Permit

Environmental Protection Act 1994

Environmental authority EPML04238116

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

Environmental authority number: EPML04238116

Environmental authority takes effect on 24 May 2019**.**

Environmental authority holder(s)

Name(s)	Registered address
Thomson Resources Ltd	Level 1, 80 Chandos Street ST LEONARDS NSW 2065

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Ancillary 33 - Crushing, milling, grinding or screening - Crushing, grinding, milling or screening more than 5000t of material in a year	ML100106
Schedule 3 - 10 - Investigating the potential development of a mineral resource by large bulk sampling or constructing an exploratory shaft, adit or open pit	ML100106
Ancillary 30 - Metal smelting and refining - 1(a) - Processing, in a year, 1t to 100t of gold	ML100106
Ancillary 31 - Mineral processing - 2(b) - Processing, in a year, the following quantities of mineral products, other than coke - more than 100,000t	ML100106
Schedule 3 - 17 - Mining copper ore	ML100106
Schedule 3 - 18 - Mining lead, silver or zinc separately or in any combination	ML100106
Schedule 3 - 16 - Mining gold ore	ML100106

ABN 46 640 294 485

Environmentally relevant activity/activities	Location(s)
Ancillary 30 - Metal smelting and refining - 1(b) - Processing, in a year, 10t to 100t of metalloids or metals other than gold	ML100106
Ancillary 08 - Chemical Storage - 1 - Storing a total of 50t or more of chemicals of dangerous goods class 1 or class 2, division 2.3 under subsection (1)(a)	ML100106

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.

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

Enquiries:
Minerals Business Centre
Department of Environment and Science
Phone: 07 4222 5352
Email: ESCairns@des.qld.gov.au

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
- Schedule B – Air
- Schedule C – Waste management
- Schedule D – Noise
- Schedule E – Groundwater
- Schedule F – Water
- Schedule G – Land and rehabilitation
- Schedule H – Regulated structures
- Schedule I – Maps and plans
- Schedule J – Definitions

Location

Mining lease (ML)100106

Approximately 230 km southwest of Brisbane on the Queensland/New South Wales border, 7km east of Texas, partially within the Arcot State Forest (Mount Gunyan), Goondiwindi Regional Shire.

Environmentally relevant activities

The environmentally relevant activity(ies) conducted at the location as described above must be conducted in accordance with the following site specific conditions of approval.

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 In carrying out the mining activity authorised by this environmental authority, the environmental authority holder must comply with **Table A1—Authorised mining activities and locations** and the plan provided in **Schedule I—Figure 2 (Project infrastructure layout)**.

Table A1—Authorised mining activities and locations

Mine domain	Mine feature name	Location (MGA94, Zone 56)		Current disturbance area (ha)	Maximum disturbance area (ha)
		Easting	Northing		
Existing disturbance					
Twin Hills Mine	Mine excavations and haul ramp	330608.7	6807712.1	11.1	11.1
	Waste rock dump	330817.4	6807324.8	9.2	9.2
	Low grade ore stockpile	330841.2	6808009.1	8.43	8.43
	Topsoil stockpile	331158.2	6809058.1	2.58	2.58
	Clay borrow pit and stockpiles	331061.1	6809099.9	2.8	2.8
	Heap leach pads (including ROM stockpile and crushing)	330601.8	6808257.6	16.4	16.4
	Process dam treatment ponds	330458.8	6808483.5	2.1	2.1
	Stormwater containment dam and water supply dams	330252.7	6808712.4	12.0	12.0
	Access roads and tracks	330363.2	6807004.0	8.46	8.46
	Workshop areas	330425.5	6808102.2	1.5	1.5
	Storage/Office/Magazine	330420.2	6808136.8	0.1	0.1
	Fuel/Oil Storage	330411.8	6808067.4	0.1	0.1
	Metal recovery plant	330454.1	6808593.4	2.1	2.1
Proposed disturbance					
Twin Hills Mine	Heap leach pad 5	TBA[1]	TBA[1]	0	TBA[1]

Notes:

1. *To be provided to the administering authority prior to construction as one central data point (to 1 decimal point only, for each mine feature) in the appropriate domain.*

A3 The environmental authority holder 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; and

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 The environmental authority holder 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.

A5 All monitoring referred to in this environmental authority must be undertaken by an appropriately qualified person.

A6 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 five (5) years.

A7 The following information must be recorded in relation to all monitoring required under the conditions of this 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; and

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

Financial assurance

A8 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

A9 By **11 May 2018**, the environmental authority holder must develop and implement a risk management system for mining activities which complies with 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.

Notification of emergencies, incidents and events

A10 The environmental authority holder must notify the administering authority by verbal and written notification within 24 hours after becoming aware of any emergency, incident or event which does or may contravene a condition of this environmental authority.

A11 Notification to the administering authority must be provided to the administering authority's Pollutions Hotline on 1300 130 372 and the PollutionHotline@ehp.qld.gov.au in accordance with **condition A10**.

A12 Within 10 business days following the initial notification of an emergency, incident or event, 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, incident or event.

Investigations

A13 Except where specified otherwise in another condition of this environmental authority, in the event of any monitoring showing exceedance of trigger values or limits specified in the conditions of this environmental authority, the environmental authority holder must:

a) complete an investigation to identify the potential cause of the exceedance and the potential for environmental harm being caused or likely to be caused by the exceedance;

b) provide a written report to the administering authority within three (3) months of the date of the original exceedance, outlining:

(i) details of the investigation carried out; and

(ii) actions taken to prevent environmental harm.

Complaints

A14 The environmental authority holder must record all environmental complaints received about the mining activities including:

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.

Third-party reporting

A15 The environmental authority holder 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.

A16 The environmental authority holder must implement any findings arising from the audit (unless the administering authority confirms in writing they are not required) and take necessary action to ensure compliance with the conditions of this environmental authority.

A17 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 environmental authority holder must:

a) comply with the amended or changed standard, policy or guideline within two (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 **condition H36**; and

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.

Meteorological monitoring

A18 By **6 April 2018**, the environmental authority holder must establish and maintain an automatic weather station at the licensed place to measure and record daily data on wind speed, wind direction, temperature and rainfall.

Community engagement

A19 The environmental authority holder must establish, promote and maintain easily accessible lines of communication between local residents, stakeholders and land owners, reasonably expected to be affected by the mining activity to ensure that environmental impacts are identified and managed. This must include but not be limited to the following:

a) regular meetings with all residents, stakeholders and land owners, at intervals of not more than six (6) months; and

b) the establishment of a consultative committee with representation open for all residents, stakeholders and land owners, that meets at regular intervals as determined by the committee.

Exploration

A20 All exploration activities carried out on the relevant mining tenure must comply with each of the standard environmental conditions contained in the most recent version of the *Eligibility criteria and standard conditions for exploration and mineral development projects*.

END OF 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.

Point source releases to air

B2 The environmental authority holder must monitor for contaminants stated in **Table B1—Air quality and dust deposition contaminant trigger levels and limits** at the boundary of the site.

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 Deposition[7]			
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 environmental authority holder 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 exceedance allowed each year including exceedances 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.*

B3 Monitoring results must not exceed any of the limits defined in **Table B1—Air quality and dust deposition contaminant trigger levels and limits**.

