

Permit

Environmental Protection Act 1994 **Environmental authority EPML00819213**

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

Environmental authority number: EPML00819213

Environmental authority takes effect on 21 October 2022

Environmental authority holder(s)

Name(s)	Registered address
METRES PTY LTD	Level 37, 123 Eagle Street BRISBANE CITY QLD 400 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 13: Mining black coal	ML70344, ML70457, ML70313, ML70485, ML70401, ML70483
Schedule 3 09: A mining activity involving drilling, costeaning, pitting or carrying out geological surveys causing significant disturbance	ML70344, ML70457, ML70313, ML70485, ML70401, ML70483
Ancillary 07 - Chemical Manufacturing 3: Manufacturing, in a year, a total of 200t or more of any of the following (d) explosives	ML70344, ML70457, ML70313, ML70485, ML70401, ML70483
Ancillary 08 - Chemical Storage 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML70344, ML70457, ML70313, ML70485, ML70401, ML70483
Ancillary 60 - Waste disposal 2: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(b) (d) more than 10,000t but not more than 20,000t	ML70344, ML70457, ML70313, ML70485, ML70401, ML70483
Ancillary 63 - Sewage Treatment 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (a-ii) 21 to 100EP otherwise	ML70344, ML70457, ML70313, ML70485, ML70401, ML70483

Additional information for applicantsEnvironmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

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

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the 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.

**Alisha Stewart**

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

Date Issued: 21 October 2022

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Obligations under the *Environmental Protection Act 1994*

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

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

Other permits required

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

Development Approval

This permit is not a development approval under the *Planning Act 2016*. The conditions of this environmental authority are separate, and in addition to, any conditions that may be on the development approval. If a copy of this environmental authority is attached to a development approval, it is for information only, and may not be current. Please contact the Department of Environment and Science to ensure that you have the most current version of the environmental authority relating to this site.

Conditions of environmental authority

Schedule A: General	
Condition number	Condition
A1	Prevent and/or minimise likelihood of environmental harm In carrying out the environmentally relevant activities, the holder of this environmental authority must take all reasonable and practicable measures to prevent and/or to minimise the likelihood of environmental harm being caused. Any environmentally relevant activity, that, if carried out incompetently, or negligently, may cause environmental harm, in a manner that could have been prevented, shall be carried out in a proper manner in accordance with the conditions of this authority. NOTE: This authority authorises the environmentally relevant activity. It does not authorise environmental harm unless a condition contained within this authority explicitly authorises that harm. Where there is no condition or the authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.
A2	Scope of activity Coal extraction under this environmental authority and coal receipt under Condition A14 must not total more than five and a half (5.5) million tonnes per annum (mtpa) of run-of-mine (ROM) coal.
A3	In carrying out the mining activity (other than exploration) authorised by this environmental authority, the holder of this environmental authority must not cause disturbance greater than 1848.9 ha. All disturbance (other than exploration) must be located within the authorised disturbance footprint detailed within Figure 3: Authorised Disturbance Footprint.
A4	Maintenance of measures, plant and equipment The environmental authority holder must ensure: a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; b) that such measures, plant and equipment are maintained in a proper condition; and c) that such measures, plant and equipment are operated in a proper manner.
A5	Monitoring and records Record, compile and keep for a minimum of five (5) years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.
A6	Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring at a specified frequency by the relevant in effect regulation/guideline/standard.

A7	Notification of emergencies, incidents and exceptions All reasonable actions are to be taken to minimise environmental harm, or potential environmental harm, resulting from any emergency, incident, or circumstances not in accordance with the conditions of this environmental authority.
A8	As soon as practicable after becoming aware of any emergency, incident or information about circumstances which results or may result in environmental harm not in accordance with the conditions of this environmental authority, the administering authority must be notified within twenty-four (24) hours, by telephone or email.
A9	Within ten (10) business days following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following: a) results and interpretation of any samples taken and analysed; b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and c) proposed actions to prevent a recurrence of the emergency or incident.
A10	Third-party reporting The holder of this environmental authority must: a) On or prior to 7 December 2022, 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. c) Provide each report to the administering authority within 90 days of its completion.
A11	Complaints The holder of this environmental authority must record all environmental complaints received about the mining activities including: a) name, address and contact number of the complainant; b) time and date of complaint; c) reasons for the complaint; d) investigations undertaken; e) conclusions formed; f) actions taken to resolve the complaint; g) any abatement measures implemented; and h) person responsible for resolving the complaint.

A12	The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority within 10 business days of completion of the investigation, or no later than 10 business days after the end of the timeframe nominated by the administering authority to undertake the investigation.
A13	Coal is permitted to be transported from Isaac Downs Coal Mine (EA0002817) to the Red Mountain CHPP (EPML00819113) via Millennium Mine using the haul road shown in Figure 3: Authorised Disturbance Footprint .
A14	Coal from Vitrinite (EA0002912) and Isaac Downs mine (EA0002817) is permitted to be received and temporarily stored at Millennium Mine, until 31 July 2023 , at the locations shown in Figure 5: RMI coal storage and rejects/tailings disposal .

Schedule B: Air	
Condition number	Condition
B1	Dust nuisance The environmental authority holder shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the mining activities do not cause exceedances of the following levels when measured at any sensitive or commercial place: a) Dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with the most recent version of Australian Standard AS3580.10.1 Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter-Gravimetric method. b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM₁₀) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, for no more than five exceedances recorded each year, when monitored in accordance with the most recent version of either: (i) Australian Standard AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM₁₀ high volume sampler with size selective inlet – Gravimetric method, or (ii) Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM₁₀ low volume sampler—Gravimetric method. c) A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres (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_{2.5} low volume sampler—Gravimetric method. d) A concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1-year averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—Total suspended particulate matter (TSP)—High volume sampler gravimetric method.

B2	Ambient Dust Monitoring Program The environmental authority holder must develop an Ambient Dust Monitoring Program to specify how the ambient dust impacts of the Millennium Mine will be monitored. The Program shall include, but not necessarily be limited to: 1) identification of an integrated air quality monitoring network, developed in consultation with the owner/operator of the coal mining site; 2) locations, frequencies and methods for monitoring PM₁₀ and deposited particulate matter; 3) provision for the use of at least one hi-volume air sampler (HVAS) or Tapered Element Oscillating Microbalance Sampler (TEOMS), five dust depositional gauges and a meteorological station capable of monitoring wind direction and speed; 4) investigation of the use of HVAS or TEOMS as part of the integrated air quality monitoring network. Should an alternative sampling method be required; the holder may seek approval from the administering authority to exclude this requirement. In seeking such exclusion, the reasons for the exclusion shall be provided and be fully justified; 5) provided that the use of TEOMS is proven to be justified (as outlined in 4 above), the holder shall utilise real time monitoring data to inform environmental management decisions associated with the project; 6) a framework for identifying actual and potential dust impacts, and for applying pro-active and reactive mitigation and management measures to address those impacts; 7) provision for independent review and auditing of the Program; and 8) mechanisms for updating. The environmental authority holder must submit the Ambient Dust Monitoring Program to the administering authority within ten business days upon request.
B3	Ongoing monitoring must be conducted in accordance with the standards and at the locations specified in Table B1: Air Quality Monitoring Details.

Table B1: Air Quality Monitoring Details

Air Quality Determination	Monitoring Standard	Monitoring Point Description	Approximate Monitoring Point Location	
			Latitude	Longitude
PM ₁₀	AS/NZS 3580.9.6:2003 or AS 3580.9.8:2008	PM10 station	22° 0'15" S	148° 4'47" E
Dust Description	AS/NZS 3580.10.1:2003	DG1	22° 00' 20" S	148° 12' 42" E
		DG2	21° 59' 43" S	148° 15' 16" E
		DG3	22° 10' 53" S	148° 16' 58" E
		DG4	22° 20' 21" S	148° 13' 38" E
		DG5	22° 20' 10" S	148° 12' 40" E
		MS1	22° 00' 33" S	148° 14' 44" E

NOTE: Wind speed and direction, humidity, temperature and precipitation.

B4	Where monitoring at locations identified in Table B1: Air Quality Monitoring Details indicates that the air quality objectives detailed in Condition B1 have been exceeded, the environmental authority holder must investigate the matter and report to the administering authority within fourteen days: 1) the concentration of PM₁₀ particulates or dust deposition rate recorded; 2) a description of meteorological conditions occurring at the time; and 3) the measures taken to reduce dust generated by the mining activities.
B5	When requested by the administering authority or as a result of a complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer), additional dust and particulate monitoring (including dust deposition, total suspended particles (TSP), PM₁₀ and PM_{2.5}) must be undertaken, and the results thereof notified to the administering authority within fourteen days following completion of monitoring. This includes providing interim reports if the monitoring lasts for more than one month. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place. Monitoring must be conducted in accordance with the appropriate standards.
B6	If monitoring conducted as a result of a complaint indicates an exceedance of the guidelines detailed in Condition B1, the environmental authority holder must: 1) address the complaint through the use of appropriate dispute resolution if required; and 2) in consultation with the administering authority and within an agreed timeframe, implement dust abatement measures.
B7	The results of PM₁₀, dust deposition and meteorological monitoring must be reported to the administering authority on request.
B8	If requested by the administering authority, the results of PM₁₀, dust deposition and meteorological monitoring must be made available for use in any air quality monitoring network in the Moranbah region operated independently of mining operations.
B9	Model Validation Study Following one full year of data collection in accordance with an approved Ambient Dust Monitoring Program (as required by Condition B2), the environmental authority holder must undertake a model validation study to review PM₁₀ and dust deposition levels to assess compliance with the dust impact predictions made in the documents entitled: "Millennium Expansion Project – Supplementary Report, 2011" and with the ambient air quality objectives specified in Condition B1. The model validation study must be undertaken in accordance with the NSW DECC Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (DECC, 2005) and specific requirements of the administering authority

B10	Within sixty (60) days of conducting the model validation study required by Condition B9, the environmental authority holder must provide a copy of the report to the administering authority. If the model validation study identifies significant deviance from the predictions made in the documents referred to under Condition B9 or any exceedance with ambient air quality objectives of the Environmental Protection (Air) Policy 2008, the environmental authority holder must detail what additional measures would be implemented to further mitigate dust impacts. The environmental authority holder must clearly indicate who would implement these measures, when these measures would be implemented, and how the effectiveness of these measures would be assessed and reported to the administering authority.
B11	Odour nuisance The release of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not cause an environmental nuisance at any nuisance sensitive or commercial place.
B12	When requested by the administering authority, odour monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen days to the administering authority following completion of monitoring.
B13	If the administering authority determines the odour released to constitute an environmental nuisance, then the environmental authority holder must: 1) address the complaint including the use of appropriate dispute resolution if required; and 2) immediately implement odour abatement measures so that emissions of odour from the activity do not result in further environmental nuisance.

