

Permit

Environmental Protection Act 1994

Environmental authority EPML00658113

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

Environmental authority number: EPML00658113

Environmental authority takes effect on 2 September 2021.

The anniversary date of this environmental authority is 8 October each year.

An annual return will be due each year on 01 April.

Environmental authority holder(s)

Name(s)	Registered address
Cement Australia (Exploration) Pty Ltd	18 Station Ave DARRA QLD 4076
Cement Australia (Queensland) Pty Limited	40 McDougall Street MILTON QLD 4064

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 - 21 - A mining activity that is an ineligible ERA, other than a mining activity mentioned in items 9 to 20	ML3629
	ML3630
	ML3631
	ML3632
	ML3659
	ML7629
	ML80127
	ML80156
	ML80002

Environmentally relevant activity/activities	Location(s)
Ancillary 63 - Sewage Treatment - 1(a-ii) - Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of 21 to 100EP - otherwise	ML3629
	ML3630
	ML3631
	ML3632
	ML3659
	ML7629
	ML80002
	ML80127
Ancillary 33 - Crushing, milling, grinding or screening - Crushing, grinding, milling or screening more than 5000t of material in a year	ML3659
	ML3631

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

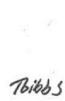
- a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority - on the nominated day; or
- b) if the authority states a day or an event for it to take effect on the stated day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

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

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

The anniversary day of this environmental authority is the same day each year as the original take effect date unless you apply to change the anniversary day. The payment of the annual fee will be due each year on this day. An annual return will be due each year on 01 April.

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



Signature

2 September 2021

Date

Teale Gibbs

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

Enquiries:

Mineral Business Centre
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Phone: (07) 4222 5352
Email: ESCairns@des.qld.gov.au

Privacy statement

Pursuant to section 540 of the EP Act, the Department is required to maintain a register of certain documents and information authorised under the EP Act. A copy of this document will be kept on the public register. The register is available for inspection by members of the public who are able to take extracts, or copies of the documents from the register. Documents that are required to be kept on the register are published in their entirety, unless alteration is required by the EP Act. There is no general discretion allowing the Department to withhold documents or information required to be kept on the public register. For more information on the Department's public register, search 'public register' at www.qld.gov.au. For queries about privacy matters please email privacy@des.qld.gov.au or telephone 13 74 68.

Obligations under the *Environmental Protection Act 1994*

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

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

Other permits required

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

Conditions of environmental authority

Schedule A - General

A1 This environmental authority authorises environmental harm referred to in the conditions. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence does not authorise environmental harm.

A2 In carrying out the mining activity authorised by this environmental authority, the environmental authority holder must comply with the authorised disturbance areas listed in Table A1 – Authorised disturbance and as depicted in **Figure 1 - Project Infrastructure Layout Mine Area and Support Infrastructure**.

Table A1 - Authorised disturbance

Mine Feature Name	Location ^[1] (GDA2020, decimal degrees ^[2])		Maximum Disturbance Area (ha)	Description / Purpose
	Latitude	Longitude		
Water Storage / Settling Ponds	-23.87743	150.96314	11	Includes: water storages, sediment settling ponds.
Void / Mine Workings / Haul Roads	-23.87779	150.95840	209	Void, haul roads, mine workings, access roads
Spoil Dumps	-23.88061	150.95264	53	Includes: overburden and spoil dumps
Stockpiling/Crushing/Loading and Infrastructure	-23.87646 -23.87406 -23.87551	150.95848 150.96226 150.96747	37	Includes: Stockpiles, Crushing Plant, Offices, Workshops, Rail Loop

^[1] Coordinates indicate location of mine feature not boundaries.

^[2] Decimal degrees to be provided to a minimum of 5 decimal places.

A3 The environmental authority holder must:

- Install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority; and
- Maintain such measures, plant and equipment in a proper and efficient manner; and
- Operate such measures, plant and equipment in a proper and efficient manner; and,
- Ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.

A4 All flammable, corrosive and combustible liquids, including petroleum products, must be stored and handled in accordance with:

- The latest edition of *AS1940—The storage and handling of flammable and combustible liquids* where applicable;
- The current Australian Standard where applicable; or
- Where no relevant Australian Standard exists, store such materials within an on-site containment system sufficient to prevent release to the receiving environment.

A5 Financial assurance must be lodged in the amount, the form, and within the time required by the administering authority.

A6 Any **records** kept or created in relation to this environmental authority must be:

- a) kept for a period of at least five years; and
- b) provided to the **administering authority** on request; and
- c) provided to the **administering authority** in the format requested.

A7 An **appropriately qualified person(s)** must monitor and record all indicator(s) required by and in accordance with this environmental authority.

A8 When required by the **administering authority**, monitoring must be undertaken in the manner prescribed by the **administering authority** to investigate a complaint arising from the **activity**. The monitoring results must be recorded.

A9 The following must be recorded in relation to all monitoring required under a condition of this environmental authority:

- a) The date and time when the sample was taken;
- b) The location where the sample was taken;
- c) The results of all monitoring and details of exceedances of the conditions of this environmental authority; and
- d) Any other pertinent details of relevance to interpreting the sample results (i.e. stream or release flow rate, wind, conditions, atmospheric conditions, any relevant observations such as odour or colouration).

A10 The environmental authority holder must implement and maintain a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (ISO31000:2009), or the Standard for Environmental Management Systems (ISO14001), or the latest edition of an Australia standard for risk management, to the extent relevant to environmental management.

A11 The environmental authority holder must notify the administering authority within twenty four (24) hours of becoming aware of any incident or event which does or may contravene a condition of this environmental authority.

Notification to the administering authority must be provided to the administering authority Pollution Hotline on 1300 130 372 and PollutionHotline@ehp.qld.gov.au.

A12 Within ten (10) business days following the initial notification of an incident or event, 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; and
- b) Outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and
- c) Proposed actions to prevent recurrence of the emergency or incident.

- A13** The environmental authority holder 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.
- A14** Compliance with the conditions of this environmental authority must be audited at regular intervals not exceeding once every three (3) years. The audit must be conducted by a suitably qualified third party auditor. The environmental authority holder must submit a final version of the auditor's report to the administering authority within ninety (90) days of completing the audit.
- A15** All waste generated as part of the mining activities must be lawfully reused, recycled, or removed to an off-site facility that can lawfully accept the waste.
- A16** 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 10 metres away from any other scrap tyre storage area, or combustible or flammable material, including vegetation.
- A17** All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10 metre radius of the scrap tyre storage area.
- A18** Where no feasible recycling or waste-to-energy options are available, disposing of scrap tyres resulting from the mining activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as reasonably practicable.
- A19** 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.
- A20** The consequence category of any **structure** must be assessed by a **suitably qualified and experienced person** in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (EM635)* at the following times:
- a) Prior to the design and construction of the structure, if it is not an existing structure; or
 - b) Prior to any change in its purpose or the nature of its stored contents.
- A21** 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.
- A22** Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (ESR/2016/1933)*.