B4 If monitoring results indicate an exceedance of any trigger value specified in **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.

Dust and particulate matter monitoring

B5 By **11 May 2018**, the environmental authority holder must design and implement an air quality monitoring program that can ensure compliance with **conditions B1** to **B6**.

B6 Air emissions generated by mining activities must not cause exceedances of the following air quality objectives 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 (PM_{10}) 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; or

(iii) Standards Australia AS3580.9.8 Methods for sampling and analysis of ambient air-Determination of suspended particulate matter – PM10 continuous direct mass method using a tapered element oscillating microbalance analyser; or

(iv) Standards Australia AS3580.9.11 Methods for sampling and analysis of ambient air-Determination of suspended matter PM10 beta attenuation monitors; or

(v) other relevant equipment authorised by the administering authority.

c) a concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres ($PM_{2.5}$) 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; and

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 SCHEDULE B

Schedule C—Waste management

General

C1 All general and regulated waste generated in carrying out mining activities must be removed to a facility that can lawfully recycle or dispose the waste.

Waste rock

C2 By **11 May 2018**, the environmental authority holder must develop and implement a Waste Rock Management Plan (WRMP), certified by an appropriately qualified person which includes:

a) a detailed design of the waste rock dumps that meets the requirements of this condition;

b) characterisation of the waste rock to predict the quality of runoff and seepage generated, including salinity, acidity, alkalinity, dissolved metals, metalloids and non-metallic inorganic substances;

c) a progressive sampling program to validate pre-mine waste rock characterisation. The waste rock sampling program must include validation of salinity, acidity, alkalinity, dissolved metals, metalloids and non-metallic inorganic substances;

d) where the acid mine drainage potential and 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;

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 prevent the generation of acid mine drainage;

f) a materials balance and disposal plan demonstrating how waste rock that has a potential to generate neutral and/or saline mine drainage will be selectively placed and managed to prevent the generation of neutral mine drainage;

g) a sampling program to verify encapsulation and/or placement of potentially acid forming, acid forming waste rock and waste rock that has a potential to generate neutral mine drainage, in accordance with the detailed design plan;

h) records must be maintained of all waste rock characterisation and disposal including contingency planning for the management of acid mine drainage and neutral mine drainage;

i) how often the effectiveness of the plan will be assessed;

j) a rehabilitation strategy and monitoring program that will achieve the rehabilitation objectives specified in **Schedule G** of this environmental authority; and

k) a monitoring program that verifies the requirements of **condition C2 (j)** have been completed.

Heap leach pads

C3 The design and construction (or reconstruction) of heap leach pads must be undertaken by an appropriately qualified person and must include, but not be limited to:

a) a liner which is chemically compatible with the fluids it will be exposed to;

b) adequate sizing of launders, perimeter drains and containment bunds to prevent the release of contaminants to the receiving environment; and

c) a leak detection system.

Heap leach operational plan

C4 By **10 November 2017**, the environmental authority holder must develop and implement a Heap Leach Operational Plan (HLOP) certified by suitably qualified and experienced person, that achieves the following requirements:

a) diversion of uncontaminated stormwater away from the heap leach pads and minimising catchment size;

b) procedures to prevent tears and leaks in the liner;

c) contingency plans in the event of the release of contaminants;

d) records of 'as constructed' and design plans, all pipes and infrastructure associated with the heap leach operation;

e) procedures to minimise erosion of the heap leach pads and exclude ore from entering the launders and/or perimeter drains; and

f) a monitoring program that is capable of detecting any potential releases of contaminants to the receiving environment.

Transitional arrangements for heap leach pads

C5 By **11 May 2018**, all existing heap leach pads must comply with the requirements of the HLOP and **conditions C3** and **C4** of this environmental authority.

END OF SCHEDULE C

Schedule D—Noise

Noise limits

D1 Noise or vibration generated by mining activities must not cause environmental harm to any sensitive place or commercial place.

D2 The environmental authority holder 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**
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

Notes:

1. *CV = Critical Value and AV = Adjustment Value*
2. *To calculate noise limits in Table D1:*

   If bg ≤ (CV – AV), then Noise limit = bg + AV

   If (CV – AV) < bg ≤ CV, then Noise limit = CV

   If bg > CV, then Noise limit = bg + 0
3. *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*
4. *bg = background noise level (LA90, adj, 15 mins) measured over 3-5 days at the nearest sensitive receptor*
5. *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

D3 The environmental authority holder 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.

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	Blasting not permitted

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	

Monitoring and reporting

D4 A blast monitoring program must be developed by an appropriately qualified person and implemented by the environmental authority holder prior to undertaking blasting activities to ensure compliance with **Table D2—Blasting noise limits** at any **sensitive place** or **commercial place**.

D5 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; and

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 SCHEDULE D

Schedule E—Groundwater

Contaminant release

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

Groundwater model

E2 By **10 November 2017**, the environmental authority holder must develop a groundwater model relevant to the entire project which will achieve the following outcomes:

a) characterising the hydrogeology and determining the hydrogeological properties of each aquifer;

b) determining groundwater dynamics including levels, quantity, chemistry and flows for each aquifer;

c) identifying interactions between groundwater and surface water, as well as groundwater dependent ecosystems (GDE's);

d) predicting impacts to groundwater dynamics, surface water-groundwater interactions and GDE's, for each aquifer, as a result of mining activities;

e) predicting impacts to all environmental values of groundwater; and

f) estimating model confidence and limitations.

E3 By **10 November 2017**, the environmental authority holder must have the groundwater model, required by **condition E2**, peer-reviewed by an appropriately qualified person.

E4 The environmental authority holder must implement any recommendations from the review required under **condition E3** and update the groundwater model accordingly.

Groundwater management plan

E5 By **10 November 2017**, the EA holder must implement a Groundwater Management Plan (GMP), developed by an appropriately qualified person that includes:

a) certification by an appropriately qualified person that the plan is in accordance with all conditions of this environmental authority;

b) an adequate monitoring program of all receiving groundwater's potentially impacted by mining activities and achieve the following objectives; and

(i) be capable of detecting any impacts to the groundwater dynamics, surface water-groundwater interactions and GDE's, for each aquifer, due to mining activities; and

(ii) be capable of collecting data to validate the groundwater model;

c) prevention, mitigation and management measures for all potential impacts identified by the groundwater model.

E6 The GMP must be reviewed by **10 November** each year by an appropriately qualified person and must achieve the following outcomes:

a) verify the models predictions, confidence and limitations against measured monitoring data;

b) update the groundwater model to ensure the requirements of **condition E2** are met;

c) identify any changes to the predicted impacts to groundwater dynamics, surface water-groundwater interactions and GDE's, as a result of mining activities;

d) assess the effectiveness of prevention, mitigation and management measures, including any additional or different measures; and

e) propose recommendations necessary to improve the effectiveness of the GMP and/or groundwater model.

Monitoring and reporting

E7 Groundwater quality and standing water levels must be monitored at the locations and frequencies defined in **Table E1—Groundwater monitoring locations and frequency** for contaminants identified in **Table E2—Groundwater contaminant triggers and limits**.