Schedule C: Surface Water	
Condition number	Condition
C1	Contaminants that will/or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the mining activities, except as permitted under the conditions of this environmental authority.
C2	The release of mine affected water to waters must only occur from the release points specified in Table C1 Mine affected water release Points, sources and receiving waters and as depicted in Figure 1: mine affected water release points and receiving waters monitoring locations attached to this environmental authority.

Table C1: Mine affected water release points, sources and receiving waters

Release Point (RP)	Latitude (decimal degrees GDA94)	Longitude (decimal degrees GDA94)	Mine affected water source and location	Monitoring Point	Receiving Waters Description
RP1	22° 10' 44" S	148° 16' 48" E	Southern Void	Nominated Low Point and End of Pipe	New Chum Creek
RP2	22° 01' 19" S	148° 15' 28" E	Mavis ROM Dam	End of Pipe	New Chum Creek
RP3	22° 00' 11" S	148° 14' 31" E	Carborough ROM Dam	Nominated Low Point and End of Pipe	New Chum Creek

C3	The release of mine affected water to waters must only be released from the release points specified in Table C1: Mine affected water release points, sources and receiving waters in accordance with the release requirements specified in Table C2: Mine affected water release limits and Table C3: Release contaminant trigger investigation levels .
C4	The release of mine affected water to waters from the release points must be monitored at the locations specified in Table C1: Mine affected water release points, sources and receiving waters for each quality characteristic and at the frequency specified in Table C2: Mine affected water release limits and Table C3: Release contaminant trigger investigation levels .

Table C2: Mine affected water release limits

Quality Characteristic	Contaminant Release Limits	Monitoring Frequency
Electrical conductivity (µS/cm)	1400	Daily during release (first sample within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	
Turbidity (NTU)	TBA*	
Suspended solids (mg/L)	TBA*	
Sulphate (SO ₄ ²⁻) (mg/L)	1000	

*To be provided to the administering authority on or prior to **7 December 2022**.

Table C3: Release contaminant trigger investigation levels

Quality Characteristic ¹	Trigger Levels (µg/L)	Comment on Trigger Level ^{2, 3}	Monitoring Frequency
Aluminium	55	For aquatic ecosystem protection, based on LOR for ICPMS	Commencement of release and thereafter weekly during the release.
Arsenic	13	For aquatic ecosystem protection, based on SMD guideline	
Cadmium	0.2	For aquatic ecosystem protection, based on SMD guideline	
Chromium	1	For aquatic ecosystem protection, based on SMD guideline	
Copper	2	For aquatic ecosystem protection, based on LOR for ICPMS	
Iron	300	For aquatic ecosystem protection, based on low reliability guideline	
Lead	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Mercury (inorganic)	0.2	For aquatic ecosystem protection, based on LOR for CV FIMS	
Nickel	11	For aquatic ecosystem protection, based on SMD guideline	
Zinc	8	For aquatic ecosystem protection, based on SMD guideline	
Boron	370	For aquatic ecosystem protection, based on SMD guideline	
Cobalt	90	For aquatic ecosystem protection, based on low reliability guideline	
Manganese	1900	For aquatic ecosystem protection, based on SMD guideline	
Molybdenum	34	For aquatic ecosystem protection, based on low reliability guideline	
Selenium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Silver	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Uranium	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Vanadium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Ammonia	900	For aquatic ecosystem protection, based on SMD guideline	
Nitrate	1100	For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN	
Petroleum hydrocarbons (C6-C9)	20	For aquatic ecosystem protection, based on LOR for GCMS	
Petroleum hydrocarbons (C10-C36)	100	For aquatic ecosystem protection, based on LOR for GCMS	
Fluoride (total)	2000	Protection of livestock and short-term irrigation guideline	

NOTE:

- All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.
- SMD – slightly moderately disturbed level of protection, guideline refers ANZECC and ARMCANZ (2000).
- LOR – typical reporting for method stated. ICPMS/CV FIMS/GCMS– analytical method required to achieve LOR.

C5	If quality characteristics of the release exceed any of the trigger levels specified in Table C3: Release Contaminant Trigger Investigation Levels during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in Table C3: Release Contaminant Trigger Investigation Levels and: 1. where the trigger values are not exceeded then no action is to be taken; or 2. where the downstream results exceed the trigger values specified in Table C3: Contaminant Release Trigger Investigation Levels for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and; a) if the result is less than the background monitoring site data, then no action is to be taken; or b) if the result is greater than the background monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ (2000) methodology, into the environmental harm and provide a written report to administering authority in the next annual return, outlining: i. details of the investigations carried out; and ii. actions taken to prevent environmental harm. NOTE: Where an exceedance of a trigger level has occurred and is being investigated in accordance with Condition C5(b)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.
C6	If an exceedance in accordance with Condition C5(b)(ii) is identified, the holder of the authority must notify the administering authority within fourteen days of receiving the result.
C7	Mine affected water release events The environmental authority holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in Table C4: Mine affected water Release during Flow Events.

Table C4: Mine affected water release during flow events

Receiving Water Description	Release Point	Gauging Station Description	Gauging station latitude (decimal degrees GDA94)	Gauging station longitude (decimal degrees GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Percentage for Maximum Release	Flow Recording Frequency
Isaac River	RP1 RP2	Goonyella Gauging Station #130414A (Department of Resources)	21° 51' 24" S	147° 58' 18" E	≥ 2.0 m3/sec	Cumulative 1% of flow in receiving waters	Continuous (minimum daily)
New Chum Creek	RP1 RP2	Railway Culvert (GS1)	22° 20' 61" S	148° 16' 44" E	≥ 0.05 m3/sec	Cumulative 20% of flow in receiving waters	Continuous (minimum daily)

C8	Notwithstanding any other condition of this environmental authority, the release of contaminants to waters must only take place during periods of natural flow events specified as minimum flow in Table C4: Mine affected water release during flow events for the contaminant release point(s) specified in Table C1: Mine affected water release points, sources and receiving Waters .
C9	The cumulative volume released through the release point(s) must not exceed the maximum allowable flow at any time determined by multiplying the recorded flow at the corresponding gauging station in Table C4: Mine affected water release during flow events with the corresponding percentages for maximum release in Table C4: Mine affected water release during flow events .
C10	The daily quantity of contaminants released from each release point must be measured at the release points specified in Table C1: Mine affected water release points, sources and receiving waters and recorded.
C11	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.

C12	Notification of release event The environmental authority holder must notify the administering authority via WaTERS as soon as practicable but no later than twenty-four (24) hours after commencing the release of mine affected water to the receiving environment. Notification must include the submission of the following information: 1) release commencement date/time; 2) details regarding the compliance of the release with the conditions of Schedule C: Surface water of this environmental authority (that is, contaminant limits, natural flow, discharge volume etc.) 3) release point(s); 4) release rate 5) release volume (estimated); 6) receiving water(s) including the natural flow rate; and 7) any details (including available data) regarding likely impacts on the receiving water(s).expected release cessation date/time; NOTE: Notification to the administering authority must be via the WaTERS reporting system.
C13	The environmental authority holder must notify the administering authority as soon as practicable but no later than twenty-four hours after the cessation of a release event notified under Condition C12 and within twenty-eight days provide the following information in writing: 1) release cessation date/time; 2) natural flow volume in receiving water; 3) volume of water released; 4) details regarding the compliance of the release with the conditions of Schedule C:Surface Water of this environmental authority (i.e. contaminant limits, natural flow, discharge volume); 5) all in-situ water quality monitoring results; and 6) any other matters pertinent to the water release event.
C14	Notification of release event exceedance If the release limits defined in Table C2: Mine affected water release limits are exceeded, the environmental authority holder must notify the administering authority within twenty-four hours of receiving the results.

C15	Within twenty-eight days of a release that exceeds the conditions of this authority, the environmental authority holder must provide a report to the administering authority detailing: 1) the reason for the release; 2) the location of the release; 3) all water quality monitoring results; 4) any general observations; 5) all calculations; and 6) any other matters pertinent to the water release event.
C16	Monitoring of water storage quality Water storages associated with release points, as specified in Table C5: Water Storage Monitoring, must be monitored for the quality characteristics specified in Table C6: Onsite Water Storage Contaminant Limits at the monitoring locations and at the monitoring frequency specified in Table C5: Water Storage Monitoring.

Table C5: Water Storage Monitoring

Water Storage Description	Latitude	Longitude	Frequency of Monitoring
Southern Void	22° 01' 38" S	148° 16' 58" E	Quarterly
Mavis ROM Dam	22° 01' 14" S	148° 15' 34" E	Quarterly
Mavis Northern ROM Dam	21° 59' 38" S	148° 14' 21" E	Quarterly

Table C6: Onsite Water Storage Contaminant Limits

Quality Characteristic ³	Test Value	Contaminant Limit
pH (pH unit)	Range	Greater than 4, less than 9 ²
EC (µS/cm)	Maximum	5970 ¹
Sulphate (mg/L)	Maximum	1000 ¹
Fluoride (mg/L)	Maximum	2.0 ¹
Aluminium (mg/L)	Maximum	5.0 ¹
Arsenic (mg/L)	Maximum	0.5 ¹
Cadmium (mg/L)	Maximum	0.01 ¹
Cobalt (mg/L)	Maximum	1.0 ¹
Copper (mg/L)	Maximum	1.0 ¹
Lead (mg/L)	Maximum	0.1 ¹
Nickel (mg/L)	Maximum	1.0 ¹
Zinc (mg/L)	Maximum	20 ¹

NOTE:

1. Contaminant limit based on ANZECC & ARMICANZ (2000) stock water quality guidelines.
2. Page 4.2-15 of ANZECC & ARMICANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4–9".
3. Total measurements (unfiltered) must be taken and analysed.

C17	In the event that a water storage defined in Table C5: Water Storage Monitoring exceeds the contaminant limits defined in Table C6: Onsite Water Storage Contaminant Limits , the environmental authority holder must implement measures, where practicable, to prevent access to that water storage by all livestock.
C18	Receiving environment monitoring and contaminant trigger levels The quality of the receiving waters must be monitored at the locations specified in Table C8: Receiving Water Upstream Background Sites and Down Stream Monitoring Points and depicted in Figure 1: Mine affected water release points and receiving waters monitoring locations attached to this environmental authority for each quality characteristic and at the monitoring frequency stated in Table C7: Receiving Waters Contaminant Trigger Levels.

