994*.

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

Annual inspection report means an assessment prepared by a suitably qualified and experienced person containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan);

(a) against recommendations contained in previous annual inspections reports;

(b) against recognised dam safety deficiency indicators;

(c) for changes in circumstances potentially leading to a change in consequence category;

(d) for conformance with the conditions of this authority;

(e) for conformance with the 'as constructed' drawings;

(f) for the adequacy of the available storage in each regulated dam, 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 dam (or network of linked containment systems);

(g) for evidence of conformance with the current operational plan.

Annual exceedance probability or AEP means the probability that at least one event in excess of a particular magnitude will occur in any given year.

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 or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature.

Assessed or **assessment** by a suitably qualified and experienced person in relation to a consequence 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 an environmental authority or a development approval.

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

Blasting means the use of explosive materials to fracture:

(a) rock, coal and other minerals for later recovery, or

(b) structural components or other items to facilitate removal from a site or for reuse.

Certified with respect to watercourse diversions, means assessed and approved by a suitably qualified and experienced person. In relation to 'as constructed' drawings and specifications, the certification must be by the suitably qualified person who supervised the construction of the watercourse diversion, or re-establishment of the watercourse.

Certification, Certifying or **Certified** by an appropriately qualified and experienced person in relation to a design plan or an annual report regarding dams/structures, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

(a) exactly what is being certified and the precise nature of that certification

(b) the relevant legislative, regulatory and technical criteria on which the certification has been based

(c) the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts

(d) the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

Chemical means:

(a) an agricultural chemical product or veterinary chemical product within the meaning of the Agricultural and *Veterinary Chemicals Code Act 1994* (Commonwealth), or

(b) a dangerous good under the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council, or

(c) a lead hazardous substance within the meaning of the Workplace Health and Safety Regulation 1997, or

(d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth, or

(e) any substance used as, or intended for use as:

i. a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product, or

ii. a surface active agent, including, for example, soap or related detergent, or

iii. a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide, or

iv. a fertiliser for agricultural, horticultural or garden use, or

v. a substance used for, or intended for use for mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater, or

vi. manufacture of plastic or synthetic rubber.

Commercial place means a workplace 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.

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

Construction or constructed, in relation to watercourse diversions, is the process of building, or modifying an existing diversion, but does not include investigations and testing necessary for the purpose of preparing a design plan.

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

Consequence 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 Consequence Categories and Hydraulic Performance of Structures (EM635)*. The relevant category is specified in **Table G1 – Regulated structures hydraulic performance criteria**

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 and associated works.

Dam crest volume means the volume of material (liquids and/or solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (for example, via spillway).

Design plan is a document that contains the design, operation, monitoring and revegetation criteria of a watercourse diversion that addresses the outcomes stated in conditions on the environmental authority relating to the diversion. The document should include, but not be limited to:

(a) required information under a functional design

(b) the location, function and description of geomorphic and riparian vegetation features within the proposed watercourse diversion

(c) results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion

(d) a revegetation and vegetation management plan (a revegetation plan) for the diversion

(e) engineering drawings depicting the physical attributes and dimensions of the diversion

(f) (if relevant) the staged development of a permanent watercourse diversion including the proposed use of temporary watercourse diversions with identified lifespans

(g) all investigation and other reports relied on by the design

(h) plans and specifications sufficient to complete construction and revegetation in accordance with the design.

Design storage allowance or DSA means an available volume, estimated in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority, 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 exceedance probability (AEP) specified in that Manual. The applicable DSA for regulated structures authorised under this environmental authority are detailed in **Table G1 – Regulated structures hydraulic performance criteria**.

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

Disturbance of land includes:

(a) compacting, removing, covering, exposing or stockpiling of earth

(b) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion

(c) carrying out mining within a watercourse, waterway, wetland or lake

(d) the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls

(e) temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after the mining activity has ceased

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

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

(a) areas off lease (e.g. roads or tracks which provide access to the mining lease)

(b) areas previously disturbed which have achieved the rehabilitation outcomes

(c) by agreement with the administering authority, areas previously disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions)

(d) areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner

(e) disturbance that pre-existed the grant of the tenure.