Table E1—Groundwater monitoring locations and frequency

Monitoring Point[1]	Location (MGA94 – Zone 56)		Surface RL (m)[3]	Screen(s) RL (m)[3]	Depth RL[2] (m)[3]	Monitoring Frequency	
	Easting	Northing				Standing Water Level	Groundwater Quality
Reference Bores[3]							
Aquifer type - *i.e. Tertiary Sediments (each aquifer type of relevance to mining activities included)*							
TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]
Aquifer type - *i.e. Volcanics*							
TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]
Compliance Bores							
Aquifer type - *i.e. Tertiary Sediments*							
TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]
Aquifer type - *i.e. Volcanics*							
TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]
Observation Bores							
TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]	TBA[4]

Notes:

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

1. *Monitoring points identified in Schedule I—Figure 4 (Groundwater monitoring locations).*
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.*
4. *To be provided to the administering authority by **10 November 2017** in accordance with **condition E5**.*

E8 Groundwater quality monitoring results from compliance bores identified in **Table E1—Groundwater monitoring locations and frequency** must not exceed any of the limits defined in **Table E2—Groundwater contaminant triggers and limits**.

Table E2—Groundwater contaminant triggers and limits

Contaminant[1]	Contaminant limits	Trigger levels
pH (pH units)	6.5[3] or 80th percentile of reference[13] whichever is higher	-
	7.5[3] or 80th percentile of reference[13] whichever is higher	-
Electrical Conductivity (µS/cm)	350 µS/cm [7] or 80th percentile of reference[13] whichever is higher	-

Contaminant[1]	Contaminant limits	Trigger levels
Turbidity (NTU)	32[12] or 80th percentile of reference[13] whichever is higher	-
Sulfate (mg/L)	545[4] or 80th percentile of reference[13] whichever is higher	250[5] or 80th percentile of reference[13] whichever is higher
Metals and Metalloids (mg/L)		
Arsenic	0.013[6] or 80th percentile of reference[13] whichever is higher	0.01[5] or 80th percentile of reference[13] whichever is higher
Cadmium	0.002[5] or 80th percentile of reference[13] whichever is higher	0.0002[6] or 80th percentile of reference[13] whichever is higher
Cobalt	TBA[11] or 80th percentile of reference[13] whichever is higher	TBA[11] or 80th percentile of reference[13] whichever is higher
Copper	0.2^^^ or 80th percentile of reference[13] whichever is higher	0.0014[6] or 80th percentile of reference[13] whichever is higher
Lead	0.01[5] or 80th percentile of reference[13] whichever is higher	0.0034[6] or 80th percentile of reference[13] whichever is higher
Manganese	1.9[6] or 80th percentile of reference[13] whichever is higher	0.1[5] or 80th percentile of reference[13] whichever is higher
Molybdenum	0.05[5] or 80th percentile of reference[13] whichever is higher	0.01[8] or 80th percentile of reference[13] whichever is higher
Silver	0.01[5] or 80th percentile of reference[13] whichever is higher	0.00005[6] or 80th percentile of reference[13] whichever is higher
Uranium	0.017[5] or 80th percentile of reference[13] whichever is higher	0.01[8] or 80th percentile of reference[13] whichever is higher
Zinc	2[8] or 80th percentile of reference[13] whichever is higher	0.008[6] or 80th percentile of reference[13] whichever is higher
Non-metallic inorganics (mg/L)		
Cyanide (WAD)[2]	0.5[9] or 80th percentile of reference[13] whichever is higher	-
Cyanide (as un-ionised HCN, measured as[CN])	0.08[5] or 80th percentile of reference[13] whichever is higher	0.007[6] or 80th percentile of reference[13] whichever is higher
Hydrocarbons (µg/L)		
Petroleum hydrocarbons (C6-C9)	20[10]	-
Petroleum hydrocarbons (C10-C36)	100[10]	-
Major Ions (mg/L)		
Bicarbonate	For interpretation purposes	
Calcium		
Carbonate		
Chloride		
Magnesium		
Potassium		
Sodium		
Hardness		

Notes:

1. *For water quality, all metals and metalloids must be measured as both 'total' (from analysis of an unfiltered sample) and 'dissolved' (from analysis of a field filtered sample);*
2. *CN (WAD) is Weak Acid Dissociable Cyanide, measured as an indicator of the bio-available cyanide;*
3. *ANZECC (2000) Table 4.4.2;*

4. *Dunlop et al 2016 "Ecosystem protection trigger values for sulfate in hard waters of the Fitzroy River basin";*
5. *Australian Drinking Water Guidelines (2011), Table 10.5;*
6. *95% species protection (ANZECC 2000) Table 3.4.1;*
7. *95% species protection (ANZECC 2000) Table 3.3.3;*
8. *ANZECC (2000) Table 4.2.10, Irrigation trigger levels;*
9. *The International Cyanide Management Code (2009), Section 4.5;*
10. *Model mining conditions;*
11. *To be provided to the administering authority by **10 November 2017** in accordance with **condition E5**;*
12. *Draft WQOs for the Dumaresq River and floodplains for high flows; and*
13. *Refer to procedure in section 7.4.4.1 and 7.4.4.2 of ANZECC when using reference site data for trigger values and contaminant limits.*

Exceedance investigation

E9 If contaminants measured at compliance bores identified in **Table E1—Groundwater monitoring locations and frequency** exceed any of the triggers stated in **Table E2—Groundwater contaminant triggers and limits**, the environmental authority holder must complete an investigation into the potential for environmental harm and provide a written report to the administering authority within 28 days or another timeframe agreed to by the administering authority, outlining:

a) details of the investigations carried out and the cause of the exceedance;

b) an assessment of environmental harm; and

c) the management measures proposed or implemented to prevent future exceedances and environmental harm.

Note: Where an exceedance has occurred and is being investigated, in accordance with this condition, no further reporting is required for subsequent exceedance events for that quality characteristic.

Bore construction and maintenance and decommissioning

E10 The construction, maintenance and management of groundwater 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 data.

END OF SCHEDULE E

Schedule F—Water

Contaminant release

F1 Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters, except as permitted under the conditions of this environmental authority.

F2 The release of contaminants to waters must only occur from the release points specified in **Table F1—Contaminated water release points, sources and receiving waters** and **Schedule I—Figure 3 (Contaminated water release points)**.

F3 The release of contaminants to waters in accordance with **condition F2** must comply with all the requirements specified in **Table F2—Contaminated water release limits and monitoring frequency**, when measured at the monitoring points specified in **Table F1—Contaminated water release points, sources and receiving waters**.