Table C7: Receiving Waters Contaminant Trigger Levels

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 – 8.0	Daily during a relevant release for MP1 and MP2. ¹
Electrical Conductivity (µS/cm)	1000	
Suspended solids (mg/L)	258	
Sulfate (SO ₄ ²⁻) (mg/L)	1000	First day of release and thereafter every second day during release for MP7 ¹ , for all releases.

NOTE: ¹. MP1 (upstream monitoring point) and MP2 (downstream monitoring point) must be monitored during a release from RP1 for contaminant trigger levels as per Table C7;

pH and EC must be monitored at MP7 during a release from release points mentioned in Table C4

Table C8: Receiving Water Upstream Background Sites and Down Stream Monitoring Points

Monitoring Points	Receiving Waters Location Description	Latitude	Longitude
Upstream Background Monitoring Points			
MP1	New Chum Creek 9740 metres upstream of RP1	22° 00' 16" S	148° 13' 35" E
Downstream Monitoring Points			
MP2	New Chum Creek 1150 metres downstream of RP1	22° 20' 61" S	148° 16' 44" E
MP7	Isaac River at Deverill (Department of Resource Gauge No. 130410A)	22° 10' 27" S	148° 22' 52" E

NOTE: The data from background monitoring points must not be used where they are affected by releases from other mines.

C19	If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table C7: Receiving Waters Contaminant Trigger Levels during a release event the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and: 1) where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or 2) where the downstream results exceed the upstream results complete an investigation in accordance with the ANZECC & ARMCANZ (2000) methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining: a) details of the investigations carried out; and b) actions taken to prevent environmental harm. NOTE: Where an exceedance of a trigger level has occurred and is being investigated in accordance with Condition C19(2), no further reporting is required for subsequent trigger events for that quality characteristic.
C20	Receiving Environment Monitoring Program The environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site. For the purposes of the REMP, the receiving environment is the waters of New Chum Creek, West Creek and North Creek and connected or surrounding waterways within 10km downstream of the release. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

C21	The REMP must: 1) assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality); 2) be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected; 3) include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in Table C7: Receiving Waters Contaminant Trigger Levels); 4) specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the Queensland Water Quality Guidelines 2009 This should include monitoring during periods of natural flow irrespective of mine or other discharges; 5) include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in Table C1: Mine affected water release points, sources and receiving waters and Table C2: Mine affected water release limits; 6) include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.12 Guidance on Sampling of Bottom Sediments); 7) include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology; 8) apply procedures and/or guidelines from ANZECC & ARMCANZ 2000 and other relevant guideline documents; 9) describe sampling and analysis methods and quality assurance and control; and 10) incorporate stream flow and hydrological information in the interpretations of water quality and biological data.
C22	A REMP Design Document that addresses each criterion presented in Conditions C20 and C21 must be prepared and submitted to the administering authority within 1 year from the date of issue of this environmental authority. Due consideration must be given to any comments made by the administering authority on the REMP Design Document and subsequent implementation of the program.
C23	A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with Conditions C20 and C21 must be prepared annually and made available on request to the administering authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

C24	Water re-use Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party (with the written consent of the third party).
C25	Water general All determinations of water quality must be: 1) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements; 2) made in accordance with methods prescribed in the latest edition of the administering authority's <i>Monitoring and Sampling Manual</i>; 3) collected from the monitoring locations identified within this environmental authority, within ten hours of each other where possible; 4) carried out on representative samples; and 5) laboratory testing must be undertaken using a laboratory accredited (e.g. the National Association of Testing Authorities [NATA]) for the method of analysis being used. NOTE: Condition C25 requires the <i>Monitoring and Sampling Manual</i> to be followed and where it is not followed because of exceptional circumstances, this should be explained and reported with the results.
C26	The release of contaminants directly or indirectly to waters: 1) must not produce any visible discolouration of receiving waters; and 2) must not produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.
C27	Annual water monitoring reporting The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format with each annual return: 1) the date on which the sample was taken; 2) the time at which the sample was taken; 3) the monitoring point at which the sample was taken; 4) the measured or estimated daily quantity of the contaminants released from all release points; 5) the release flow rate at the time of sampling for each release point; 6) the results of all monitoring and details of any exceedance with the conditions of this environmental authority; and 7) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

C28	Temporary interference with waterways Temporarily destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with the Department of Resources' 'Guideline – Activities in a watercourse, lake or spring associated with a resource activity or mining operations.
C29	Water Management Plan A Water Management Plan must be developed by an appropriately qualified person and implemented.
C30	The Water Management Plan must: 1. provide for effective management of actual and potential environmental impacts resulting from water management associated with the mining activity carried out under this environmental authority; and 2. to include: a) a study of the source of contaminants; b) a water balance model for the site; c) a water management system for the site; d) measures to manage and prevent saline drainage; e) measures to manage and prevent acid rock drainage; f) contingency procedures for emergencies; and g) a program for monitoring and review of the effectiveness of the Water Management Plan.
C31	The Water Management Plan must be reviewed each calendar year and a report prepared by an appropriately qualified person. The report must: 1) assess the plan against the requirements under Condition C30; 2) include recommended actions to ensure actual and potential environmental impacts are effectively managed for the coming year; and 3) identify any amendments made to the water management plan following the review.
C32	The holder of this environmental authority must attach to the Review Report required by Condition C31, a written response to the report and recommended actions, detailing the actions taken or to be taken by the environmental authority holder on stated dates: 1) to ensure compliance with this environmental authority; and 2) to prevent a recurrence of any non-compliance issues identified.
C33	The Review Report required by Condition C31 and the written response to the Review Report required by Condition C32 must be submitted to the administering authority with the subsequent annual return under the signature of the appointed signatory for the annual return.
C34	A copy of the Water Management Plan must be provided to the administering authority on request.

C35	Saline drainage The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline drainage.
C36	Acid rock drainage The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of acid rock drainage.
C37	Stormwater and water sediment controls An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of storm water. An Erosion and sediment control plan must be submitted to the Department upon request.
C38	Stormwater, other than mine affected water, is permitted to be released to waters from: 1) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by Condition C37; and 2) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with Conditions C29 to C34 inclusive, for the purpose of ensuring water does not become mine affected water.
C39	The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas from which contaminants can be released into any receiving waters.

Schedule D: Groundwater	
Condition number	Condition
D1	Groundwater The holder of this environmental authority must develop and implement a Groundwater Monitoring Program. The program must be able to detect a significant change to groundwater quality values (consistent with the current suitability of the groundwater for domestic and agricultural use) due to activities that are part of this mining project. The Groundwater Monitoring Program must detail: 1) the location of groundwater monitoring sites and the aquifers the sites are monitoring; 2) the frequency at which sampling will be undertaken; 3) the groundwater contaminant trigger values; 4) the groundwater monitoring reporting requirements; and 5) management measures to effectively mitigate and manage potential impacts on aquifers and existing groundwater users.
D2	The holder of the environmental authority must report the results and analysis of groundwater monitoring to the administering authority on request.
D3	Groundwater potentially affected by the mining activities must be monitored at the locations and frequency defined in Table D1: Groundwater monitoring locations and frequency .

Table D1: Groundwater monitoring locations and frequency

Monitoring Site ID	Latitude (GDA94)	Longitude (GDA94)	Aquifer	Monitoring Frequency	Monitoring Parameters
MB2	22° 10' 49" S	148° 14' 18" E	Permian Rangal	Quarterly	SWL
MB8A	22° 00' 27" S	148° 14' 20" E	Fort Cooper (New Chum Creek Alluvium)*	Quarterly	SWL and Quality
MB8B	22° 00' 27" S	148° 14' 20" E	Fort Cooper*	Quarterly	SWL and Quality
MB9A	22° 00' 34" S	148° 14' 43" E	Fort Cooper (New Chum Creek Alluvium)	Quarterly	SWL and Quality
MB9B	22° 00' 34" S	148° 14' 43" E	Fort Cooper	Quarterly	SWL and Quality
MB10A	22° 10' 33" S	148° 16' 00" E	Fort Cooper (New Chum Creek Alluvium)	Quarterly	SWL and Quality
MB10B	22° 10' 33" S	148° 16' 00" E	Fort Cooper	Quarterly	SWL and Quality

NOTE: SWL means standing water level

D4	If the groundwater contaminant trigger levels defined in Table D2: Groundwater Contaminant Trigger Values are exceeded for two consecutive monitoring periods, then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within twenty-eight days of receiving the analysis results.
D5	The groundwater monitoring data must be reviewed on an annual basis. The review must include the assessment of groundwater levels and quality data, and the suitability of the monitoring network. The assessment will be made available to the administering authority within twenty-eight days from request.
D6	For the Mavis underground operations as detailed in Figure 3 , an assessment by an appropriately qualified person must be undertaken to determine the following: a) Number and location of groundwater monitoring sites; b) Suitability of the monitoring network; and c) Ground water contaminant trigger levels.
D7	The results from the assessment required by condition D6 must be used to update Table D1: Groundwater monitoring locations and frequency and Table D2: Groundwater Contaminant Trigger Values of this environmental authority, via an amendment process by 31 December 2022 .

Table D2: Groundwater Contaminant Trigger Values

Water Quality Indicator	Unit	Trigger Values	Limit Type
Aluminium	mg/L	0.02	Maximum
Antimony	mg/L	0.002	Maximum
Arsenic	mg/L	0.003	Maximum
Calcium	mg/L	70	Maximum
Chlorine	mg/L	0.04	Maximum
Carbonate (CO ₃)	mg/L	8	Maximum
Total Dissolved Solids	mg/L	2,200	Maximum
Electrical Conductivity	µS/cm	4,000	Maximum
Bicarbonate (HCO ₃)	mg/L	900	Maximum
Iron	mg/L	0.3	Maximum
Magnesium	mg/L	190	Maximum
Mercury	mg/L	0.0001	Maximum
Molybdenum	mg/L	0.003	Maximum
pH	pH units	6.5 – 9.0	Minimum - Maximum
Potassium	mg/L	6	Maximum
Selenium	mg/L	0.01	Maximum
Silver	mg/L	0.004	Maximum
Sulfate (SO ₄ ²⁻)	mg/L	70	Maximum
Sodium	mg/L	500	Maximum
Total Suspended Solids	mg/L	30	Maximum
Total Petroleum Hydrocarbons	mg/L	0.1	Maximum

Schedule E: Acoustic	
Condition number	Condition
E1	Noise nuisance Noise from mining activities must not cause an environmental nuisance at any noise sensitive or commercial place.
E2	All noise from mining activities must not exceed the levels specified in Table E1: Noise Limits at any noise affected place.
E3	Noise monitoring When requested by the administering authority, noise monitoring must be undertaken to investigate any complaint of noise nuisance, and the results notified within fourteen days to the administering authority. Monitoring must include: 1) LA10, adj, 10 mins; 2) LA1, adj, 10 mins; 3) the level and frequency of occurrence of impulsive or tonal noise; 4) atmospheric conditions including wind speed and direction; 5) effects due to extraneous factors such as traffic noise; and 6) location, date and time of recording.
E4	Noise is not considered to be a nuisance under Condition E1 if monitoring shows that noise does not exceed the following levels in the time periods specified in Table E1: Noise Limits.
E5	The method of measurement and reporting of noise monitoring must comply with the current edition of the administering authority's <i>Noise Measurement Manual</i>.
E6	If monitoring indicates exceedance of the relevant limits in Condition E4, then the environmental authority holder must: 1) address the complaint including the use of appropriate dispute resolution if required; and 2) in consultation with the administering authority and within an agreed timeframe, implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.