- A23** Except for an **existing structure**, all regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)*.
- A24** Except for an **existing structure**, construction of a regulated structure is prohibited unless
- a) The environmental authority holder has submitted a consequence category assessment report and certification to the administering authority;
 - b) Certification for the design, design plan and the associated operating procedures has been certified by a suitably qualified and experienced person in compliance with the relevant condition of this environmental authority.
- A25** Except for an **existing structure**, certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan in the form set out in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)*, and must be recorded in the Register of Regulated Structures.
- A26** Except for an **existing structure**, regulated structures must:
- a) Be designed and constructed in compliance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)*;
 - b) Be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of:
 - i. floodwaters from entering the regulated dam from any watercourse or drainage line;
 - ii. wall failure due to erosion by floodwaters arising from any watercourse or drainage line.
 - c) 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.
- A27** Except for an **existing structure**, certification by the **suitably qualified and experienced person** who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that:
- a) The 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure;
 - b) Construction of the regulated structure is in accordance with the design plan.
- A28** All **affected persons** must be provided with a copy of the emergency action plan in place for each regulated structure:
- a) For existing structures that are regulated structures, within ten (10) business days of this condition taking effect;
 - b) Prior to the operation of the new regulated structure; and
 - c) If the emergency action plan is amended, within five (5) business days of it being amended.

- A29** Operation of a regulated structure, except for an existing structure, is prohibited unless the environmental authority holder has submitted to the administering authority
- a) One (1) paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with **condition A24**;
 - b) A set of 'as constructed' drawings and specifications;
 - c) Certification of those 'as constructed drawings and specifications' in accordance with **condition A27**;
 - d) Where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the design storage allowance (DSA) volume across the system, a copy of the certified system design plan;
 - e) The requirements of this authority relating to the construction of the regulated structure have been met;
 - f) The holder has entered the details required under this authority, into a Register of Regulated Structures; and
 - g) There is a current operational plan for the regulated structure.
- A30** 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.
- A31** For regulated structures that have not been certified as low consequence category for 'failure to contain – overtopping', the mandatory reporting level (MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.
- A32** For regulated structures that have not been certified as low consequence category for 'failure to contain – overtopping', the environmental authority holder must, as soon as practical but within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.
- A33** For regulated structures that have not been certified as low consequence category for 'failure to contain – overtopping', the environmental authority 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.
- A34** For regulated structures that have not been certified as low consequence category for 'failure to contain – overtopping', the environmental authority holder must record any changes to the MRL in the Register of Regulated Structures.
- A35** The environmental authority 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.
- A36** 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 DSA volume for the dam (or network of linked containment systems).

- A37** The environmental authority holder must, as soon as possible but within forty-eight (48) hours of becoming aware that the regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.
- A38** The environmental authority 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.
- A39** Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
- A40** At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include a recommendations section, with any recommended actions to ensure the integrity of the regulated structure or a positive statement that no recommendations are required.
- A41** The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)*.
- A42** The environmental authority holder must within twenty (20) business days of receipt of the annual inspection report, provide to the administering authority:
- a) The recommendations section of the annual inspection report;
 - b) If applicable, any actions being taken in response to those recommendations; and
 - c) If, following receipt of the recommendations and (if applicable) recommended actions, the administering authority requests a copy of the annual inspection report from the environmental authority holder, provide this to the administering authority within ten (10) business days of receipt of the request.
- A43** The environmental authority 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 environmental authority holder on transfer of this activity.

- A44** Regulated structures must not be abandoned but be either:
- a) Decommissioned and rehabilitated to achieve compliance with **Schedule E** of this environmental authority; or
 - b) Be left in-situ for a use by the landholder provided that:
 - i. it no longer contains contaminants that will migrate into the environment;
 - ii. it contains water of a quality that is demonstrated to be suitable for its intended use(s); and
 - iii. the environmental authority holder and the landholder agree in writing that the:
 - 1. dam will be used by the landholder following the cessation of the environmentally relevant activity(ies); and
 - 2. landholder is responsible for the dam, on and from an agreed date.
- A45** A Register of Regulated Structures must be established and maintained by the environmental authority holder for each regulated structure.
- A46** The environmental authority 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.
- A47** The environmental authority holder must make a final entry of the required information in the Register of Regulated Structures once compliance with **condition A29** has been achieved.
- A48** The environmental authority holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
- A49** All entries in the Register of Regulated Structures must be approved by the chief executive officer for the environmental authority holder, or their delegate, as being accurate and correct.
- A50** The environmental authority 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.

END OF CONDITIONS FOR SCHEDULE A

Schedule B – Air

- B1** The release of dust or particulate matter, or both, resulting from the mining activity must not cause environmental harm to an environmental value for air.
- B2** When measured at any area or place outside of the mining lease boundary, airborne contaminants generated by the mining activities must not cause the following levels to be exceeded:
- a) Dust deposition of 120 milligrams per square metre per day, averaged over 1 month, when monitored in accordance with the most recent version of *Australian Standard AS3580.10.1 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method*.
 - b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, for no more than 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 particulate matter – PM10 low volume sampler – Gravimetric method*.

END OF CONDITIONS FOR SCHEDULE B

Schedule C – Acoustic

C1 Noise generated by the mining activities must not exceed the specified levels in **Table C1 – Noise limits** when measured at any sensitive receptor.