Table F1—Contaminated water release points, sources and receiving waters

	Location (MGA94, Zone 56)		Monitoring point	

Release point (RP)	Easting	Northing	Contaminated water source and location[1]		Receiving waters description
Twin Hills					
Terminal Storage Dam spillway	330272.34	6808821.22	Stormwater overflows from process ponds	At release point	Dry Creek
East Dam spillway	330810.96	6806901.43	Stormwater overflows from waste rock dump sump		Unnamed Drainage Channel

Notes:
1. *Locations presented in **Schedule I—Figure 3 (Contaminated water release points)***

Table F2—Contaminated water release limits and monitoring frequency

Contaminant[1]	Release limits	Monitoring frequency
Physico-chemical		
pH (pH Units)	6.5[3]	Daily during release event (first sample must be taken within (2) two hours of commencement of release)
	7.5[3]	
Electrical conductivity (µS/cm)	325[3]	
Turbidity (NTU)	25[3]	
Sulfate (mg/L)	250[4]	
Major ions (mg/L)		
Bicarbonate	For interpretation only	Daily during release event (first sample must be taken within (2) two hours of commencement of release)
Calcium		
Carbonate		
Chloride		
Magnesium		
Potassium		
Sodium		
Hardness		
Metals and Metalloids (mg/L)		
Arsenic	0.01[4]	Daily during release event (first sample must be taken within (2) two hours of commencement of release)
Cadmium	0.0002[5]	
Cobalt	TBA[8]	
Copper	0.0014[5]	
Metals and Metalloids (mg/L)		
Lead	0.0034[5]	Daily during release event (first sample must be taken within (2) two hours of commencement of release)
Manganese	0.1[4]	
Molybdenum	0.01[6]	
Silver	0.00005[5]	
Uranium	0.01[6]	
Zinc	0.008[5]	
Non-metallic inorganics (mg/L)		
Cyanide (as un-ionised HCN, measured as [CN])	0.007[5]	

Contaminant[1]	Release limits	Monitoring frequency
CN (WAD)[2]	0.5[7]	Daily during release event (first sample must be taken within (2) two hours of commencement of release)
Hydrocarbons		
Oil and grease	No visible film	Daily during release event (first sample must be taken within (2) two hours of commencement of release)

Notes:

1. *All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Release limits for metal/metalloids apply if the dissolved concentrations exceed the limit;*
2. *CN (WAD) is Weak Acid Dissociable Cyanide, measured as an indicator of the bio-available cyanide;*
3. *ANZECC (2000) Table 3.3.2 – 3.3.3;*
4. *Australian Drinking Water Guidelines (2011), Table 10.5;*
5. *95% species protection (ANZECC 2000) Table 3.4.1;*
6. *ANZECC (2000) Table 4.2.10, Irrigation trigger levels;*
7. *The International Cyanide Management Code (2009), Section 4.5; and*
8. *To be provided to the administering authority by **11 August 2017** in accordance with **condition F8**.*

Receiving environment monitoring

F4 The quality of the receiving waters must be monitored at the locations specified in **Table F3—Receiving water upstream reference sites and downstream monitoring points** in accordance with the requirements specified in **Table F4—Receiving water trigger levels and contaminant limits**.

Table F3—Receiving water and upstream reference sites and downstream monitoring points

Monitoring points[1]	Receiving waters location description	Location (MGA94, Zone 56)	
		Easting	Northing
Upstream reference monitoring points			
TBA[2]	TBA[2]	TBA[2]	TBA[2]
Downstream monitoring points			
TBA[2]	TBA[2]	TBA[2]	TBA[2]

Notes:

1. *Locations presented in **Schedule I—Figure 5 (Surface water monitoring locations)***
2. *To be provided to the administering authority by **11 August 2017** in accordance with **condition F8**.*

1. **Table F4—Receiving water trigger levels and contaminant limits**

Contaminant[1]	Contaminant limits	Trigger levels	Monitoring Frequency
Physico-chemical			
pH (pH units)	6.5[3] or 80th percentile of reference[13] whichever is higher	-	Daily during release event (first sample must be taken within (2) two hours of commencement of release)
	7.5[3] or 80th percentile of reference[13] whichever is higher	-	
Electrical Conductivity (µS/cm)	350 µS/cm[7] or 80th percentile of reference[13] whichever is higher	-	
Turbidity (NTU)	32[11] or 80th percentile of reference[13] whichever is higher	-	

Contaminant[1]	Contaminant limits	Trigger levels	Monitoring Frequency
Sulfate (mg/L)	545[4] or 80th percentile of reference[13] whichever is higher	250[5] or 80th percentile of reference[13] whichever is higher	
Major ions (mg/L)			
Bicarbonate	For interpretation only		Daily during release event (first sample must be taken within (2) two hours of commencement of release
Calcium			
Carbonate			
Chloride			
Magnesium			
Potassium			
Sodium			
Hardness			
Metals and Metalloids (mg/L)			
Arsenic	0.013[6] or 80th percentile of reference[13] whichever is higher	0.01[5] or 80th percentile of reference[13] whichever is higher	Daily during release event (first sample must be taken within (2) two hours of commencement of release
Cadmium	0.002[5] or 80th percentile of reference[13] whichever is higher	0.0002[6] or 80th percentile of reference[13] whichever is higher	
Cobalt	TBA[12] or 80th percentile of reference[13] whichever is higher	TBA[12] or 80th percentile of reference[13] whichever is higher	
Copper	0.2[8] or 80th percentile of reference[13] whichever is higher	0.0014[6] or 80th percentile of reference[13] whichever is higher	
Lead	0.01[5] or 80th percentile of reference[13] whichever is higher	0.0034[6] or 80th percentile of reference[13] whichever is higher	
Manganese	1.9[6] or 80th percentile of reference[13] whichever is higher	0.2[8] or 80th percentile of reference[13] whichever is higher	
Molybdenum	0.05[5] or 80th percentile of reference[13] whichever is higher	0.034[7] or 80th percentile of reference[13] whichever is higher	
Metals and Metalloids (mg/L)			
Silver	0.01[5] or 80th percentile of reference[13] whichever is higher	0.00005[6] or 80th percentile of reference[13] whichever is higher	Daily during release event (first sample must be taken within (2) two hours of commencement of release
Uranium	0.017[5] or 80th percentile of reference[13] whichever is higher	0.01[8] or 80th percentile of reference[13] whichever is higher	
Zinc	2[8] or 80th percentile of reference[13] whichever is higher	0.008[6] or 80th percentile of reference[13] whichever is higher	
Cyanide (WAD)[2]	0.5[9] or 80th percentile of reference[13] whichever is higher	-	Daily during release event (first sample must be taken within (2) two hours of commencement of release)
Cyanide (as un-ionised HCN, measured as [CN])	0.08[5] or 80th percentile of reference[13] whichever is higher	0.007[6] or 80th percentile of reference[13] whichever is higher	
Hydrocarbons			

Contaminant[1]	Contaminant limits	Trigger levels	Monitoring Frequency
Petroleum hydrocarbons (C6-C9)	20[10]	-	Daily during release event (first sample must be taken within (2) two hours of commencement of release)
Petroleum hydrocarbons (C10-C36)	100[10]	-	

Notes:

1. *For water quality, all metals and metalloids must be measured as both 'total' (from analysis of an unfiltered sample) and 'dissolved' (from analysis of a field filtered sample);*
2. *CN (WAD) is Weak Acid Dissociable Cyanide, measured as an indicator of the bio-available cyanide;*
3. *ANZECC (2000) Table 4.4.2;*
4. *Dunlop et al 2016 "Ecosystem protection trigger values for sulfate in hard waters of the Fitzroy River basin";*
5. *Australian Drinking Water Guidelines (2011), Table 10.5;*
6. *95% species protection (ANZECC 2000) Table 3.4.1;*
7. *95% species protection (ANZECC 2000) Table 8.3.7;*
8. *ANZECC (2000) Table 4.2.1, Irrigation trigger levels;*
9. *The International Cyanide Management Code (2009), Section 4.5;*
10. *Model mining conditions;*
11. *Draft WQOs for the Dumaresq River and floodplains for high flows;*
12. *To be provided to the administering authority by **11 August 2017** in accordance with **condition F8**; and*
13. *Refer to procedure in section 7.4.4.1 and 7.4.4.2 of ANZECC when using reference site data for trigger values and contaminant limits.*

F5 Contaminants measured at any downstream monitoring point specified in **Table F3—Receiving water upstream reference sites and downstream monitoring points** must not exceed the limit specified in **Table F4—Receiving water trigger levels and contaminant limits**.