EC means electrical conductivity.

Environmental offset has the meaning in section 7 of the *Environmental Offsets Act 2014*.

Equilibrium: A state where 'balance' is achieved despite changing variables.

Existing authority has the meaning in section 94 of the *Environmental Offsets Act 2014*.

Existing structure means a structure that was in existence prior to the adoption of this schedule of conditions under the authority.

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.

Functional design is a document that contains 'conceptual' information about the design, operation and revegetation criteria of a watercourse diversion that addresses the outcomes stated in the conditions on the environmental authority relating to the diversion. The document should include, but not be limited to:

(a) geomorphic and vegetation assessment of the existing watercourse

(b) hydrologic conditions of the existing watercourse

(c) the proposed watercourse diversion route

(d) results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion.

Functionality means the purpose that something is designed or expected to fulfil.

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

Holder, for a mining tenement, means a holder of the tenement under the *Mineral Resources Act 1989*, and the holder of the associated environmental authority under the *Environmental Protection Act 1994.*

Hydraulic performance means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

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

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

Land use means the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

Leachate means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of at the operational land which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

Levee means an embankment that only provides for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of water or flowable substances at any other times.

Licensed place means the mining activities carried out at the mining tenements.

Low consequence dam means any dam that is not a high or significant consequence category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

Low impact activities means activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation, or result in significant disturbance to land which cannot be

rehabilitated immediately using hand tools after the activity is completed. Examples of such activities include but are not necessarily limited to soil surveys (excluding test pits), topographic surveys, cadastral surveys and ecological surveys, the installation of monitoring equipment provided that it is within the meaning of low impact and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.

Mandatory reporting level or MRL means a warning and reporting level determined in accordance with the criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

Manual means the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

Maximum extent of impacts means the total maximum, unabated, impact to a prescribed environmental matter that could to occur over the whole-of-project life.

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.

Mine waste includes any waste produced from mining activities and includes but is not limited to spoil, overburden, waste rock and tailings.

Minimise is to reduce to the smallest possible amount or degree.

Modification or modifying (see definition of 'construction')

NATA means National Association of Testing Authorities, Australia.

Natural flow means the flow of water through waters caused by natural processes (*i.e.* rainfall in the catchment area and subsequent runoff into watercourses).

Non polluting means having no adverse impacts upon the receiving environment.

Operational plan includes:

(a) Normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA allowance);

(b) 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.

Peak particle velocity (ppv) means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mm/s).

Permanent watercourse diversion is a man-made structure that incorporates the geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse and is designed, constructed, operated and maintained according to an engineering standard that ultimately achieves a self-sustaining watercourse able to function without features or characteristics that rely on ongoing maintenance or that impose a financial or other burden on the proponent, government or the community.

Potentially acid forming (PAF) waste rock means potentially acid forming waste rock and includes any mined material with the potential for nett generation of acidity; where there is uncertainty regarding the materials acid-forming potential, it must be treated as PAF waste rock until demonstrated otherwise.

Pre-existing watercourse is the section of watercourse from which the flow of water will be diverted as a result of the construction and operation of a watercourse diversion.

Prescribed environmental matters has the meaning in section 10 of the *Environmental Offsets Act 2014*, limited to the matters of State environmental significant listed in schedule 2 of the *Environmental Offsets Regulation 2014*.

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

(a) a marine park under the *Marine Parks Act 1992*, or

(b) a World Heritage Area.

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

(a) Waters;

(b) Land;

(c) Air; and

(d) Any area that is not specified in Table A1 of this environmental authority.