Table C1 – Noise limits

Location	Noise level dB(A) measured as:	Monday to Saturday			Sundays and Public Holidays		
		7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
Dwelling	LAeq, adj, 1 hour	Bkg + 5dBA	Bkg + 3dBA	Bkg + 3dBA	Bkg + 5dBA	Bkg + 3dBA	Bkg + 3dBA
	Max LpA, 1 hour	Bkg + 10dBA	Bkg + 5dBA	Bkg + 5dBA	Bkg + 10dBA	Bkg + 5dBA	Bkg + 5dBA
Commercial	Noise level dB(A) measured as:	Monday to Saturday			Sundays and Public Holidays		
		7am to 6pm	6pm to 10pm	10pm to 7am	7am to 6pm	6pm to 10pm	10pm to 7am
Commercial	LAeq, adj, 1 hour	Bkg + 10dBA	Bkg + 5dBA	Bkg + 5dBA	Bkg + 10dBA	Bkg + 5dBA	Bkg + 5dBA
	Max LpA, 1 hour	Bkg + 15dBA	Bkg + 10dBA	Bkg + 10dBA	Bkg + 15dBA	Bkg + 10dBA	Bkg + 10dBA

A – A weighted

Bkg = Background

dB – Decibel

LAeq - the A-weighted equivalent continuous Lp of the sample time T

Lp – Sound pressure level

Associated requirements:

- Noise Measurement Manual, Department of Environment and Heritage Protection, 2013 or subsequent revisions

C2 The environmental authority holder must ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in **Table C2 – Blasting noise limits** to be exceeded when measured at any sensitive receptor.

Table C2 – Blasting noise limits

Blasting noise limits	Sensitive receptor blasting noise limits	
	8am to 5pm Monday to Saturday	Other times and Public holidays
Airblast overpressure	115dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120dB (Linear) Peak at any time	No blasting
Ground vibration peak particle velocity	5mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	No blasting

C3 When requested by the administering authority, noise monitoring and recording must include the following descriptor characteristics and matters:

- a) LAN,T (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins);
- b) Background noise LA90;
- c) The level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;
- d) Atmospheric conditions including temperature, relative humidity and wind speed and directions;
- e) Effects due to any extraneous factors such as traffic noise;
- f) Location, date and time of monitoring;
- g) If the complaint concerns low frequency noise, Max Lp(lin)_T and one third octave band measurements in dB(lin) for centre frequencies in the 10–200 Hertz range.

END OF CONDITIONS FOR SCHEDULE C

Schedule D – Water

- D1** 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 authorised mining activities, except as permitted under the conditions of this environmental authority.
- D2** The release of contaminants to waters must only occur from the release points specified in **Table D1 – Contaminated water release points, sources and receiving waters**.

Table D1– Contaminated water release points, sources and receiving waters

Release point ^[1] (RP)	Location (GDA94)		Water source ^[1]	Receiving waters description
	Latitude	Longitude		
A	-23.879876	150.9624459	East End mining operations discharging at Weir 1.	East End Creek
1	-23.878007	150.963352	East End mining operations discharging at Weir 6.	East End Creek

[1] Locations depicted in **Figure 2 – Release point and surface water monitoring locations**.

- D3** The release of contaminants to waters in accordance with **condition D2** must be monitored:
- a) at the release points specified in **Table D1 - Contaminated water release points, sources and receiving waters** as depicted in **Figure 2 – Release points and surface water monitoring locations**; and
 - b) at the monitoring frequencies specified in **Table D2 – Contaminant release limits**; and
 - c) for the quality characteristics identified in **Table D2 – Contaminant release limits**.
- D4** The release of contaminants to waters in accordance with **condition D2** must not exceed the release limits stated in **Table D2 – Contaminant release limits** when measured at the release points specified in **Table D1 – Contaminated water release points, sources and receiving waters** for each quality characteristic.

Table D2 – Contaminant release limits

Quality characteristic	Release limit ^[2]	Monitoring frequency
Electrical Conductivity (micro siemens per centimetre, µs/cm)	5,000	Daily during a release greater than 6 mega litres per day. Monthly for all other releases.
pH (pH units)	6.5 (minimum)	
	8.5 (maximum)	
Turbidity (NTU)	20 ^[1]	

[1] If turbidity at [the upstream monitoring point (Monitoring Point C)] is greater than Release Point A then no exceedance is to be recorded.

[2] Release limits apply at Release Point 1 from 02 September 2022.

- D5** The release of contaminants to waters in accordance with **condition D2** must only take place during periods of **natural flow** in the Larcom Creek.
- D6** Releases to waters must be undertaken so as to not cause erosion of the bed and banks of the receiving waters, or cause a material build-up of sediment in such waters.

- D7** The rate and daily quantity of water released from the release points specified in **Table D1 – Contaminated water release points, sources and receiving waters** must be measured and recorded.
- D8** The environmental authority holder must determine and record stream flows in the receiving environment at the upstream reference monitoring point specified in **Table D3 – Receiving waters monitoring sites**.
- D9** If the release limits specified in **Table D2 – Contaminant Release limits** are exceeded, the holder of the environmental authority must notify the administering authority within twenty four (24) hours of receiving the results.
- D10** The environmental authority holder must, within twenty eight (28) days of a release that is not compliant with the conditions of this environmental authority, provide a report to the administering authority detailing:
- a) the reason for the release; and
 - b) the location of the release; and
 - c) the total volume of the release and which (if any) part of this volume was non-compliant; and
 - d) the total duration of the release and which (if any) part of this period was non-compliant; and
 - e) all water quality monitoring results (including all laboratory analyses); and
 - f) identification of any environmental harm as a result of the non-compliance; and
 - g) all calculations; and
 - h) any other matters pertinent to the water release event.
- D11** The quality of the receiving waters must be monitored at the locations and frequency specified in **Table D3 - Receiving waters monitoring sites** as depicted in **Figure 2 – Release points and surface water monitoring locations** for each quality characteristic stated in **Table D4 – Water quality objectives for receiving waters**.

Table D3 – Receiving waters monitoring sites

Monitoring point ^[1]	Receiving waters location description	Location (GDA94)		Monitoring frequency
		Latitude	Longitude	
Upstream reference monitoring point ^[1]				
Monitoring Point G	Larcom Creek upstream of East End Creek and Larcom Creek junction ^[2]	TBD	TBD	Weekly
Monitoring Point C	Larcom Creek upstream of East End Creek and Larcom Creek junction (Location 5)	-23.887106	150.977379	Weekly
Downstream monitoring points				
Monitoring Point D	Larcom Creek downstream of East End Creek and Larcom Creek Junction (at Weir 7)	-23.899256	150.976483	Weekly

[1] Locations depicted in **Figure 2 – Release point and surface water monitoring locations**.

[2] Upstream location must be outside of any influence from the releases from RP A

TBD To be determined and provided to the administering authority by 02 December 2021.

D12 Receiving waters measured from Monitoring Point D specified in **Table D3 – Receiving waters monitoring sites** must not exceed the corresponding Limit A specified in **Table D4 – Water quality objectives for receiving waters** on any five consecutive sampling occasions.