F6 If contaminants measured at the downstream monitoring point specified in **Table F3—Receiving water upstream reference sites and downstream monitoring points** exceed any of the triggers specified in **Table F5—Receiving water contaminant triggers** during a release event, the environmental authority holder must complete an investigation into the potential for environmental harm and provide a written report to the administering authority within 28 days or another timeframe agreed to by the administering authority, outlining:

(a) details of the investigations carried out and the cause of the exceedance;

(b) an assessment of environmental harm; and

(c) the management measures proposed or implemented to prevent future exceedances and environmental harm.

Note: Where an exceedance of a trigger has occurred and is being investigated, no further reporting is required for subsequent trigger events for that quality characteristic.

Contaminated water release events

F7 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build-up of sediment in such waters.

Receiving environment monitoring program

F8 By **11 August 2017**, the environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to authorised mining activities. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while contaminants are being discharged from the site. For the purposes of the REMP, the receiving environment is the waters of Dry Creek and connected or surrounding waterways within

20km downstream of the authorised site. The REMP should encompass any sensitive receiving waters or environmental values downstream of authorised mining activities that will potentially be directly affected by an authorised release of contaminants to water.

F9 A REMP design document that addresses the requirements of the REMP must be prepared prior to mining activities beginning and made available to the administrating authority upon request.

F10 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 administrating authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

Water management plan

F11 By **11 August 2017**, a Water Management Plan (WMP) must be developed by an appropriately qualified person and implemented by the environmental authority holder.

Stormwater and water sediment controls

F12 By **11 August 2017**, an Erosion and Sediment Control Plan (ESCP) must be developed and certified by a Certified Professional in Erosion and Sediment Control (CPESC) and implemented by the environmental authority holder.

F13 By **1 November** each year, the ESCP must be updated by a CPESC to include all disturbed areas and implemented by the environmental authority holder.

END OF SCHEDULE F

Schedule G—Land and rehabilitation

G1 All land described in **Table A1—Authorised mining activities and locations** must be rehabilitated in accordance with **Table G1—Final land use and rehabilitation approval schedule**.

Table G1—Final land use and rehabilitation approval schedule

Tenure ID	Mine domain	Mine Feature	Rehabilitation goal	Rehabilitation objectives	Indicators	Completion criteria
ML100106	Twin Hills Mine	Mine excavations and haul ramp	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]
		Waste rock dump	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]
		Low grade ore stockpile	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]

Tenure ID	Mine domain	Mine Feature	Rehabilitation goal	Rehabilitation objectives	Indicators	Completion criteria
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]
		Topsoil stockpiles	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]
		Clay borrow pit and stockpiles	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]
		Heap leach pads (including ROM stockpile and crushing)	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]
		Process ponds	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]
		Stormwater containment dam and water supply dams	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]
		Access roads and tracks	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]
		Workshop/ storage/ Office / magazine/ fuel & oil storage	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]

Tenure ID	Mine domain	Mine Feature	Rehabilitation goal	Rehabilitation objectives	Indicators	Completion criteria
		Metal recovery plant	Safe to humans and wildlife	TBA[1]	TBA[1]	TBA[1]
			Non-polluting	TBA[1]	TBA[1]	TBA[1]
			Stable	TBA[1]	TBA[1]	TBA[1]
			Able to sustain an agreed post-mining land use	TBA[1]	TBA[1]	TBA[1]

Notes:

1. *To be provided to the administering authority by **11 May 2018** in accordance with **condition G3**.*

G2 Rehabilitation must commence progressively with the plan of operations.

Rehabilitation management plan

G3 By **11 May 2018**, the environmental authority holder must develop, implement and submit to the administering authority a Rehabilitation Management Plan (RMP) that includes:

a) schematic representations of the proposed final landform including, landform type, slope, regional ecosystems, drainage designs and any post mining land or infrastructure use agreed with the landowner/holder and the administering authority;

b) rehabilitation methods including landform establishment, plant species selection and methods of revegetation;

c) materials balance including available topsoil and subsoil;

d) proposed cover designs for encapsulation of waste material, including performance and completion criteria;

e) geotechnical, geochemical and hydrological studies;

f) a rehabilitation schedule integrated with the mine plan schedule including material suitable for encapsulating waste in accordance with the proposed encapsulation methodology;

g) the rehabilitation goals, objectives, indicators and completion criteria for each agreed post mining land use within each domain and the final vegetation community type;

h) a rehabilitation monitoring program, based on on-site revegetation trials which test the success of the rehabilitation methods, that must be capable of:

(i) assessing the condition and function of rehabilitation sites compared to reference sites;

(ii) assessing the function of rehabilitation sites compared to reference sites; and

(iii) comparing the progression of rehabilitation site indicators to the targeted completion criteria;

i) management actions for rehabilitation objectives not progressing towards the completion criteria and programs for maintenance of rehabilitation as required to achieve the nominated rehabilitation objective; and

j) on-site revegetation trials which test the success of the rehabilitation methods proposed for **condition G1**.

Topsoil

G4 Topsoil and subsoils must be stripped and stockpiled separately ahead of the areas proposed to be disturbed for the mining activity to ensure that useable soil resources are preserved for rehabilitation.

G5 Topsoil and subsoil stockpiles must be managed to ensure stability and minimise the release of contaminants. Measures must include:

a) vegetating stockpiles;

b) minimising the height of stockpiles; and

c) re-using stockpiles as soon as possible.

Contaminated land

G6 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.

G7 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 under **condition G1**.

Impacts to prescribed environmental matters

G8 Significant residual impacts to prescribed environmental matters are not authorised under this environmental authority or the *Environmental Offsets Act 2014*.

G9 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 SCHEDULE G

Schedule H—Regulated structures

Assessment of consequence category

H1 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 (ESR/2016/1933)* at the following times:

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

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

H2 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.

H3 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 (ESR/2016/1933)*.

Design and construction of a regulated structure

H4 **Conditions H5** to **H9** inclusive do not apply to existing structures.

H5 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 (ESR/2016/1933)*.

H6 Construction of a regulated structure is prohibited unless:

a) the holder has submitted a consequence category assessment report and certification to the administering authority; and

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

H7 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 (ESR/2016/1933)*, and must be recorded in the Register of Regulated Structures.