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

Regulated dam means any dam in the significant or high consequence category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

Register of Regulated Dams includes**:**

(a) Date of entry in the register;

(b) Name of the dam, its purpose and intended/actual contents;

(c) The consequence category of the dam as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635);

(d) Dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam;

(e) Name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;

(f) For the regulated dam, other than in relation to any levees –

i. The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;

ii. Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area

iii. Dam crest volume (megalitres);

iv. Spillway crest level (metres AHD).

v. Maximum operating level (metres AHD);

vi. Storage rating table of stored volume versus level (metres AHD);

vii. Design storage allowance (megalitres) and associated level of the dam (metres AHD);

viii. Mandatory reporting level (metres AHD);

(g) The design plan title and reference relevant to the dam;

(h) The date construction was certified as compliant with the design plan;

(i) The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;

(j) Details of the composition and construction of any liner;

(k) The system for the detection of any leakage through the floor and sides of the dam;

(l) Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;

(m) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority;

(n) Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

Regulated structure includes land-based containment structures, levees, bunds and voids, but not a tank or container designed and constructed to an Australian Standard that deals with strength and structural integrity.

Rehabilitation means the process of reshaping and revegetating land to restore it to a stable landform.

Release event means a discharge of water contaminated by the mining activity.

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

Revegetation is the re-establishment of vegetation of a species and density of cover similar to surrounding undisturbed areas or the landform that existed before mining activities on soil surfaces associated with the construction or rehabilitation of a watercourse diversion.

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

Self-sustaining means not requiring on-going intervention and maintenance to maintain functional riverine processes and characteristics

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 residual impact has the meaning in section 8 *Environmental Offsets Act 2014.*

Spillway means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges form the dam, normally under flood conditions or in anticipation of flood conditions.

Structure means dam or levee.

Suitably qualified and experienced person' means a person who is a Registered Professional Engineer of Queensland under the provisions of the *Professional Engineers Act 2002*, who has an **appropriate level of expertise** in the structures, geomechanics, hydrology, hydraulics and environmental impact of watercourse diversions.

An ***appropriate level of expertise*** includes:

- demonstrable competency, experience and expertise in:
    - investigation, design or construction of watercourses diversions
    - operation and maintenance of watercourse diversions
    - geomechanics with particular emphasis on channel equilibrium, geology and geochemistry
    - hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology
    - hydraulics with particular reference to sediment transport and deposition and erosion control
    - hydrogeology with particular reference to seepage and groundwater
    - solute transport processes and monitoring thereof, or
- sufficient knowledge and experience to certify that where the **suitably qualified and experienced person** has relied on advice and information provided by other **persons with relevant expertise***:
    - they consider it reasonable to rely on that advice and information
    - the expert providing the advice and information has knowledge, competency, suitable experience and demonstrated expertise in the matters related to watercourse diversions.

Persons with relevant expertise include:

- Geomorphologist: person who has demonstrated competency and relevant experience in stream geomorphology and watercourse diversions.
- Geotechnical Expert: person who has demonstrated competency and relevant experience in geotechnical assessment of soil characteristics suitable for watercourse diversions.
- Vegetation Expert: person who has demonstrated competency and relevant experience in the identification, role and function of vegetation with watercourses and adjoining floodplains, and has demonstrated competency and relevant experience in revegetation of watercourse diversions and adjoining floodplains. .
- Groundwater Expert: person who has demonstrated competency and relevant experience in groundwater systems.
- Surface Water Expert: person who has demonstrated competency and relevant experience in hydrology.

- Engineer: person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Persons Act 2002* or has similar qualifications under a respected professional registration association, and has demonstrated competency and relevant experience in design and construction of watercourse diversions.
- Soils Expert: person who has demonstrated competency and relevant experience in soil classification including the physical, chemical and hydrologic analysis of soil.

System design plan means a plan that manages an integrated containment system that shares the required DSA and/or ESS volume across the integrated containment system.

Temporary watercourse diversion is a man-made structure that may incorporate geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse and is designed, constructed, operated and maintained to an engineering standard that ensures the diversion does not compromise the equilibrium and performance of the diversion and adjoining watercourses. A temporary diversion is replaced by a permanent diversion, or the re-establishment of the pre-existing watercourse, within the timeframe specified in the design plan.

the Act means the *Environmental Protection Act 1994*.

Void means any constructed, open excavation in the ground.