Table E1: Noise limits

Noise Level dB(A)	Monday to Saturday			Sundays and Public Holidays		
	7am - 6pm	6pm - 10pm	10pm - 7am	9am - 6pm	6pm - 10pm	10pm - 9am
Noise Measured at a 'Noise Sensitive Place'						
LA10, adj, 10 mins	B/g + 5	B/g + 5	B/g + 0	B/g + 5	B/g + 5	B/g + 0
LA1, adj, 10 mins	B/g + 10	B/g + 10	B/g + 5	B/g + 10	B/g + 10	B/g + 5
Noise Measured at a 'Commercial Place'						
LA10, adj, 10 mins	B/g + 10	B/g + 10	B/g + 5	B/g + 10	B/g + 10	B/g + 5
LA1, adj, 10 mins	B/g + 15	B/g + 15	B/g + 10	B/g + 15	B/g + 15	B/g + 10

E7	Vibration nuisance Vibration from the licensed activities must not cause an environmental nuisance, at any sensitive or commercial place.
E8	When requested by the administering authority, vibration monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the Authorised Officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.
E9	Airblast overpressure nuisance The Airblast overpressure level from blasting operations on the premises must not exceed the limits defined in Table E2: Airblast Overpressure Level at any nuisance sensitive or commercial place.

Table E2: Airblast Overpressure Level

Location	Airblast Overpressure Measured
Sensitive or commercial place	Air blast overpressure level of 115 dB (Linear peak) for nine out of ten consecutive blasts initiated and not greater than 120 dB (Linear peak) at any time.

E10	When requested by the administering authority, Airblast overpressure monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the Authorised Officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen days to the administering authority following completion of monitoring.
E11	Airblast overpressure monitoring must include the following descriptors, characteristics and conditions: 1) location of the blast(s) within the mining area (including which bench level); 2) atmospheric conditions including temperature, relative humidity and wind speed and direction (as per the Millennium Meteorological Station or closest recognised weather station); and 3) location, date and time of recording.
E12	If monitoring indicates exceedance of the relevant limits in Table E2 Airblast Overpressure Level , then the environmental authority holder must: 1) address the complaint including the use of appropriate dispute resolution if required; and 2) in consultation with the administering authority and within an agreed timeframe, implement Airblast overpressure abatement measures so that Airblast overpressure from the activity does not result in further environmental nuisance.
E13	The method of measurement and reporting of Airblast overpressure levels must comply with the current edition of the administering authority's <i>Noise Measurement Manual</i> .

Schedule F: Land and Rehabilitation	
Condition number	Condition
F1	Topsoil Topsoil must be strategically stripped ahead of mining and stockpiled in accordance, with a Topsoil Management Plan. This plan must be provided to the administering authority upon request.
F2	A topsoil inventory which identifies the topsoil requirements for all areas disturbed by mining activities, including availability of suitable topsoil on-site, must be detailed in the Topsoil Management Plan.
F3	Rehabilitation landform criteria All areas disturbed by mining activities must be rehabilitated to a stable landform with a self-sustaining vegetation cover in accordance with Table F1: Final Land Use and Rehabilitation Approval Schedule and Table F2: Landform Design Criteria . NOTE: Methods and design criteria specified in Table F1: Final Land Use and Rehabilitation Approval Schedule and Table F2: Landform Design Criteria will be reviewed and modified on the basis of outcomes from ongoing research and experience, and upon acceptance of the Rehabilitation Management Plan and Residual Void Management Plan required by Conditions F5 and F7 of this environmental authority.

Table F1: Final Land Use and Rehabilitation Approval Schedule

Details	Disturbance Type						
	Residual Void including High Wall and Low Walls	Spoil Dump(s)	Spoil Dumps (External Batters)	Waste Rock Runoff / Supply Dams	Diversion Channels and Riparian Zones	Road(s)	Subsidence (Mavis Underground)
Projective surface area (ha) ²	281	698	289	TBA ¹	TBA ¹		198
Map Reference	TBA ¹	TBA ¹	TBA ¹	TBA ¹	TBA ¹	TBA ¹	Figure 3
Pre-mine land use	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing
Post-mine land use	Waterbody/ Native bushland	Native bushland	Native bushland	Waterbody/ Grazing	Native bushland	Grazing	Grazing
Post-mine land use capability classification	N/A	N/A	N/A	N/A or Class 2 grazing land	Class 2 grazing land	Class 2 or 3 grazing land	Class 3 grazing land
Projective cover range (%)	TBA ¹	TBA ¹	TBA ¹	TBA ¹	TBA ¹	TBA ¹	TBA ¹

NOTE: 1. To be advised in accordance with **Condition F5**.
2. Based on conceptual design details.

Table F2: Landform Design Criteria

Disturbance Type	Projective Surface Area (ha)	Design Criteria
Spoil dumps – external walls	289	Slope <3(H):1(V)
Spoil dumps – top	698	Shaped to reduce runoff downslope
Voids, ramps and highwalls	281	Highwall to remain as is if geotechnical stability is sound or otherwise benched with 15m benches at 20m intervals
Haul roads	80.5	Remove any creek crossings and reshape to remain stable

F4	Progressive rehabilitation must commence within twelve months when areas become available within the operational land.
F5	Complete an investigation into rehabilitation of disturbed areas and implement a Rehabilitation Management Plan by 31 December 2020. On acceptance of the criteria proposed in the Rehabilitation Management Plan, the criteria must be specified in this environmental authority. The Rehabilitation Management Plan must, at a minimum: 1) map existing areas of rehabilitation; 2) develop design objectives for rehabilitation of disturbed areas and post mining land uses across the mine; 3) specify waste rock characteristics, soil analysis, soil separation for use on rehabilitation; 4) detail rehabilitation methods applied to areas; 5) contain landform design criteria including end of mine design; 6) detail how landform design will be consistent with the surrounding topography; 7) include figures of the final landform that illustrate contours, internal surface drainage patterns, appropriate drop structures and runoff retention features; 8) include cross-sections of the final landform at appropriate intervals; 9) identify success criteria for areas and itemise revegetation criteria; 10) explain planned native vegetation rehabilitation areas and corridors; 11) identify at least a minimum of three reference and three rehabilitation sites to be used to develop rehabilitation success criteria; 12) describe rehabilitation indicators and the monitoring program to be used; 13) develop a contingency plan for rehabilitation maintenance or redesign; 14) describe end of mine landform design plan and post mining land uses across the mine; 15) include a cost benefit analysis / triple bottom line assessment (or an alternative assessment method) of the proposed final landform design criteria and alternatives; 16) propose Endangered Regional Ecosystem (ERE) management and offset protection; and 17) identify and consider the potential for cumulative impacts on rehabilitation outcomes as a result of applying mine affected water with high electrical conductivity for dust suppression.

F6	Residual void outcome Residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself and subject to any other condition within this environmental authority.
F7	Complete an investigation into residual voids and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in Condition F6 and landform design criteria by 31 December 2020 for review and comment. On acceptance of the criteria proposed in the residual void management plan, the criteria must be specified in the environmental authority. The investigation must at a minimum include the following: 1) a study of options available for minimising residual void area and volume; 2) develop design criteria for rehabilitation of residual voids; 3) a void hydrology study, addressing the long-term water balance in the voids, connections to groundwater resources and water quality parameters in the long- term; 4) a pit wall stability study, considering the effects of long-term erosion and weathering of the pit wall and the effects of significant hydrological events; 5) a study of void capability to support native flora and fauna; and 6) a proposal/s for end of mine void rehabilitation success criteria and residual void areas and volumes. These studies will be undertaken during the life of the mine and will include detailed research and modelling. NOTE: As required by Condition G32(c), at the completion of decommissioning and rehabilitation, residual voids must be protected from Probable Maximum Floods (PMFs) from nearby watercourses such that the protection is sustainable for the foreseeable future.
F8	Review of rehabilitated landform criteria and residual void outcome The rehabilitated landform criteria and residual void outcomes must be reviewed every three years from the anniversary date of the reports for Conditions F6 and F10. Any amendments to rehabilitation criteria and landform designs must be re-submitted to the administering authority.
F9	Subsidence A subsidence management plan must be developed and implemented by an appropriately qualified person by 31 December 2022.