H8 Regulated structures must:

a) be designed and constructed in compliance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933);*

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;

(ii) wall failure due to erosion by floodwaters arising from any watercourse or drainage line;

(iii) have the floor and sides of the dam designed and constructed to prevent or minimise the passage of the wetting front and any entrained contaminants through either the floor or sides of the dam during the operational life of the dam and for any period of decommissioning and rehabilitation of the dam; and

c) meet the hydraulic performance criteria stated in **Table H1—Hydraulic performance criteria for regulated structures**.

Table H1—Hydraulic performance criteria for regulated structures

Name of Regulated Structure	Spillway Capacity AEP	Design Storage Allowance AEP	Mandatory Reporting Level AEP
TBA[1]	TBA[1]	TBA[1]	TBA[1]
TBA[1]	TBA[1]	TBA[1]	TBA[1]
TBA[1]	TBA[1]	TBA[1]	TBA[1]

Notes:

1. *To be provided to the administering authority by **6 October 2017** in accordance with **condition H36**.*

H9 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.

Notification of affected persons

H10 All affected persons must be provided with a copy of the emergency action plan in place for each regulated structure:

a) for existing structures that are regulated structures, within 10 business days of completing the regulated structures assessment of this condition taking effect;

b) prior to the operation of the new regulated structure; and

c) if the emergency action plan is amended, within 5 business days of it being amended.

Operation of a regulated structure

H11 Operation of a regulated structure, except for an existing structure, is prohibited unless the holder has submitted to the administering authority in respect of regulated structure, all of the following:

a) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with **condition H6**;

b) a set of 'as constructed' drawings and specifications;

c) certification of the 'as constructed drawings and specifications' in accordance with **condition H9**;

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 Structures; and

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

H12 For existing structures that are regulated structures:

a) where the existing structure that is a regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the holder must submit to the administering authority within 12 months of the commencement of this condition a copy of the certified system design plan including that structure; and

b) there must be a current operational plan for the existing structures.

H13 Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in compliance with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.

Mandatory reporting level

H14 **Conditions H15** to **H16** inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.

H15 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.

H16 The holder must, as soon as practicable but 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.

H17 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 dam.

H18 The holder must record any changes to the MRL in the Register of Regulated Structures.

Design storage allowance

H19 The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.

H20 By 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the dam (or network of linked containment systems).

H21 The holder must, as soon as practicable but within forty-eight (48) hours of becoming aware that the regulated dam (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.

H22 The holder must, immediately on becoming aware that a regulated dam (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 dam or linked containment systems.

Annual inspection report

H23 Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.

H24 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 a recommendations section, with any recommended actions to ensure the integrity of the regulated structure or a positive statement that no recommendations are required**.**

H25 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 (ESR/2016/1933)*.

H26 The holder must within 20 business days of receipt of the annual inspection report, provide to the administering authority:

a) the recommendations section of the annual inspection report;

b) if applicable, any actions being taken in response to those recommendations; and

c) if, following receipt of the recommendations and (if applicable) recommended actions, the administering authority requests a 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

H27 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

H28 Regulated structures must not be abandoned but be either:

a) decommissioned and rehabilitated to achieve compliance with **condition H29**; or

b) be left in-situ for a use by the landholder provided that:

(i) it no longer contains contaminants that will migrate into the environment;

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

c) the environmental authority holder 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) landholder is responsible for the dam, on and from an agreed date.

H29 Before surrendering this environmental authority the site must be rehabilitated to achieve a safe, stable, non-polluting landform in accordance with **Table G1—Final land use and rehabilitation approval schedule**.

Register of regulated structures

H30 A register of regulated structures must be established and maintained by the holder for each regulated structure:

H31 The holder must provisionally enter the required information in the register of regulated structures when a design plan for a regulated dam is submitted to the administering authority.

H32 The holder must make a final entry of the required information in the register of regulated structures once compliance with **condition H11** and **H12** has been achieved.

H33 The holder must ensure that the information contained in the register of regulated structures is current and complete on any given day.

H34 All entries in the register of regulated structures must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.

H35 The holder must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the register of regulated structures, in the electronic format required by the administering authority.

Transitional arrangements

H36 All existing structures that have not been assessed in accordance with either the Manual or the former Manual for Assessing Hazard Categories and Hydraulic Performance of Dams must be assessed and certified in accordance with the Manual by **1 November 2017**.

H37 All existing structures must subsequently comply with the timetable for any further assessments in accordance with the Manual specified in **Table H2—Transitional hydraulic performance requirements for existing structures**, depending on the consequence category for each existing structure assessed in the most recent previous certification for that structure.

Table H2—Transitional hydraulic performance requirements for existing structures ceases to apply for a structure once any of the following events has occurred:

a) it has been brought into compliance with the hydraulic performance criteria applicable to the structure under the Manual; or

b) it has been decommissioned; or

c) it has been certified as no longer being assessed as a regulated structure.

H38 Certification of the transitional assessment required by **condition H36** and **H37** (as applicable) must be provided to the administering authority within six (6) months of amendment of the authority adopting this schedule.

Table H2—Transitional hydraulic performance requirements for existing structures

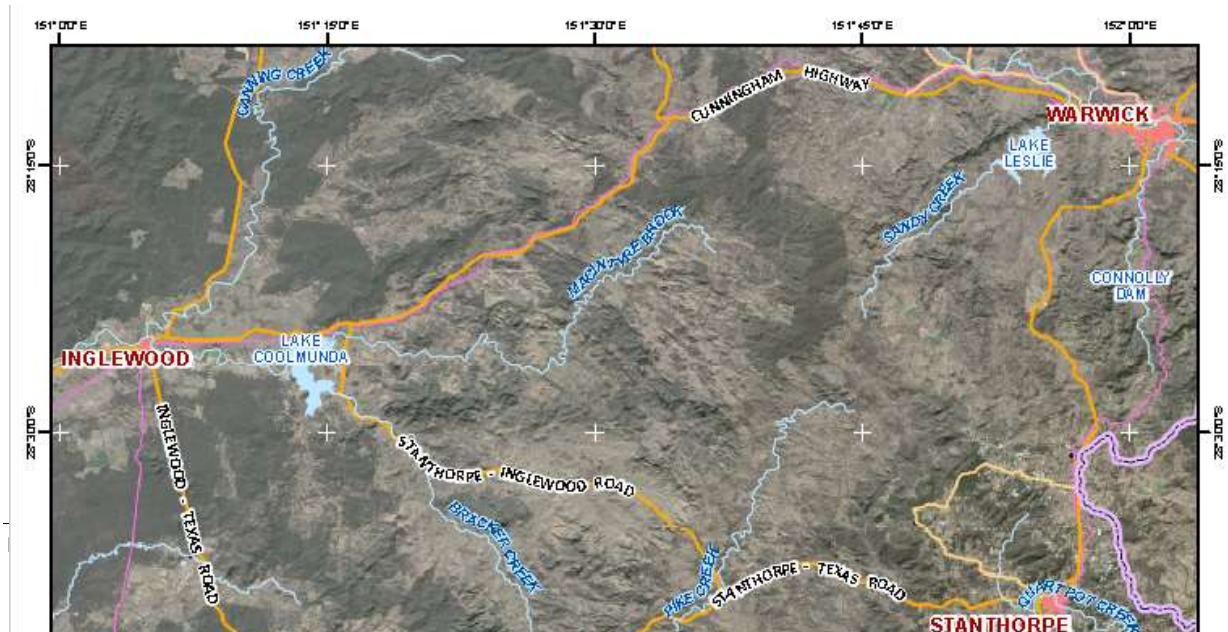
Transition period required for existing structures to achieve the requirements of the Manual for Assessing Consequence Categories and Hydraulic Performance of Dams			
Compliance with criteria	**High consequence**	**Significant consequence**	**Low consequence**
>90% and a history of good compliance performance in last 5 years	No transition required	No transition required	No transitional conditions apply. Review consequence assessment every 7 years.
>70%-≤90%	Within 7 years, unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Within 10 years, unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	No transitional conditions apply. Review consequence assessment every 7 years.
>50-≤70%	Within 5 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Within 7 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Review consequence assessment every 7 years.
≤50%	Within 5 years or as per compliance requirements (e.g. TEP timing).	Within 5 years or as per compliance requirements (e.g. TEP timing).	Review consequence assessment every 5 years.
Regulated levee designed to prevent the ingress of clean flood water <100% compliant[1]	Within 5 years unless otherwise agreed with the administering authority.		