D13 Receiving waters measured from Monitoring Point D specified in **Table D3 – Receiving waters monitoring sites** must not exceed the corresponding Limit B specified in **Table D4 – Water quality objectives for receiving waters** on any three consecutive sampling occasions.

Table D4 – Water quality objectives for receiving waters

Quality characteristic	Water quality limit A	Water quality limit B
pH (pH units)	NA	6.5 (minimum) ^[1]
	NA	8.0 (maximum) ^[1]
Electrical conductivity (micro siemens per centimetre, µS/cm)	2,900 ^[2]	3,300 ^[3]
Turbidity (NTU) ^[4]	4.2 ^[1]	28.6 ^[5]

[1] Local water guideline values for protection of aquatic ecosystems for lowland fresh waters as per Table 2F of Environmental Protection (Water) Policy 2009 Curtis Island, Calliope River and Boyne River Basins Environmental Values and Water Quality Objectives), published in November 2014..

[2] Limit based on 75th percentile of Monitoring Point D specific data from January 2011 to March 2018.

[3] Limit based on 95th percentile of Monitoring Point D specific data from January 2011 to March 2018.

[4] If turbidity at Monitoring Point C is greater than Monitoring Point D then no exceedance is to be recorded.

[5] Limit based on 95th percentile of Monitoring Point C specific data from January 2011 to April 2017.

D14 By 02 December 2021, the environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) in accordance with the *Receiving Environment Monitoring program guideline for use with environmentally relevant activities under the Environmental Protection Act 1994 (ESR/2016/2399)*, to monitor, identify and describe any adverse impacts to: surface water environmental values, quality and flows; and groundwater due to the mining activity. This must include monitoring the effects of the mine on the receiving environment periodically and while contaminants are being discharged from the site.

For the purposes of the REMP, the receiving environment includes the waters of:

- Larcom Creek;
- East End Creek;
- Machine Creek;
- Jacobs Creek;
- Scrub Creek;
- Shultz Lagoon; and
- Groundwater.

D15 A report outlining the findings of the REMP, including all monitoring results and interpretations must be prepared biennially and submitted to the administering authority on request. This must include as a minimum an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, the suitability of current discharge limits to protect downstream environmental values; and changes in groundwater quality.

D16 A *Water Management Plan* must be developed by an appropriately qualified person and implemented by the environmental authority holder.

D17 An *Erosion and Sediment Control Plan (ESCP)* must be developed by an appropriately qualified person and implemented by the environmental authority holder to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

D18 The extraction of groundwater must not cause environmental harm to the terrestrial groundwater dependant ecosystems specified in **Table D5 – Identified Terrestrial Groundwater Dependant Ecosystems** or any groundwater dependant ecosystems outside of the zone of influence as depicted in **Figure 4: Groundwater Zone of Influence**.

Table D5 – Identified Terrestrial Groundwater Dependant Ecosystems

GDE	Latitude	Longitude
Terrestrial GDE ^[1]	-23.85373	150.96963

^[1] <http://www.bom.gov.au/water/groundwater/gde/map.shtml>

D19 By 02 December 2021, a *Groundwater Monitoring and Management Program* must be developed, documented and implemented by an appropriately qualified person.

- D20** The *Groundwater Monitoring and Management Program* required by **condition D19** must:
- a) identify potential sources of contamination to groundwater from the activity; and
 - b) ensure that all potential groundwater impacts due to the activity are identified, monitored and mitigated; and
 - c) document sampling and monitoring methodology; and
 - d) ensure that adequate groundwater monitoring and data analysis is undertaken to achieve the following objectives:
 - i. detect any impacts to groundwater levels due to the activity; and
 - ii. detect any impacts to groundwater quality due to the activity; and
 - iii. determine compliance with condition D18; and
 - iv. determine trends in groundwater quality; and
 - e) include an appropriate quality assurance and quality control program; and
 - f) include validation of the calibrated transient groundwater model; and
 - g) include a review process to identify improvements to the program that includes addressing any comments provided by the administering authority.
- D21** The *Groundwater Monitoring and Management Program* required by **condition D19** must be reviewed by 30 June each year by an appropriately qualified person to determine if it continues to meet the requirements stated in **condition D20**.
- D22** Groundwater quality and standing water level must be monitored:
- a) at the monitoring points specified in **Table D6 - Groundwater monitoring locations and frequency**; and
 - b) at the monitoring frequencies specified in **Table D6 - Groundwater monitoring locations and frequency**; and
 - c) for the quality characteristics identified in **Table D7 - Groundwater quality limits** for the aquifer in which the bore is located

Table D6 – Groundwater monitoring locations and frequency

Monitoring Point ^[1]	Location (GDA94)		Surface RL (m) ^[2]	Screened interval RL (m)	Monitoring Frequency	
	Latitude	Longitude			Standing Water Level	Groundwater Quality
Limestone monitoring bores – Groundwater Quality within zone of influence						
DHH96-29	-23.872779	150.974047	36	20-36	Quarterly	
DHH96-30	-23.874528	150.971084	20	15-27		
DHH96-7	-23.900377	150.965663	50	8-50		
DHH96-20	-23.868636	150.953004	45	33-45		
DHH96-25	-23.871112	150.969518	41.3	28-41.3		
Volcaniclastic monitoring bores – Groundwater Quality within zone of influence						
DHH96-39	-23.888283	150.959185	TBA	TBA	Quarterly	
DHH96-14	-23.879067	150.941706	50	20-50		
Subterranean Fauna Monitoring Bores						
DHH96-41	-23.891462	150.972234	36.67	TBA	Quarterly	
DHH96-33	TBA	TBA	TBA	TBA		
EE Mine Forest Bore SE	-23.874363	150.967503	TBA	TBA		
DHH96-30	-23.874528	150.971084	20	15-27		
DHH96-29	-23.872779	150.974047	36	20-36		
DHH96-7	-23.900377	150.965663	50	8-50		
DHH97-6	-23.884431	150.969634	TBA	TBA		
B100	-23.847465	150.951668	54.8	TBA		
Drawdown/GDE Monitoring Bores						
Limestone Compliance bores – Groundwater Levels and Quality						
DHH96-5	-23.852414	150.981157	44.77	10-50	Quarterly	
RC11-09	-23.798363	150.906876	30.487	24-36		
Shultz lagoon 1	TBA	TBA	TBA	TBA	Quarterly.	
Shultz lagoon 2	TBA	TBA	TBA	TBA		
Shultz lagoon 3	TBA	TBA	TBA	TBA		
Volcaniclastic Compliance bores – Groundwater Levels and Quality						
DHH96-1 ^[3]	-23.858826	150.974402	51.65	30-50	Quarterly	
DHH96-2 ^[3]	-23.855962	150.969479	51.85	0-20		
DHH96-10	-23.87511	150.992037	41.51	27-50		
DHH97-1A	-23.858226	150.924669	67.662	10.3-19		
RC11-07	-23.832943	150.895126	71.183	30-100		
RC11-13	-23.918103	150.996597	33.417	12-31		
RC11-15	-23.896588	151.010276	44.975	18-76		
RC11-17	-23.819972	150.96685	70.27	50-60		