F10	The subsidence management plan required by condition F9 must at a minimum include the following: a) Identified areas impacted by subsidence or proposed to be impacted by subsidence b) Subsidence modelling prior to mining c) Subsidence monitoring procedures d) Subsidence impact management strategies e) Rehabilitation methodology for the subsidence impacted area f) Land management practices pre and post subsidence g) Periodic review requirement as per suitability to the mine plan
F11	Post Closure Management Plan A Post Closure Management Plan for the site must be prepared by 31 December 2020 and implemented for a nominal period of: 1) at least thirty (30) years following final coal processing on site; or 2) a shorter period if the site is proven to be geotechnically and geochemically stable and it can be demonstrated to the satisfaction of the administering authority that no release of contaminants from the site will result in environmental harm.
F12	The Post Closure Management Plan must include the following elements: 1) operation and maintenance of: a) wastewater collection and reticulation systems; b) wastewater treatment systems; c) the groundwater monitoring network; d) final cover systems; and e) vegetative cover. 2) monitoring of: a) surface water quality; b) groundwater quality; c) seepage rates; d) erosion rates; e) the integrity and effectiveness of final cover systems; and f) the health and resilience of native vegetation cover.
F13	Nature conservation A buffer distance of not less than one hundred metres must be retained on either side of New Chum Creek within ML70313, to minimise environmental impacts to regional ecosystems except as indicated in Table F3: Work Areas in Nature Conservation Areas and depicted in Figure 4: Work areas in nature conservation areas (as per Table F3)

Table F3: Work areas in nature conservation areas

Description	Latitude (GDA94)	Longitude (GDA94)
Water Storage – West Creek	22° 02' 13" S	148° 13' 38" E
	22° 01' 46" S	148° 13' 38" E
	22° 01' 44" S	148° 13' 29" E
	22° 02' 10" S	148° 13' 18" E
Haul Road Crossings	22° 01' 36" S	148° 15' 51" E
Reload Facility (including access track)	22° 00' 30" S	148° 13' 02" E
	22° 00' 24" S	148° 13' 19" E
	22° 00' 26" S	148° 13' 17" E
	22° 00' 26" S	148° 13' 13" E
	22° 00' 27" S	148° 13' 12" E
	22° 00' 28" S	148° 13' 12" E
	22° 00' 29" S	148° 13' 11" E
	22° 00' 31" S	148° 13' 06" E
	22° 00' 30" S	148° 13' 06" E
	22° 00' 30" S	148° 13' 07" E
	22° 00' 29" S	148° 13' 06" E
	22° 00' 29" S	148° 13' 05" E
	22° 00' 30" S	148° 13' 03" E
	22° 00' 31" S	148° 13' 07" E
	22° 00' 31" S	148° 13' 08" E
	22° 00' 30" S	148° 13' 10" E

F14	Preventing contaminant release to land Contaminants must not be released to land in a manner which constitutes nuisance, material or serious environmental harm.
F15	Storage and spillage of chemicals and flammable or combustible liquids All flammable or combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm and maintained in accordance with the current version of AS 1940 - <i>Storage and handling of flammable and combustible liquids</i>.
F16	Spillage of all flammable and combustible liquids must be controlled in a manner that prevents environmental harm.
F17	Storage and handling of chemicals All chemicals must be contained within an on-site containment system and controlled in a manner that prevents environmental harm and maintained in accordance with the current version of the relevant Australian Standard.
F18	Spillage of all chemicals must be controlled in a manner that prevents environmental harm.
F19	Infrastructure All infrastructure constructed by or for the environmental authority holder during the licensed activities including water storage structures, must be removed from the site prior to surrender, except where agreed in writing by the post mining landowner / holder. NOTE: This is not applicable where the landowner / landholder is also the environmental authority holder.

F20	Exploration activities The environmental authority holder must comply with each of the Standard Environmental Conditions contained in the <i>Eligibility criteria and standard conditions for exploration and mineral development project</i> (ESR/2016/1985), except Conditions A2 and A13 of ESR/2016/1985, which is replaced by the conditions within this environmental authority.
F21	Exploration within ERE buffer This environmental authority authorises exploration activities within the 500m buffer zone of ERE on ML70313 only. Exploration activities are not permitted within ERE.
F22	This environmental authority authorises the construction of Line of Oxidation drilling activities within the 500m buffer zone of ERE on ML70313.
F23	Land disturbance on ERE buffer The operational area of drill sites must not exceed 1,200m ² in area.
F24	Drill holes are limited to no more than 200mm in diameter.
F25	The construction of sumps must not exceed 25m ² , with a maximum of three sumps per drill site.
F26	Topsoil stripping must be limited to the sump area.
F27	Exploration activities within the 500m buffer zone of ERE must not involve costeaning or bulk sampling activities.
F28	Exploration camps are not permitted to be established within ERE or ERE buffer.
F29	All new tracks are to be recorded with GPS co-ordinates and records kept of their location and made available to the administering authority on request.
F30	Exploration reporting An annual exploration report must be prepared each year and submitted with the annual return. The report must include a map identifying all exploration activities undertaken to date, in accordance with EPML00819213. The map is to clearly distinguish between proposed, completed and rehabilitated mining activities to demonstrate compliance with this environmental authority.

Schedule G: Regulated Structures	
Condition number	Condition
G1	Assessment of consequence category The consequence category of any structure must be assessed by a suitably qualified person in accordance with the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> (ESR/2016/1933) at the following times: 1) prior to the design and construction of the structure, if it is not an existing structure; or 2) if it is an existing structure, prior to the adoption of this schedule; or 3) prior to any change in its purpose or the nature of its stored contents.
G2	A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.
G3	Certification must be provided by the suitably qualified person who undertook the assessment, in the form set out in the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> (ESR/2016/1933).
G4	Design and construction of a regulated structure Conditions G5 to G9 inclusive do not apply to existing structures.
G5	All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified person in accordance with the requirements of the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> (ESR/2016/1933).
G6	Construction of a regulated structure is prohibited unless: 1) the holder has submitted a consequence category assessment report and certification to the administering authority; 2) certification for the design, design plan and the associated operating procedures has been certified by a suitably qualified person in compliance with the relevant condition of this authority.
G7	Certification must be provided by the suitably qualified person who oversees the preparation of the design plan in the form set out in the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> (ESR/2016/1933), and must be recorded in the Regulated Structures register.

G8	Regulated structures must: 1) be designed and constructed in accordance with and conform to the requirements of the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> (ESR/2016/1933); 2) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of: a) floodwaters from entering the regulated structure from any watercourse or drainage line; and b) wall failure due to erosion by floodwaters arising from any watercourse or drainage line. 3) 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.
G9	Operation of a regulated structure Operation of a regulated structure, except for an existing structure, is prohibited unless the holder has submitted to the administering authority: 1) one electronic copy of the design plan and certification of the 'design plan' in accordance with Condition G6; 2) a set of 'as constructed' drawings and specifications; 3) certification of those 'as constructed drawings and specifications' in accordance with Condition G9; 4) 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; 5) the requirements of this authority relating to the construction of the regulated structure have been met; 6) the holder has entered the details required under this authority, into a Register of Regulated Structures; and 7) there is a current operational plan for the regulated structure.
G10	Existing structures For existing structures that are regulated structures: 1) 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 twelve months of the commencement of this condition a copy of the certified system design plan including that structure; and 2) there must be a current operational plan for the existing structures.

G11	Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in a manner that is consistent with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.
G12	Mandatory reporting level Conditions G13 to G14 inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
G13	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.
G14	The holder must, as soon as practical and within forty-eight hours of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.
G15	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.
G16	The holder must record any changes to the MRL in the Register of Regulated Structures.
G17	Design storage allowance 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.
G18	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).
G19	The holder must, as soon as possible and within forty-eight 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.
G20	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.
G21	Annual inspection report Each regulated structure must be inspected each calendar year by a suitably qualified person.
G22	At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified 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.

G23	The suitably qualified person who prepared the annual inspection report must certify the report in accordance with the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> (ESR/2016/1933).
G24	The holder must within twenty business days of receipt of the annual inspection report, provide to the administering authority: 1) the recommendations section of the annual inspection report; and 2) if applicable, any actions being taken in response to those recommendations; and 3) if, following receipt of the recommendations and (if applicable) actions, the administering authority requests a full copy of the annual inspection report from the holder, provide this to the administering authority within ten business days of receipt of the request.
G25	Transfer arrangements 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.
G26	Decommissioning and rehabilitation Regulated structures must not be abandoned but be either: 1) decommissioned and rehabilitated to achieve compliance with Condition G29; or 2) be left in-situ for a beneficial use(s) provided that: a) it no longer contains contaminants that will migrate into the environment; and b) it contains water of a quality that is demonstrated to be suitable for its intended beneficial use(s); and c) the holder of the environmental authority and the landholder agree in writing that the: i. dam will be used by the landholder following the cessation of the environmentally relevant activity(ies); and ii. the landholder is responsible for the dam, on and from an agreed date.
G27	Before surrendering this environmental authority the site must be rehabilitated to achieve a safe, stable, non-polluting landform and support grazing as the final land use.
G28	Register of Regulated Structures A Register of Regulated Structures must be established and maintained by the holder for each regulated structure.
G29	The holder must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated structure is submitted to the administering authority.
G30	The holder must make a final entry of the required information in the Register of Regulated Structures once compliance with Conditions G9 and G10 has been achieved.

G31	The holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
G32	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.
G33	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.

Schedule H: Waste	
Condition number	Condition
H1	Storage and disposal of scrap tyres Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste-to-energy options must be stored in stable stacks and at least ten metres from any other scrap tyre storage area, or combustible or flammable material, including vegetation.
H2	All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a ten metre radius of the scrap tyre storage area.
H3	Disposing of scrap tyres resulting from the authorised activities in waste rock emplacements is acceptable, provided tyres are placed as deep in the waste rock as reasonably practicable. A record must be kept of the number and location of tyres disposed.
H4	Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform.
H5	Waste management A Waste Management Plan must be implemented for the site and must: 1) describe how the Millennium Coal Mine recognises and applies the waste management hierarchy; 2) identify characteristics of wastes generated from the Millennium Coal Mine and general volume trends over the past five years; 3) cover a program for safe recycling or disposal of all wastes - reusing and recycling where possible; 4) identify waste commitments with auditable targets to reduce, re-use and recycle; 5) describe waste management control strategies, including: a. the type of wastes; b. segregation of the wastes; c. storage of the wastes; d. transport of the wastes; e. monitoring and reporting matters concerning the waste; f. emergency response planning; and g. disposal, reuse and recycling options; 6) identify the potential adverse and beneficial impacts of the wastes generated; and 7) detail the hazardous characteristics of the waste generated (if any); a. detail the disposal procedure for hazardous wastes; b. outline the process to be implemented to allow for continuous improvement of the waste management systems; c. identify responsible staff (positions) for implementing, managing and reporting the Waste Management Plan; and d. detail a staff awareness and induction program that encourages re-use and recycling.
H6	Receiving Waste The only waste permitted to be received at Millennium mine is rejects and tailings generated at Red Mountain Coal Handling and Processing Plant (CHPP, EPML00819113).