Notes:

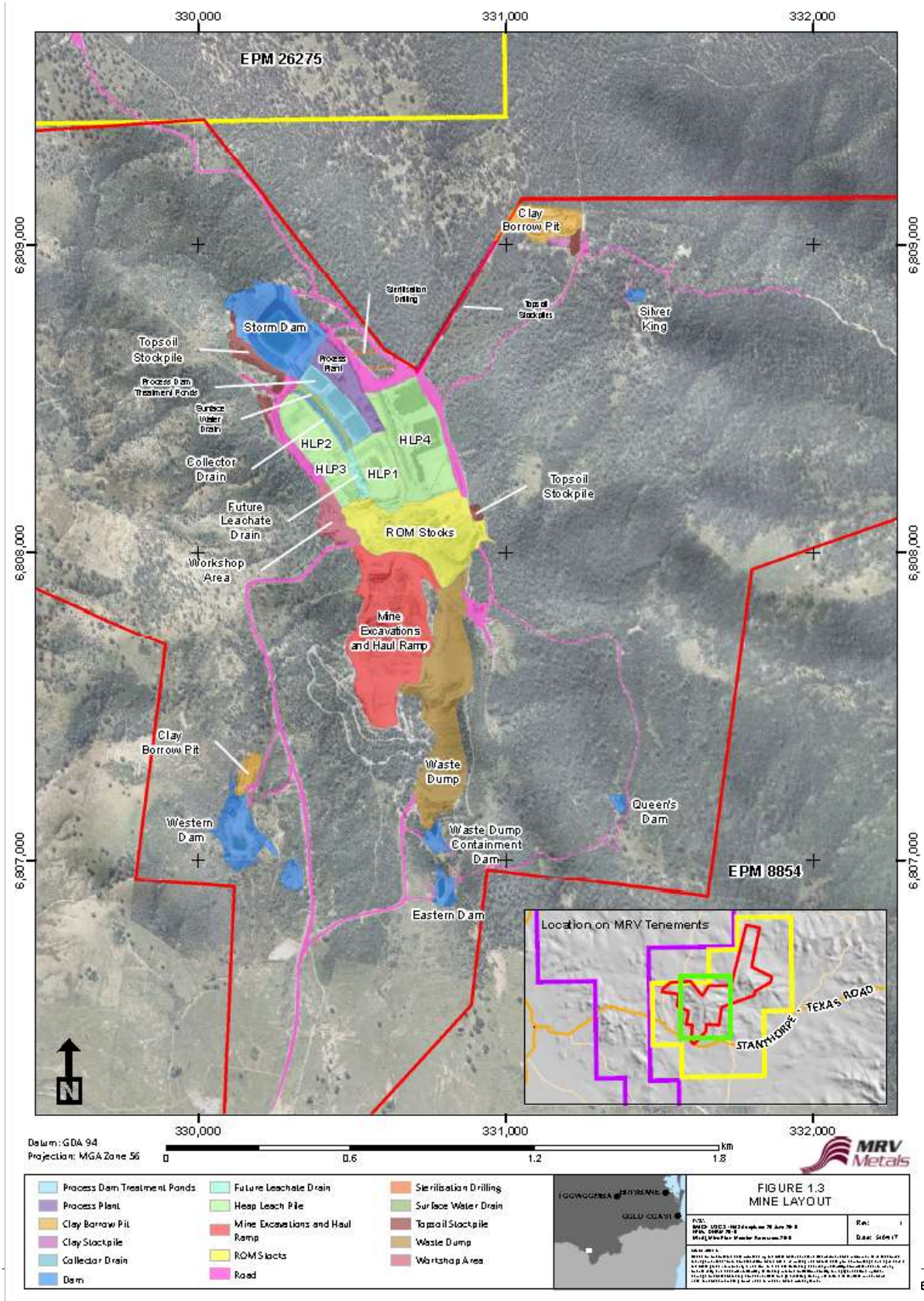
Levees designed for the diversion of contaminated waters or protection of the structural integrity of a dam are not to be considered as part of this provision. These levees are considered a key design element of the relevant dam and transitional periods should as such align to that relevant compliance criteria and consequence category.