Water is defined under Schedule 4 of the *Water Act 2000.*

Watercourse has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means a river, creek or stream in which water flows permanently or intermittently—

(a) in a natural channel, whether artificially improved or not; or

(b) in an artificial channel that has changed the course of the watercourse.

Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

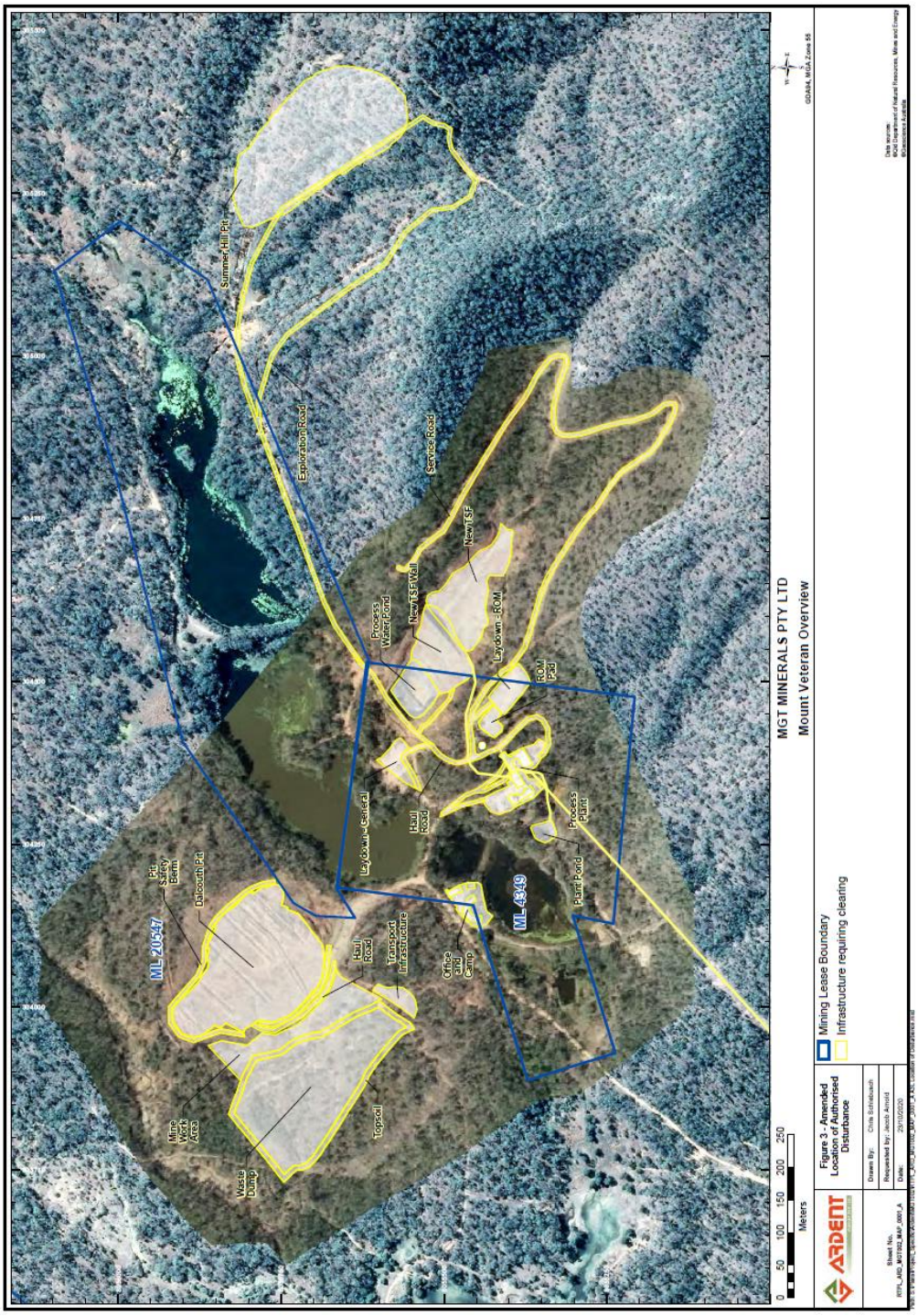
Water quality means the chemical, physical and biological condition of water.