H7	Waste disposal Waste received in accordance with Condition H6 is permitted to be disposed of within the specified features shown in Figure 5: ROM storage and rejects/tailings disposal in accordance with Condition H5.
H8	Waste must not be burned or allowed to be burned on the licensed site unless by approval of the administering authority.
H9	A designated area must be set aside for the segregation of economically viable, recyclable solid and liquid waste.
H10	Records must be kept for five years, and must include the following information: 1) date of pickup of waste; 2) description of waste; 3) cross reference to relevant waste transport documentation; 4) quantity of waste; 5) origin of the waste; 6) destination of the waste; and 7) intended fate of the waste, for example, type of waste treatment, reprocessing or disposal. NOTE: Records of documents maintained in compliance with a waste tracking system established under the <i>Environmental Protection Act 1994</i> or any other law for regulated waste will be deemed to satisfy this condition.
H11	Records of trade and regulated wastes or material leaving the mining lease for recycling or disposal, including the final destination and method of treatment, must be in accordance with the <i>Waste Reduction and Recycling Act 2011</i> .
H12	All regulated waste received at and removed from the site must be transported by a person who holds a current authority to transport such waste under the provisions of the <i>Environmental Protection Act 1994</i> .
H13	Except as otherwise provided by the conditions of this authority, all waste removed from the site must be taken to a facility that is lawfully allowed to accept such waste under the provisions of the <i>Environmental Protection Act 1994</i> .

Schedule I: Sewage treatment	
Condition number	Condition
I1	The only contaminant permitted to be released to land is treated sewage effluent in compliance with the release limits stated in Table I1: Contaminant release limits to land .
I2	Treated sewage effluent may only be released to land in accordance with the conditions of this approval at the following locations: 1) within the nominated area(s) identified in Figure 2: Sewage Treatment Plant and Effluent Disposal; and 2) other land for the purpose of dust suppression and/or firefighting.
I3	The application of treated effluent to land must be carried out in a manner such that: 1) vegetation is not damaged; 2) there is no surface ponding of effluent; and 3) there is no run-off of effluent.
I4	If areas irrigated with effluent are accessible to employees or the general public, prominent signage must be provided advising that effluent is present, and care should be taken to avoid consuming or otherwise coming into unprotected contact with the effluent.
I5	All sewage effluent released to land must be monitored at the frequency and for the parameters specified in Table I1: Contaminant Release Limits to Land .
I6	The daily volume of effluent release to land must be measured and records kept of the volumes of effluent released.
I7	When circumstances prevent the irrigation or beneficial reuse of treated sewage effluent such as during or following rain events, waters must be directed to a wet weather storage or alternative measures must be taken to store/lawfully dispose of effluent.
I8	A minimum area of 5.73ha of land, excluding any necessary buffer zones, must be utilised for the irrigation and/or beneficial reuse of treated sewage effluent.
I9	Treated sewage effluent must only be supplied to another person or organisation that has a written plan detailing how the user of the treated sewage effluent will comply with their general environmental duty under section 319 of the <i>Environmental Protection Act 1994</i> whilst using the treated sewage effluent.

Table I1: Contaminant release limits to land

Contaminant	Unit	Release Limit	Limit Type	Frequency
5 day Biochemical Oxygen Demand (BOD)	mg/L	20	Maximum	Monthly
Total Suspended Solids	mg/L	30	Maximum	Monthly
Nitrogen	mg/L	30	Maximum	Monthly
Phosphorus	mg/L	15	Maximum	Monthly
E-coli	Organisms/100mL	1000	Maximum	Monthly
pH	pH units	6.0 - 90	Range	Monthly

END OF CONDITIONS

Definitions

Words and phrases used throughout this environmental authority are defined in the ‘Definitions’ section below. Where a definition for a term used in this environmental authority is sought and the term is not defined within this environmental authority, the definitions in the *Environmental Protection Act 1994*, its regulations and policies must be used.

“acceptance criteria” means the measures by which the actions implemented to rehabilitate the land are deemed to be complete. The acceptance criteria indicate the success of the rehabilitation outcome or remediation of areas which have been significantly disturbed by the mining activities. Acceptance criteria may include information regarding:

- a) vegetation establishment, survival and succession;
- b) vegetation productivity, sustained growth and structure development;
- c) fauna colonisation and habitat development;
- d) ecosystem processes such as soil development and nutrient cycling, and the recolonisation of specific fauna groups such as collembola, mites and termites which are involved in these processes;
- e) microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration;
- f) effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;
- g) resilience of vegetation to disease, insect attack, drought and fire; and
- h) vegetation water use and effects on ground water levels and catchment yields.

“acid rock drainage” means any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata is disturbed and exposed to oxygen and moisture as a result of mining activity.

“administering authority” means the Department of Environment and Science or its successor.

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

“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 air blast overpressure measured in decibels linear (dBL).

“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 experience 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).

“ANZECC” means the Australian and New Zealand Guidelines for Fresh Marine Water Quality 2000.

“appropriately qualified person” means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods or literature.

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

“assessed” or “assessment” by a suitably qualified person in relation to a hazard assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

- a) exactly what has been assessed and the precise nature of that assessment;
- 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 development approval.

“bed and banks” for a waters, river, creek, stream, lake, lagoon, pond, swamp, wetland or dam means land over which the water of the waters, lake, lagoon, pond, swamp, wetland or dam normally flows or that is normally covered by the water, whether permanently or intermittently; but does not include land adjoining or adjacent to the bed and banks that is from time to time covered by floodwater.

“beneficial use” in respect of dams means that the current or proposed owner of the land on which a dam stands, has found a use for that dam that is:

- a) of benefit to that owner in that it adds real value to their business or to the general community;
- b) in accordance with relevant provisions of the *Environmental Protection Act 1994*;
- c) sustainable by virtue of written undertakings given by that owner to maintain that dam; and
- d) the transfer and use have been approved or authorised under any relevant legislation.

“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.

“certification” means assessment and approval must be undertaken by a suitably qualified person in relation to any assessment or documentation required by this Manual, including design plans ‘as constructed’ drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by REPCs (ID:1.4 (2A)).
“certification” by a suitably qualified person in relation to a design plan or an annual report regarding dams, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

- a) exactly what is being certified and the precise nature of that certification;
- b) the relevant legislative, regulatory and technical criteria on which the certification has been based;
- c) the relevant data and facts on which the certification has been based, the source of that material, and
- d) the efforts made to obtain all relevant data and facts; and
- e) the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

“certifying, certify or certified” have a corresponding means as ‘certification’.

“chemical” means:

- a) an agricultural chemical product or veterinary chemical product within the meaning of the *Agricultural and Veterinary Chemicals Code Act 1994* (Commonwealth); or
- b) a dangerous good under the dangerous goods code; or
- c) a lead hazardous substance within the meaning of the *Workplace Health and Safety Regulation 1997*; or
- d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers’ Advisory Council and published by the Commonwealth; or
- e) any substance used as, or intended for use as –
 - 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
- f) a substance used for, or intended for use for –
 - i) mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or
 - ii) manufacture of plastic or synthetic rubber.

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

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

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

“consequence category” means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933).

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

“contaminate” means to render impure by contact or mixture.

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

“contaminant” a contaminant can be:

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

“dam” means a land-based structure or a void that is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land based structure or void and associated works.

“dam crest volume” means the volume of material (liquids and/or soils) 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. This is, the instantaneous maximum volume within the walls, without regards to flows or entering or leaving (for example, the spillway).

“design plan” is a document setting out how all identified consequence scenarios are addressed in the planned design and operations of a regulated structure.

“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 the 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that Manual.

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

“disturbed” means any area that has had its natural state altered by the action or interference of carrying out an activity associated with the exploration project.

“emergency action plan” means documentation forming part of the operational plan held by the holder or a nominated responsible officer, that identified 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 consequence of failure, and ensure timely warning to affected persons and the implementation of protection measures. The plan must require dam owners to annual review and update contact information where required.

“environmental authority” means an environmental authority granted in relation to an environmentally relevant activity under the Environmental Protection Act 1994.

“environmental authority holder” means the holder of this environmental authority.

“environmentally relevant activity” means an environmentally relevant activity as defined under Section 18 of the Environmental Protection Act 1994 and listed under Schedule 2 or Schedule 2A of the Environmental Protection Regulation 2008.

“existing structure” means a structure that prior to 23 January 2017 meets any or both of the following, a structure:

- a) with a design that is in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) and that is considerably in progress;
- 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.

“foreseeable future” is the period used for assessing the total probability of an event occurring. Permanent structures and ecological sustainability should be expected to still exist at the end of a 150 year foreseeable future with an acceptable probability of failure before that time.

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

“hazard category” means a category, either low significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

“hydraulic performance” means the capacity of a regulated dam to contain or safely pass flowable substances based on a probability (AEP) of performance failure specified for the relevant consequence category in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933).

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

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

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

“LA, max adj, T” means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over any 10 minute period, using Fast response.

“lake” includes:

- a) lagoon, swamp or other natural collection of water, whether permanent or intermittent; and
- b) the bed and banks and any other element confining or containing the water.

“land” in the “Agency interest: Land” schedule of this document means land excluding waters and the atmosphere.

“land capability” as defined in the Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland (DME 1995).

“land suitability” as defined in the Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland (DME 1995).

“land use” term to describe the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

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

“low consequence dam” means any dam that is not a high or significant consequence category as assessed using the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933).

“mandatory reporting level” or “MRL” means a warning and reporting level determined in accordance with the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

“manual” means that Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) published by the administering authority.

“mg/L” means milligrams per litre.

“mine affected water” means the following types of water:

- a) pit water, tailings dam water, processing plant water;

- b) water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the Environmental Protection Regulation 2008 if it had not formed part of the mining activity;
- c) rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage runoff containing sediment only, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water;
- d) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;
- e) groundwater from the mine's dewatering activities;
- f) a mix of mine affected water (under any of paragraphs a)-e)) and other water.

“modification or modifying” (see definition of ‘construction’)

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

“native vegetation” means vegetation that occurs naturally in a certain area. “nature” includes:

- a) ecosystems and their constituent parts;
- b) all natural and physical resources; and
- c) natural dynamic processes.

“noxious” means harmful or injurious to health or physical wellbeing.

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

“operational land” means the land associated with the project for which this environmental authority has been issued.

“operational plan” includes:

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

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

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

“receiving environment” means all groundwater, surface water, land, and sediments that are not disturbed areas authorised by this environmental authority.

“receiving waters” means all groundwater and surface water that are not disturbed areas authorised by this environmental authority.

“recycled water” means appropriately treated effluent and urban stormwater suitable for further use.

“reference site” (or analogue site) may reflect the original location, adjacent area or another area where rehabilitation success has been completed for a similar biodiversity. Details of the reference site may be as photographs, computer generated images and vegetation models etc.