END OF SCHEDULE HSchedule I—Maps and plans

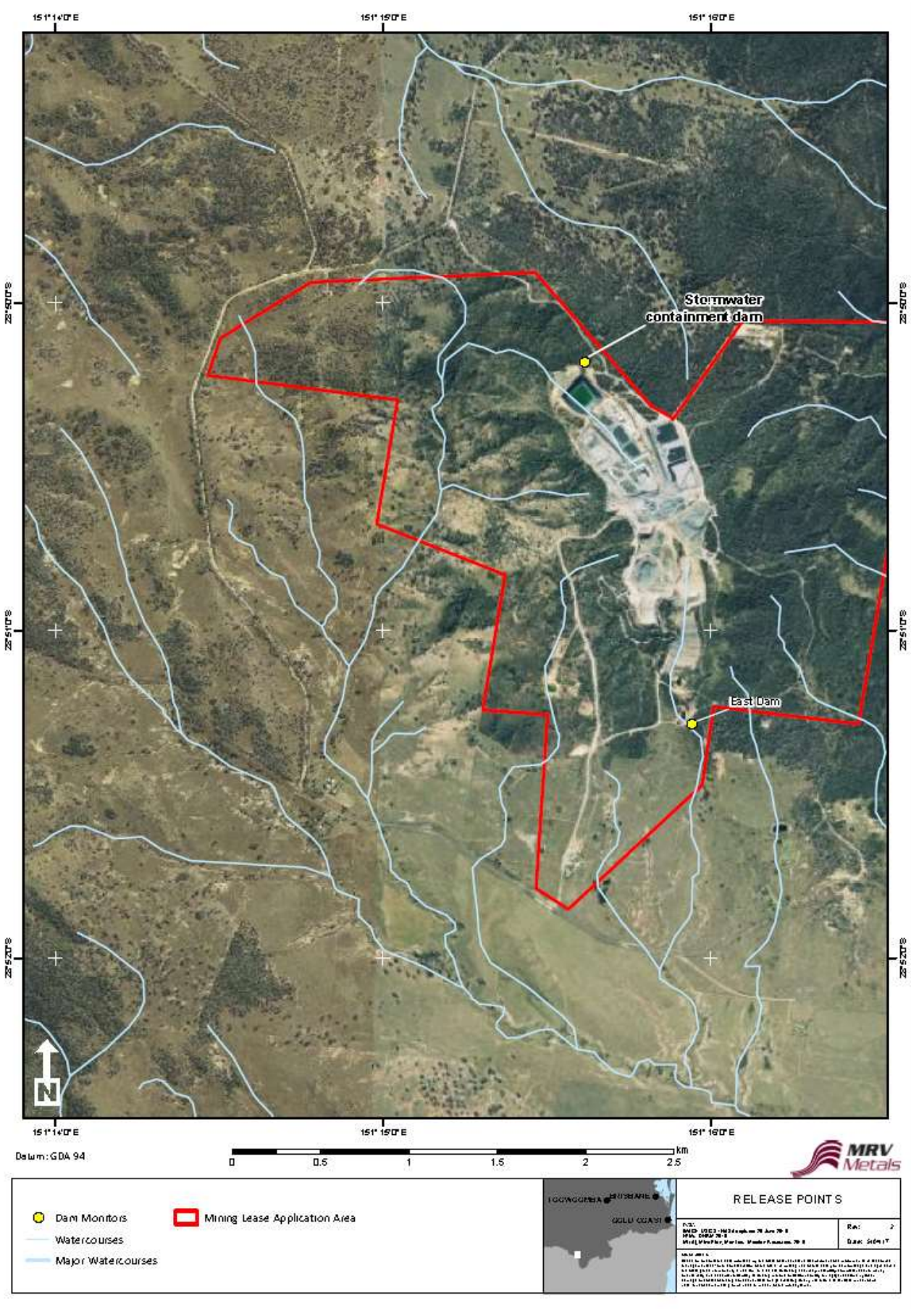
Schedule I—Figure 1 (Project location)



Schedule I—Figure 2 (Project infrastructure layout)



Schedule I—Figure 3 (Contaminated water release points)



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Schedule I—Figure 4 (Groundwater monitoring locations)

*To be provided to the administering authority by **10 November 2017** in accordance with **condition E5**.*

Schedule I—Figure 5 (Surface water monitoring locations)

*To be provided to the administering authority by **11 August 2017** in accordance with **condition F8***

END OF SCHEDULE I

Schedule J—Definitions

Words and phrases used throughout this environmental authority are defined below. Where a definition for a term used in this environmental authority is not provided within this environmental authority, but is provided in the EP Act 1994 or subordinate legislation, the definition in the EP Act or subordinate legislation must be used.

'administering authority' is the agency that administers the environmental authority provisions under the *Environmental Protection Act 1994*.

'affected person' is someone whose drinking water can potentially be impacted as a result of discharges from a dam or their life or property can be put at risk due to dwellings or workplaces being in the path of a dam break flood.

'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).

'air emission' means a substance released into the air.

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

'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); and

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

'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.

'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 mining activities 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.

'contaminant' can be—
(a) a gas, liquid or solid; or
(b) an odour; or
(c) an organism (whether alive or dead), including a virus; or
(d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
(e) a combination of contaminants.

'**contaminants'** means any prescribed water contaminants listed under Schedule 9 of *the Environmental Protection Regulations 2008*.

'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 storage allowance' or **'DSA'** means an available volume, estimated in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* published by the administering authority, 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.

'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.

'development approval' means a development approval under the *Integrated Planning Act 1997* or the *Sustainable Planning Act 2009* in relation to a matter that involves an environmentally relevant activity under the *Environmental Protection Act 1994*.

'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 mining activities have ceased; and

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; and

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

'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 affected persons and the implementation of protection measures. The plan must require dam owners to annually review and update contact information where required.

'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 structure' means a structure that prior to **7 April 2017**, meets any or both of the following, a structure:

(a) with a design that is in accordance with the latest version Manual for Assessing Consequence Categories and Hydraulic Performance of Structures and that is considerably in progress; and

(b) that is under considerable construction or that is constructed.

'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.

'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 (ESR/2016/1933)*.

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

'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.

'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 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 detailed in **Table A1— Authorised mining activities and locations** of this environmental authority.

'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 (ESR/2016/1933)* published by the administering authority.

'manual' means the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* published by the administering authority, as amended from time to time.

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

'minimise' is to reduce to the smallest possible amount or degree.

'modification' or **'modifying'** (see definition of 'construction')

'operational plan' includes:

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

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.

'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.

'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.

'register of regulated structures' includes**:**

a) Date of entry in the register;

b) Name of the structure, 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 (ESR/2016/1933)*;

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 (Easting and Northing in MGA94) 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; and

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

'regulated structure' means any structure in the significant or high consequence category as assessed using the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* published by the administering authority. A regulated structure does not include:

- 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;
- a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities; and
- a flare pit.

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

a) a watercourse;

b) groundwater; and

c) an area of land that is not specified in **Table A1—Authorised mining activities and locations** of this environmental authority.

'receiving waters' means the waters into which this environmental authority authorises releases of mine affected water.

'reference site' in accordance with section 7.4.4.1 of ANZECC volume 1, a minimum of two years of contiguous monthly data at the reference site is required before a valid trigger value can be established, until the minimum data requirements are achieved, the default trigger values apply.

'rehabilitation' the process of reshaping and revegetating land to restore it to a stable landform.

'residual drilling material' means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.

'revegetation' is the re-establishment of vegetation[1] 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.

Note: The definition of 'sensitive place' and 'commercial place' is based on Schedule 1 of EPP Noise. That is, a sensitive place is inside or outside on a dwelling, library and educational institution, childcare or kindergarten, school or playground, hospital, surgery or other medical institution, commercial & retail activity, protected area or an area identified under a conservation plan under Nature Conservation Act 1992 as a critical habitat or an area of major interest, marine park under Marine Parks Act 2004, park or garden that is outside of the mining lease and open to the public for the use other than for sport or organised entertainment. A commercial place is inside or outside a commercial or retail activity.

A mining camp (i.e., accommodation and ancillary facilities for mine employees or contractors or both, associated with the mine the subject of the environmental authority) is not a sensitive place for that mine or mining project, whether or not the mining camp is located within a mining tenement that is part of the mining project the subject of the environmental authority. For example, the mining camp might be located on neighbouring land owned or leased by the same company as one of the holders of the environmental authority for the mining project, or a related company. Accommodation for mine employees or contractors is a sensitive place if the land is held by a mining company or related company, and if occupation is restricted to the employees, contractors and their families for the particular mine or mines which are held by the same company or a related company.

For example, a township (occupied by the mine employees, contractors and their families for multiple mines that are held by different companies) would be a sensitive place, even if part or all of the township is constructed on land owned by one or more of the companies.

'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*.

'µS/cm' means micro siemens per centimetre.

'vibration' is the oscillating or periodic motion of a particle, group of particles, or solid object about its equilibrium position**.**

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

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

'waters' includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), storm water channel, storm water drain, and groundwater and any part thereof.

END OF SCHEDULE J

END OF PERMIT