Monitoring Point ^[1]	Location (GDA94)		Surface RL (m) ^[2]	Screened interval RL (m)	Monitoring Frequency	
	Latitude	Longitude			Standing Water Level	Groundwater Quality
RC11-19	-23.88478	150.931748	63.13	70-100		
RC11-20	-23.901544	150.936513	62.887	16-32		
RC11-21	-23.925181	150.924282	62.596	14-32		
Southern New Bore 1	TBA	TBA	TBA	TBA	Quarterly.	
Southern New Bore 2	TBA	TBA	TBA	TBA		

[1] Locations depicted in **Figure 3 –Groundwater monitoring locations**.

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

[3] Terrestrial GDE specific monitoring bore

TBA To be advised to the administering authority by 02 March 2022.

- D23** The activity must not cause a **deterioration of groundwater quality**.
- D24** Groundwater measured from any compliance bore specified in **Table D6 - Groundwater monitoring locations and frequency** must not exceed the corresponding Limit A specified in **Table D7 – Groundwater quality limits** on any five consecutive sampling occasions.
- D25** Groundwater measured from any compliance bore specified in **Table D6 - Groundwater monitoring locations and frequency** must not exceed the corresponding Limit B specified in **Table D7 – Groundwater quality limits** on any three consecutive sampling occasions.
- D26** If groundwater measured from any compliance bore specified in **Table D6 - Groundwater monitoring locations and frequency** exceeds the corresponding Limit B specified in **Table D7 – Groundwater quality limits** on any one sampling occasion the environmental authority holder must resample the groundwater within the compliance bore for all exceeding parameters within ten business days of receipt of results.

Table D7 - Groundwater quality limits

Monitoring Point	Quality Characteristic				
	pH (pH units)	Electrical Conductivity (micro siemens per centimetre (µs/cm))		Major ions ^[1] (milligrams per litre (mg/L))	
		Range	Maximum	Maximum	NA
			Limit A ^[2]	Limit B ^[3]	
DHH96-5	6.5 (minimum) 8.0 (maximum)	21,912	24,151	For interpretation purposes only.	
RC11-09		5,830	5,920		
Shultz lagoon 1		TBA	TBA		
Shultz lagoon 2		TBA	TBA		
Shultz lagoon 3		TBA	TBA		
DHH96-1 ^[3]		26,800	33,683		
DHH96-2 ^[3]		9,880	13,413		
DHH96-10		4,784	4,817		
DHH97-1A		284	311		
RC11-07		5,840	6,740		
RC11-13		11,394	11,406		
RC11-15		9,090	9,997		
RC11-17		10,000	11,117		
RC11-19		3,970	4,120		
RC11-20		3,630	4,372		
RC11-21		1,660	1,787		
Southern New Bore 1		TBA	TBA		
Southern New Bore 2		TBA	TBA		

^[1] Major ions include calcium, magnesium, sodium, potassium, bicarbonate, chloride, and sulphate.

^[2] Limit A has been determined from the 80th percentile of the specific bore historical groundwater quality data up to March 2017.

^[3] Limit B has been determined from the 95th percentile of the specific bore historical groundwater quality data up to March 2017.

TBA To be advised to the administering authority by 02 November 2023.

D27 If the standing water level of groundwater measured at any compliance bore specified in **Table D6 - Groundwater monitoring locations and frequency** is less than any of the corresponding trigger levels specified in **Table D8 – Groundwater monitoring trigger levels**, the environmental authority holder must:

- a) notify the administering authority within 24 hours; and
- b) conduct an investigation into the cause within ten business days; and
- c) if the mining activities are identified as a potential cause or contributor, take immediate action to ensure compliance with condition D18 of this environmental authority.

Table D8 – Drawdown/GDE Groundwater monitoring trigger levels

Monitoring Point	Unit	Trigger Levels ^[1]	Limit Type
Limestone Compliance bores – Groundwater Levels			
DHH96-5	SWL m RL	38.2	Minimum
RC11-09		24.6	
Shultz lagoon 1		TBA	
Shultz lagoon 2		TBA	
Shultz lagoon 3		TBA	
Volcaniclastic Compliance bores – Groundwater Levels			
DHH96-1 ^[2]	SWL m RL	44.1	Minimum
DHH96-2 ^[2]		44.8	
DHH96-10		34.5	
DHH97-1A		60.4	
RC11-07		55.3	
RC11-13		24.2	
RC11-15		43.6	
RC11-17		49.8	
RC11-19		56.0	
RC11-20		48.7	
RC11-21		52.7	
Southern New Bore 1		TBA	
Southern New Bore 2		TBA	

[1] 5th percentile minus 0.5 metre

[2] Terrestrial GDE specific monitoring bores

TBA To be advised to the administering authority by 02 November 2023.

D28 Groundwater monitoring bores must be :

- a) constructed and maintained in a manner that ensures the integrity of the bores to obtain representative groundwater samples from the target aquifer; and
- b) constructed, maintained and decommissioned in a manner that:
 - i. prevents contaminants entering the groundwater; and
 - ii. that maintains the hydrogeological environment within the aquifer.

D29 A bore drill log must be kept for each groundwater monitoring bore which includes:

- a) bore identification reference and geographic coordinate location;
- b) specific construction information including but not limited to depth of bore, depth and length of casing, depth and length of screening and bore sealing details;
- c) standing groundwater level and water quality parameters including physical parameters and results of laboratory analysis for the possible trigger parameters;
- d) lithological data and stratigraphic interpretation by an appropriately qualified person to identify important features associated with groundwater monitoring; and
- e) target aquifer formation of the bore.