“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 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 areas (hectares) of the dam measured at the footprint of the dam;
 - ii) coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area;
 - iii) dam crest volume (megalitres);
 - iv) spillway crest level (metres AHD);
 - v) maximum operating level (metres AHD);
 - vi) storage rating table of stored volume versus level (metres AHD);
 - vii) design 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 ad compliance with the design plan;
- i) the name and details of the suitably qualified person who certified that the constructed dam was compliance 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 operations adequacy, and to ascertain the available storage volume for 1 November of any year;
- m) dates when recommendations and actions arising from the annual inspections were provided to the administering authority;
- n) dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

“regulated structure” means any dam in the significant or high hazard 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) a fabricated or manufactured tank or container, designed to and constructed to an Australia Standard that deals with strength and structural integrity of that tank or container;
- b) a sump or earthen put used to store residual drilling material fluid only for the duration of drilling and well completing activities;
- c) a flare pit.

“regulated waste” means non-domestic waste mentioned in schedule 7 of the Environmental Protection Regulation 2008 (whether or not it has been treated or immobilised), and includes:

- a) for an element – any chemical compound containing the element; and
- b) anything that has contained the waste.

“rehabilitation” the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.

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

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

“residual void” means an open pit resulting from the removal of ore and/or waste rock which will remain following the cessation of all mining activities and completion of rehabilitation processes.

“saline drainage” means the movement of waters, contaminated with salt(s), as a result of the mining activity.

“sensitive place” means:

- a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other
- b) residential premises; or
- c) a motel, hotel or hostel; or
- d) an educational institution; or
- e) a medical centre or hospital; or
- f) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or
- g) a public park or gardens.

“sewage” means the used water of person's to be treated at a sewage treatment plant.

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

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

“structure” means dam or levee.

“storm water” means all surface water runoff from rainfall.

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

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

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

“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.

“µg/L” means micrograms per litre.

“µS/cm” means micro siemens per centimetre.

“void” means any constructed, open excavation in the ground.

“waste” as defined in section 13 of the *Environmental Protection Act 1994*.

“waste management hierarchy” has the meaning given by the *Waste Reduction and Recycling Act 2011*.

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

"waters" includes a 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), stormwater channel, stormwater drain, and groundwater and any part thereof.

“watercourse” has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means:

- 1) a river, creek or stream in which water flows from permanently or intermittently –
 - (a) in a natural channel, whether artificial improved or not; or
 - (b) in an artificial channel that has changed the course of the watercourse.
- 2) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

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

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

END OF DEFINITIONS

Appendices

Figure 1 -. Mine affected water release points and receiving waters monitoring locations