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

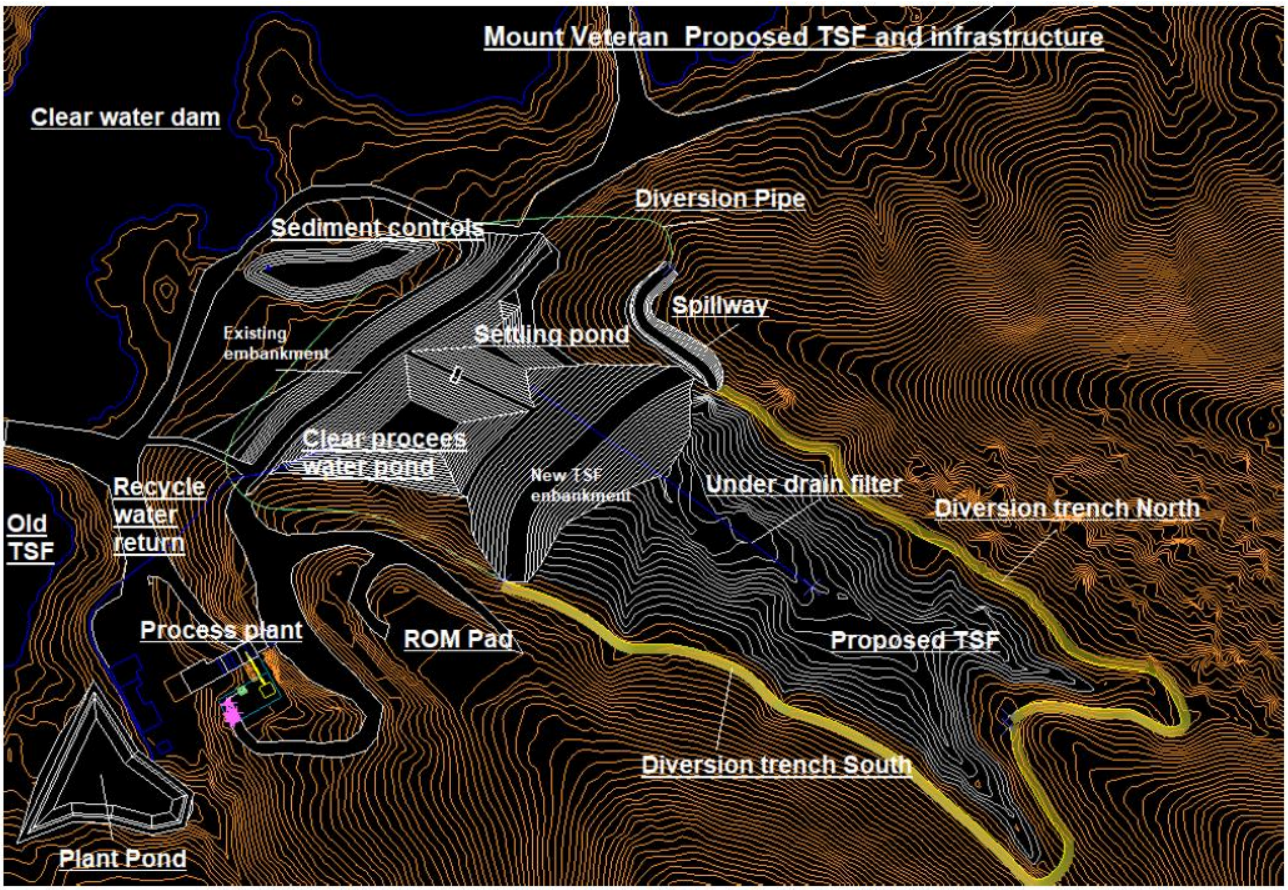
Wet season means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.

END OF SCHEDULE H

Schedule I – Figures



Map 1: Location of authorised disturbance



Map 2: Location of authorised disturbance around the TSF.

END OF SCHEDULE I

END OF ENVIRONMENTAL AUTHORITY