D30 Monitoring and sampling must be carried out in accordance with written procedures and must address the requirements of the latest version of the following documents unless otherwise approved by the administering authority:

- a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual 2009 – Environmental Protection (Water) Policy 2009
- b) for groundwater, Groundwater Sampling and Analysis – A Field Guide (2009:27 GeoCat#6890.1) and Australian Standard AS/NZS 5667.11:1998 Water Quality – Sampling – Guidance on sampling of groundwaters;
- c) for subterranean aquatic fauna, the Guideline for the Environmental Assessment of Subterranean Aquatic Fauna.

D31 Prior to the commencement of pit development on ML80156, a *Subterranean Fauna Monitoring and Management Program* must be developed by an appropriately qualified person and implemented by the environmental authority holder.

D32 The *Subterranean Fauna Monitoring and Management Program* required by **condition D31** must include adequate monitoring of subterranean species of stygofauna and troglafauna in all groundwaters potentially impacted by the mining activities and must achieve the following objectives:

- a) Identify and describe subterranean fauna species present;
- b) In addition to **condition D32(a)**, accurately describe and determine the distribution of the unique taxa found at bore locations EEUN2 and DHH96-41;
- c) Assess and describe predicted impacts to subterranean fauna identified;
- d) Recommend impact mitigation and minimisation measures for the fauna identified;
- e) Monitor and record the effects of the mining activity on the subterranean fauna species;
- f) Recommend actions, including timeframes for implementation, to ensure that any impacts to subterranean fauna not authorised under this environmental authority, are prevented.

D33 If the standing water level of groundwater measured at any compliance bore specified in **Table D6 - Groundwater monitoring locations and frequency** is less than any of the corresponding trigger levels specified in **Table D9 – Subterranean fauna trigger levels**, the environmental authority holder must:

- a) notify the administering authority within 24 hours; and
- b) review the *Subterranean Fauna Monitoring and Management Program* required by **condition D31** within ten business days, particularly the requirements of **condition D32** c), d), e), and f).

Table D9 – Subterranean fauna trigger levels

Monitoring Point	Unit	Trigger Levels ^[1]	Limit Type
DHH96-30	SWL m RL	24.1	Minimum
DHH97-6		25.1	
EE Mine Forest Bore SE		20.4	
DHH96-29		31.2	
DHH96-41		29.9	
DHH96-7		32.7	
DHH96-33		TBA	
DHH96-39		42.7	
B100		28.7	

[1] 5th percentile minus 0.5 metre

END OF CONDITIONS FOR SCHEDULE D

Schedule E – Land

E1 Treated sewage effluent may only be released to land in accordance with the conditions of this environmental authority at the following locations:

- a) Within the nominated area(s) identified in **Figure 5: Location of sewage effluent disposal area**; and
- b) Other land for the purpose of dust suppression and/or firefighting.

E2 The release of treated sewage effluent to land must not exceed the release limits stated in **Table E1 – Contaminant release limits to land**.

Table E1 – Contaminant release limits to land

Quality Characteristic	Unit	Release limit	Limit type	Monitoring frequency
Five-day biochemical oxygen demand (BOD)	mg/L	20	Maximum	Monthly
Total suspended solids	mg/L	30	Maximum	
Nitrogen	mg/L	30	Maximum	
Phosphorus	mg/L	15	Maximum	
E-coli	organisms/100mL	1000	Maximum	
pH	pH units	6.5 – 9.0	Range	

E3 The application of treated effluent to land must be carried out in a manner that:

- a) Vegetation is not damaged; and
- b) There is no surface ponding of effluent; and
- c) There is no run-off of effluent.

E4 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.

E5 All sewage effluent released to land must be monitored at the monitoring frequency and for the quality characteristics specified in **Table E1 – Contaminant release limits to land**.

E6 The monthly volume of effluent released to land must be measured and recorded.

E7 When circumstances prevent the irrigation or beneficial reuse of treated 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.

E8 A minimum area of 10m² of land, excluding any necessary buffer zones, must be utilised for the irrigation and/or beneficial reuse of treated sewage effluent.

E9 The release of contaminated water to land, other than treated sewage effluent in accordance with the conditions of this environmental authority, must only occur from the release points specified in **Table E2 – Contaminant release to land locations**.

Table E2 – Contaminant release to land locations

Release point ^[1] (RP)	Location (GDA94)		Contaminated water source ^[1]
	Latitude	Longitude	
E	-23.880282	150.949141	East End mining operations, including clay dumps and haul roads, discharging at the spillway from the western sediment pond E.
F	-23.886780	150.966126	East End mining operations, including clay dumps and haul roads, discharging at the spillway from southern sediment pond F.

[1] Locations depicted in **Figure 2 – Release point and surface water monitoring locations**.

E10 The release of contaminants to lands in accordance with **condition E9** must not exceed the release limits for each quality characteristic stated in **Table E3 – Contaminant release to land limits** when measured at the release points specified in **Table E2 – Contaminant release to land locations**.

Table E3 – Contaminant release to land limits

Quality characteristic	Release limit	Monitoring frequency
Electrical Conductivity (EC) (micro Siemens per centimetre, $\mu\text{S}/\text{cm}$)	5,000	During a release (sample must be taken within 24 hours of commencement of release but before cessation of the release).
pH (pH units)	6.5 (minimum)	
	8.5 (maximum)	

E11 The release of contaminants to land in accordance with **condition E9** must be monitored at the release points specified in **Table E2 – Contaminant release to land locations** and depicted in **Figure 2 – Release points and surface water monitoring locations**, for each quality characteristic and at the monitoring frequency specified in **Table E3 – Contaminant release to land limits**.

E12 The release of contaminants to land in accordance with condition E9 must be carried out in a manner that:

- a) Drainage to groundwater and subsurface flows of contaminants to surface waters are prevented; and
- b) Surface pondage and run-off of contaminants is prevented; and
- c) Degradation of soil structure is minimised; and
- d) Soil sodicity and the build-up of heavy metals and metalloids in the soil and subsoil is minimised.

E13 Land disturbed by mining activities must be rehabilitated in accordance with **Table E4 – Rehabilitation requirements**.