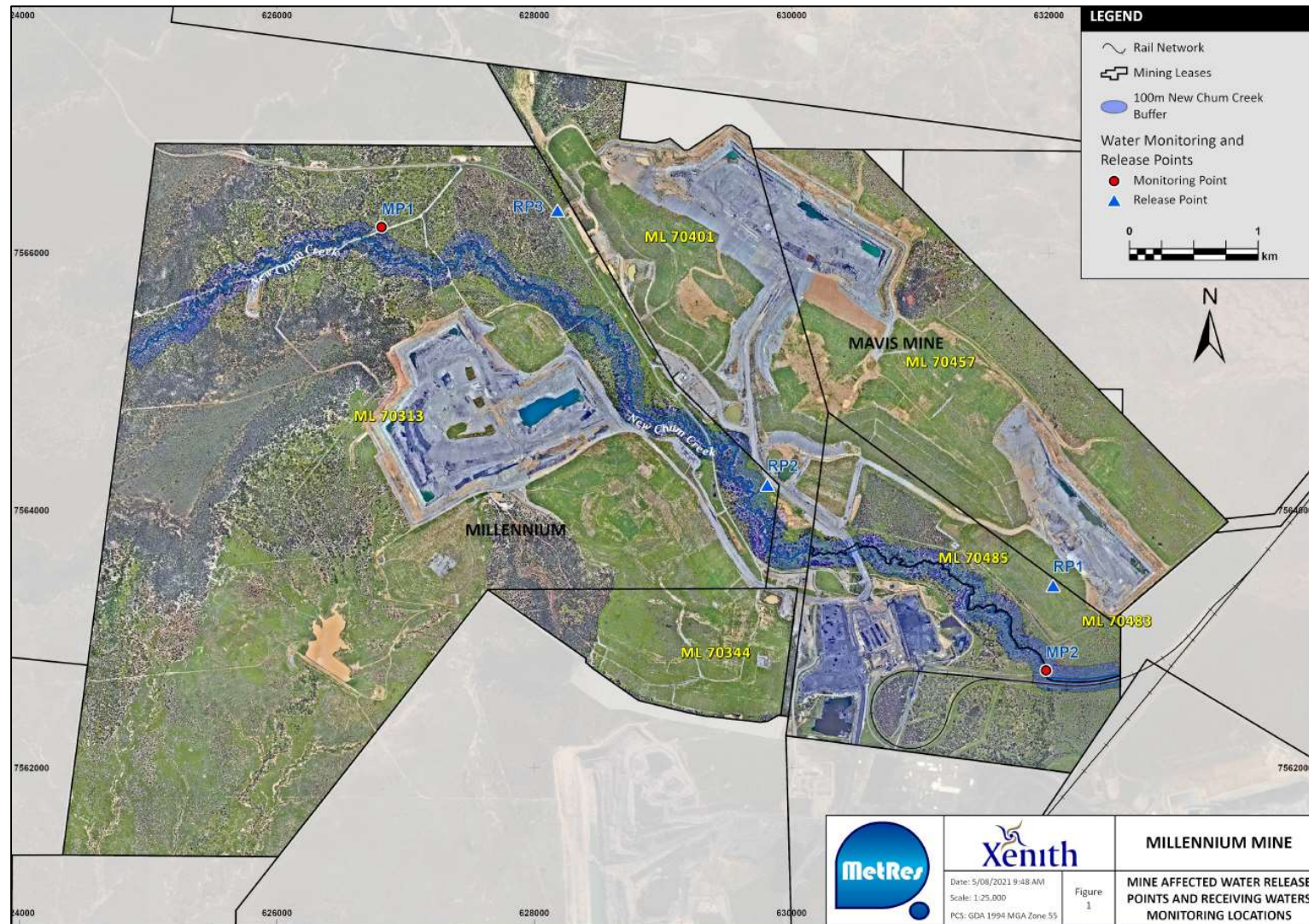


Figure 2 - Sewage Treatment Plant and Effluent Disposal

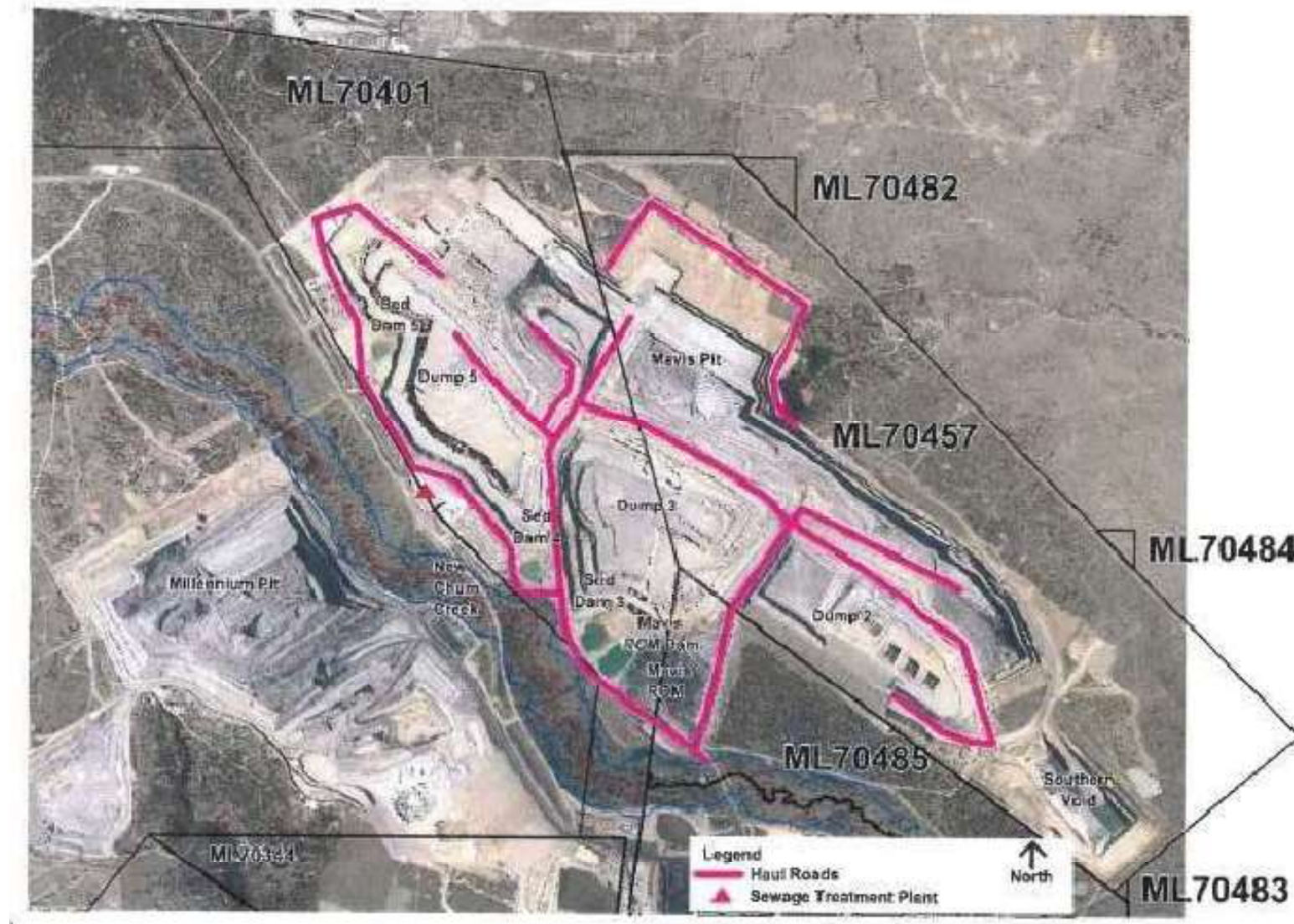


Figure 3: Authorised disturbance footprint

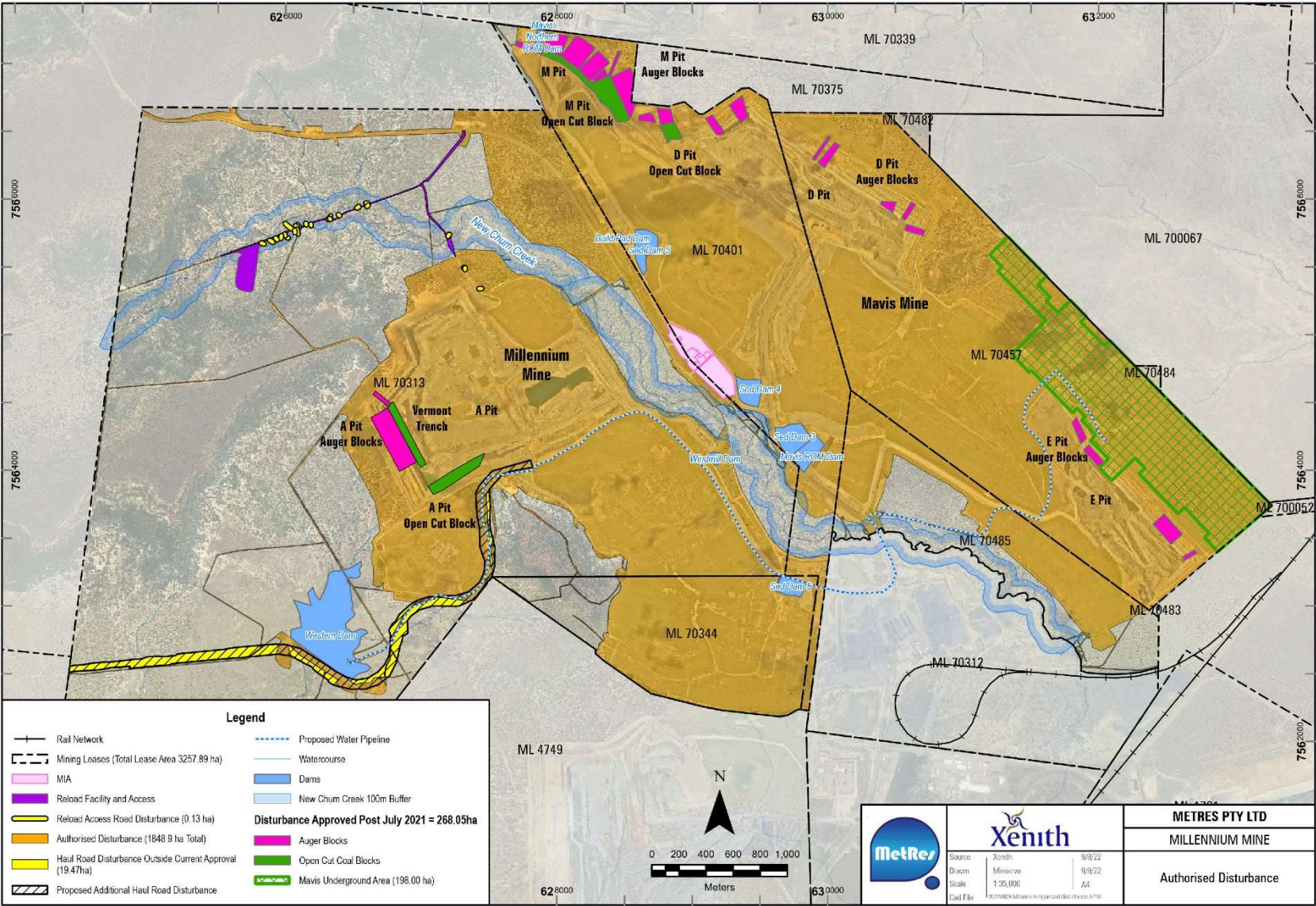


Figure 4: Work areas in nature conservation areas (as per Table F3)

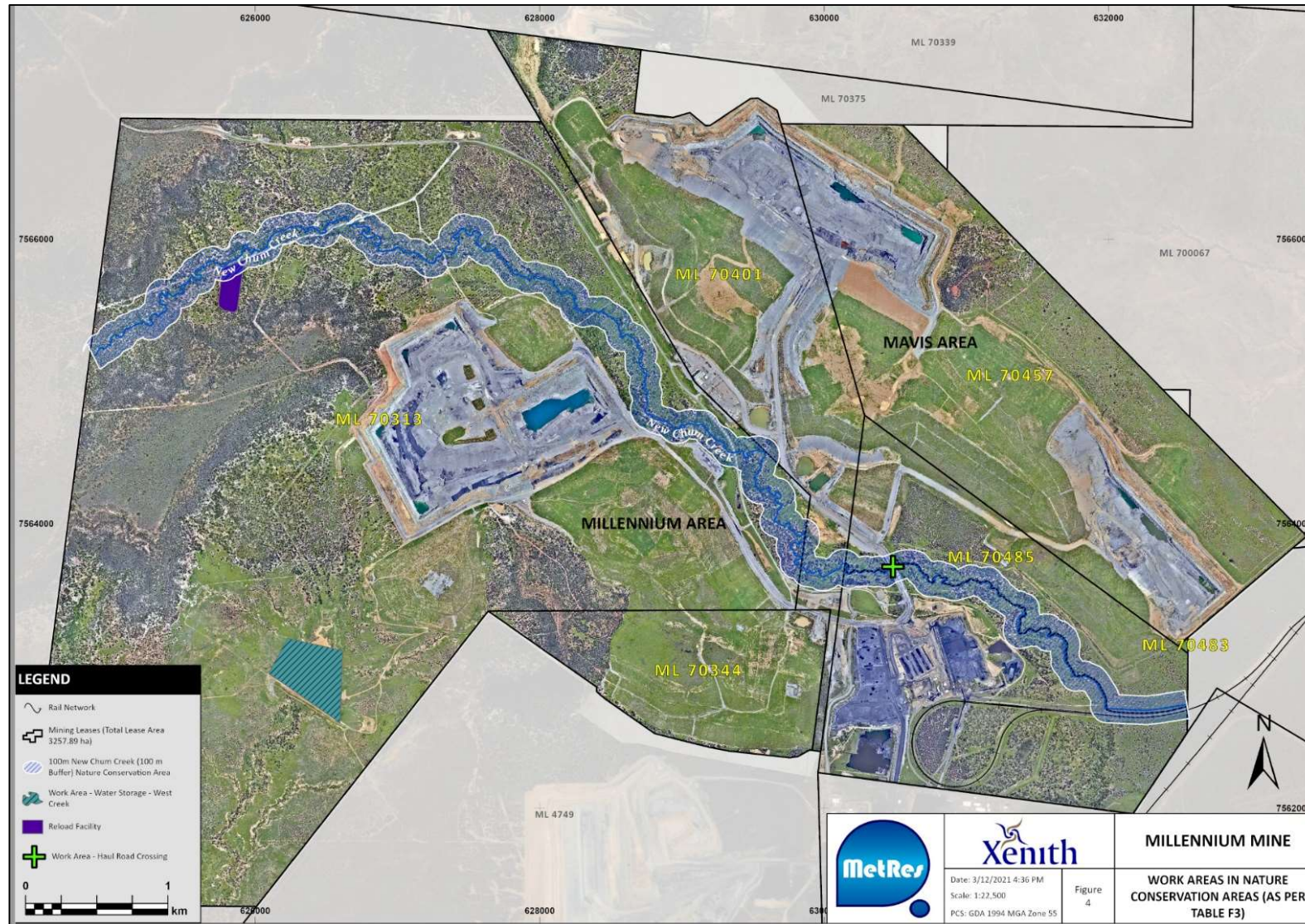
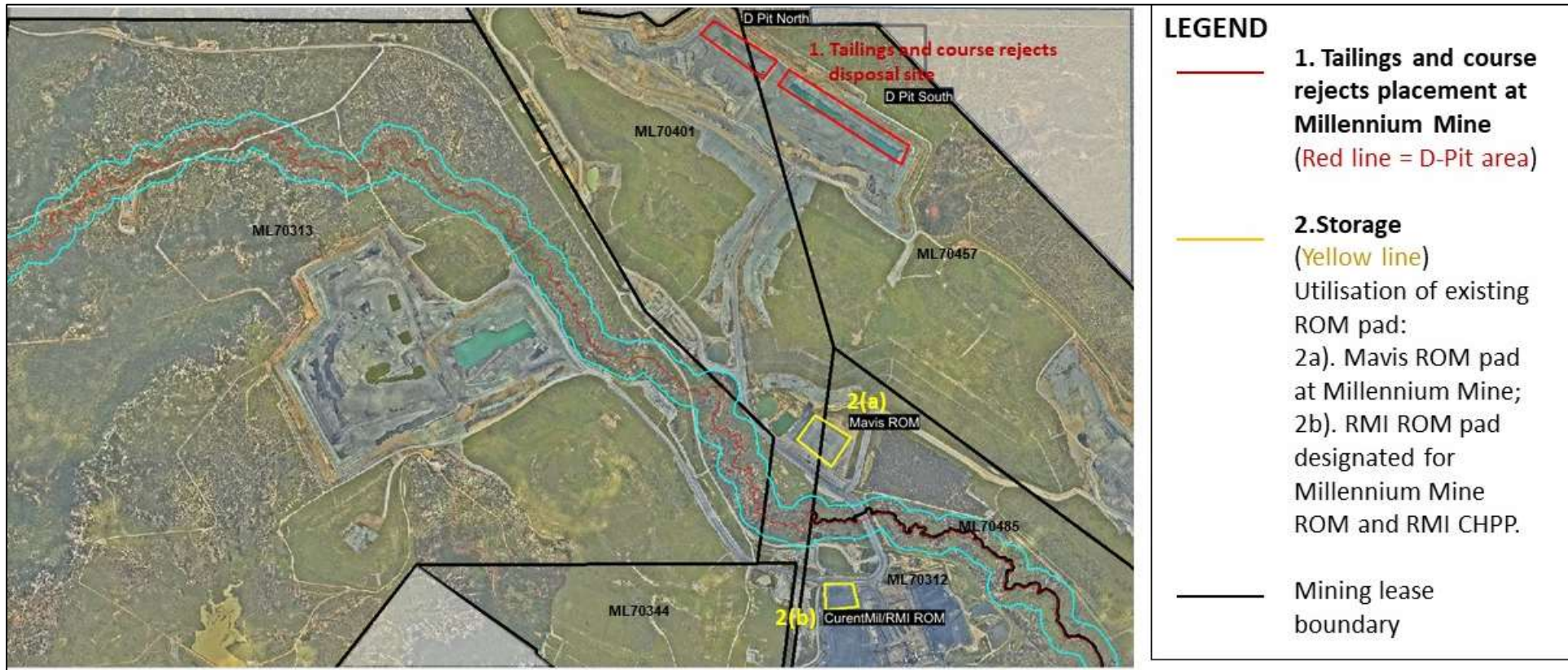


Figure 5: ROM storage and rejects/tailings disposal



END OF ENVIRONMENTAL AUTHORITY