Table E4 – Rehabilitation requirements

Mine domain	Rehabilitation goal	Rehabilitation objectives	Indicators	Completion criteria
Mine pit slopes that are greater than 30° and greater than 5m in height	Safe to humans and wildlife	Site is safe for humans and animals now and in the foreseeable future	Safety assessment of slopes that are greater than 30° and greater than 5m in height	Validation in rehabilitation report that slopes are safe and predictions about future safety
Mine water storages	Non-polluting	Surface and groundwater that leave the lease will aim to meet or improve the water quality objectives of the receiving waters. Current and future water quality parameters will be maintained at levels that are acceptable for uses downstream of the site.	End of pipe and receiving waters meet environmental authority conditions.	Validation in water quality report that surface and groundwater objectives are met.
Mine workings, void, water storages	Stable	Low probability of rock falls with serious consequences	Geotechnical studies of workings, high walls and voids	Evidence in Final Rehabilitation Report that appropriate risk assessment has been undertaken and control measures are in place.
Mine workings above RL40	Able to sustain an agreed post-mining land use	Mining and rehabilitation will aim to create a landform with land use capability and/or suitably similar to that prior to disturbance, unless other beneficial land uses are pre-determined and agreed.	• Tree density (trees/ha) • Shrub density (shrubs/ha) • Sedge/forb/grass density (grasses/ha) • Species composition • Species diversity • Unvegetated area (%) • Leaf litter depth and coverage • Erosion indicators (e.g. depth and spacing of erosion rills) • Photographic records of the site	Final Rehabilitation Report will be prepared as per administering authority rehabilitation guidelines including: • The results of a site investigation • The results of a residual risk assessment (including estimation of monitoring and maintenance costs) • The results of contamination assessment, as required. • Written statements from landowners/landholders documenting any agreement for transfer of management and maintenance commitments or transfer of infrastructure ownership. • A site management plan as required. • An accompanying audit statement detailing the extent of rehabilitation, the extent of ongoing management, maintenance or monitoring issues and the adequacy of the calculated financial assurance.
Active spoil dumps		Mine wastes and disturbed land will be rehabilitated to a condition that is self-sustaining or where the maintenance requirements are consistent with an agreed post-mining land use.		

- E14** Rehabilitation must commence progressively in accordance with the plan of operations.
- E15** The environmental authority holder must minimise the potential for contamination of land by hazardous contaminants.

END OF CONDITIONS FOR SCHEDULE E

Definitions

Key terms and/or phrases used in this document are defined in this section. Where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

Administering authority means the Department of Environment and Science or its successor.

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

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

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

- a) against recommendations contained in previous annual inspections reports
- b) against recognised dam safety deficiency indicators
- c) for changes in circumstances potentially leading to a change in consequence category
- d) for conformance with the conditions of this authority
- e) for conformance with the 'as constructed' drawings
- f) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems)
- g) for evidence of conformance with the current operational plan.

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

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

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

Associated works in relation to a dam means:

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

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

Blasting 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 and experienced person in relation to any assessment or documentation required by a condition of this environmental authority, and specifically in relation to structures, means the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (ESR/2016/1933)*, including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).

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

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

Consequence category means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)*.

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

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

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

Design plan is a document setting out how all identified consequence scenarios are addressed in the planned design and operation 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 1 November each year in order to prevent a discharge from that dam to an annual exceedence probability (AEP) specified in that Manual.

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

Deterioration of groundwater quality means a material increase (or decrease for pH) to the concentration of a contaminant identified in groundwater monitoring data.

Disturbance of land includes:

- a) compacting, removing, covering, exposing or stockpiling of earth
- b) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion;
- c) carrying out mining within a watercourse, waterway, wetland or lake;
- d) the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls;
- e) temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc.) which is to be removed after the mining activity has ceased; or
- f) releasing of contaminants into the soil, or underlying geological strata.

Effluent treated waste water released from sewage treatment plants.

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

Existing structure means a structure that prior to 02 September 2021 meets any or both of the following, a structure:

- a) With a design that is in accordance with Version 5.00 (dated 29 March 2016) of 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.

Hydraulic performance means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (ESR/2016/1933)*.

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

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

Land use 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 and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of **water** or **flowable substances** at any other times.

Low consequence structure means any structure that is not a high or significant consequence category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (ESR/2016/1933)*.

Mandatory reporting level or MRL means a warning and reporting level determined in accordance with the criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (ESR/2016/1933)* published by the administering authority.

Manual means the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)* published by the administering authority, as amended from time to time.

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

Modification or modifying see definition of 'construction'.

Natural flow the flow of water through waters caused by nature.

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

Operational plan includes:

- a) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA allowance);
- b) contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure.

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

Pit development means the act or process of making an excavation or cut of the ground for the purpose of extracting ore.

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

- a) a watercourse;
- b) groundwater; and
- c) an area of land that is not specified in this environmental authority.

Receiving waters means waters of the receiving environment as defined in the *Environmental Protection Act 1994*, including but not limited to the waters of East End Creek, Shultz Lagoon, Larcom Creek, Machine Creek, Scrub Creek and Jacobs Creek.

Records include breach notifications, written procedures, analysis results, monitoring reports and monitoring programs required under a condition of this authority.

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 structure 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 structure;
- e) name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;
- f) for the regulated dam, other than in relation to any levees:
 - i. the dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;
 - ii. coordinates (latitude and longitude in GDA94) within five (5) metres at any point from the outside of the dam including its storage area;
 - iii. dam crest volume (megalitres);
 - iv. spillway crest level (metres AHD);
 - v. maximum operating level (metres AHD);
 - vi. storage rating table of stored volume versus level (metres AHD);
 - vii. design storage allowance (megalitres) and associated level of the dam (metres AHD);
 - viii. mandatory reporting level (metres AHD);
- g) For a regulated levee:
 - i. The crest length of the levee (metres) measured along the centreline of the levee;
 - ii. Location Coordinates (latitude and longitude in GDA94), and chainage distances (metres), of each end of the levee, and of each point along the crest of the levee which marks a change in direction;
 - iii. Levee crest level (metres AHD), also at each end of the levee, and at each point along the crest of the levee which marks a change in direction;
 - iv. Maximum height of the levee (metres), from the crest level to the adjacent toe (inside or outside) of the embankment, and the location and chainage of this maximum height;
 - v. The crest width of the levee (metres);
 - vi. The Annual Exceedence Probability of the design flood for operation of the levee;
 - vii. The freeboard (metres) between design flood level and the crest level of the levee;
- h) the design plan title and reference relevant to the dam;
- i) the date construction was certified as compliant with the design plan;
- j) the name and details of the suitably qualified and experienced person who certified that the constructed structure was compliant with the design plan;
- k) details of the composition and construction of any liner;
- l) the system for the detection of any leakage through the floor and sides of the dam;
- m) dates when the regulated structure underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November for any year;
- n) dates when recommendations and actions arising from the annual inspection were provided to the administering authority;
- o) dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

Regulated structure means any structure in the significant or high consequence category as assessed by using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (ESR/2016/1933)* published by the administering authority. A regulated structure does not include a fabricated

or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container.

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

Release event means surface water discharge from water storages or contaminated areas on the mining tenements detailed in this environmental authority.

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

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

Sensitive receptor means a sensitive receptor under the Environmental Protection (Noise) Policy 2008.

Structure means dam or levee.

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.

Subterranean Fauna means fauna which live their entire lives (obligate) below the surface of the earth consisting of air-breathing troglofauna or aquatic groundwater fauna.

Subterranean wetland for the purpose of this environmental authority, means aquifer and cave groundwater dependent ecosystems that are dependent on the subterranean presence of groundwater.

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

- 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 and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in other geomechanics, hydraulic design or engineering hydrology.

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

Calibrated transient groundwater model means a calibrated groundwater model as described in the *Australian Groundwater Modelling Guidelines* published in 2012 by the Australian Government National Water Commission. The model must include time-varying inputs, calculate and save output at various times throughout the duration of the model run, and must be capable of predicting time-varying groundwater responses.

Valid complaint means all complaints unless considered by the administering authority to be frivolous, vexatious or based on mistaken belief.

Void means any constructed, open excavation in the ground.

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

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

Wetland for the purpose of this environmental authority, means:

- a) Areas shown on the Map of referable wetlands which is a document approved by the chief executive on 4 November 2011 and published by the administering authority, as amended from time to time by the chief executive under section 144D of the *Environmental Protection Regulation 2008*; and
- b) Areas defined under the Queensland Wetlands Program as permanent or periodic / intermittent inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six (6) metres, and possess one or more of the following attributes:
 - i. At least periodically, the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle; or
 - ii. The substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers, or;
 - iii. The substratum is not soil and is saturated with water, or covered by water at some time.

The term wetland includes riverine, lacustrine, estuarine, marine and palustrine wetlands; and it does not include a Great Artesian Basin Spring or a subterranean wetland that is a cave or aquifer.

Appendices

Maps and Figures

Figure 1 - Project Infrastructure Layout Mine Area and Support Infrastructure. (eDOCS#6433223)

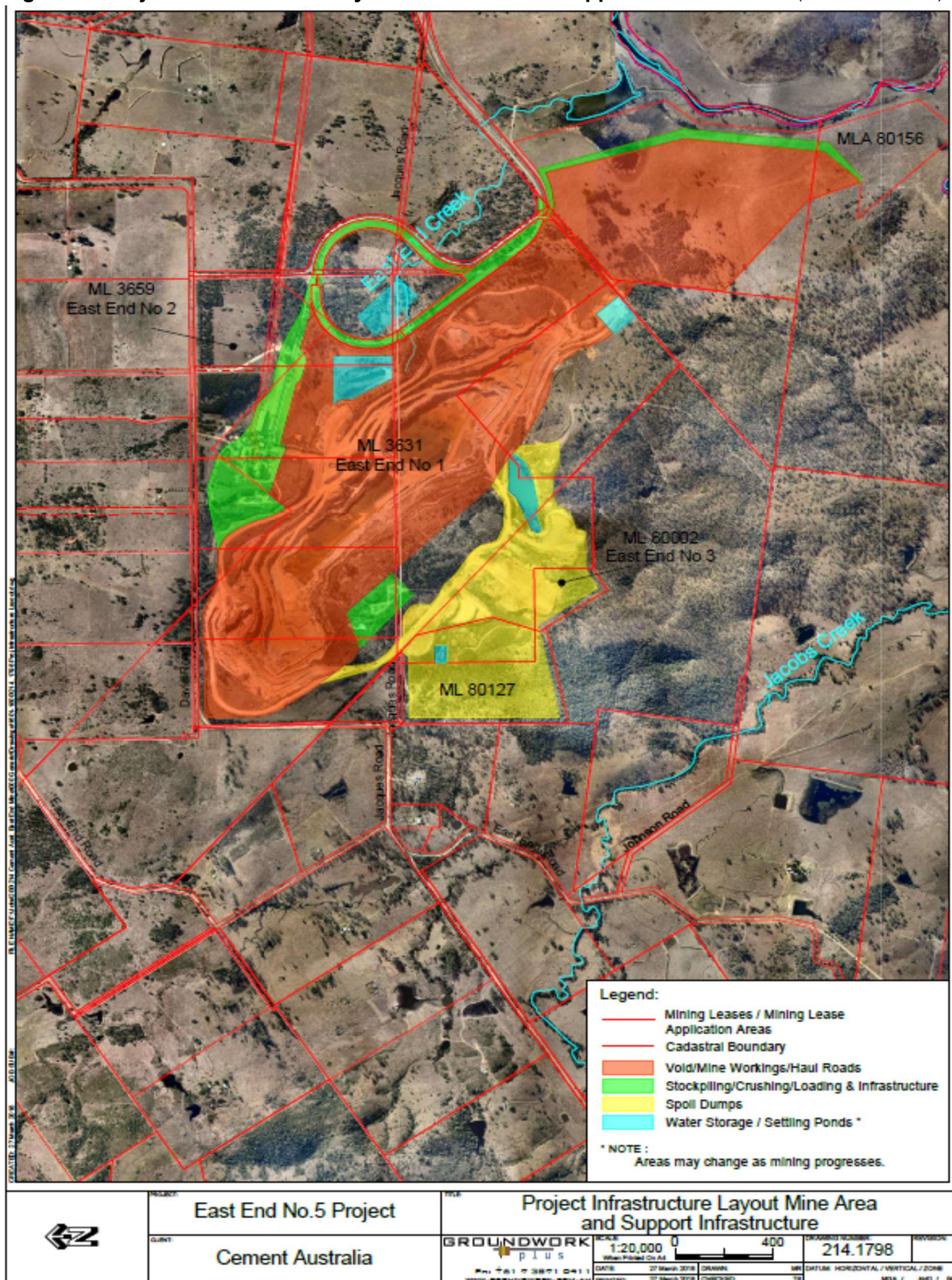


Figure 2 - Release Points and Surface water monitoring locations (to be provided by environmental authority holder to the administering authority by 04 October 2021.

Figure 3 – Groundwater monitoring locations (source: Groundwater modelling report: Conceptualisation and Modelling approach, dated 11 January 2018 – eDOCS#6428179)

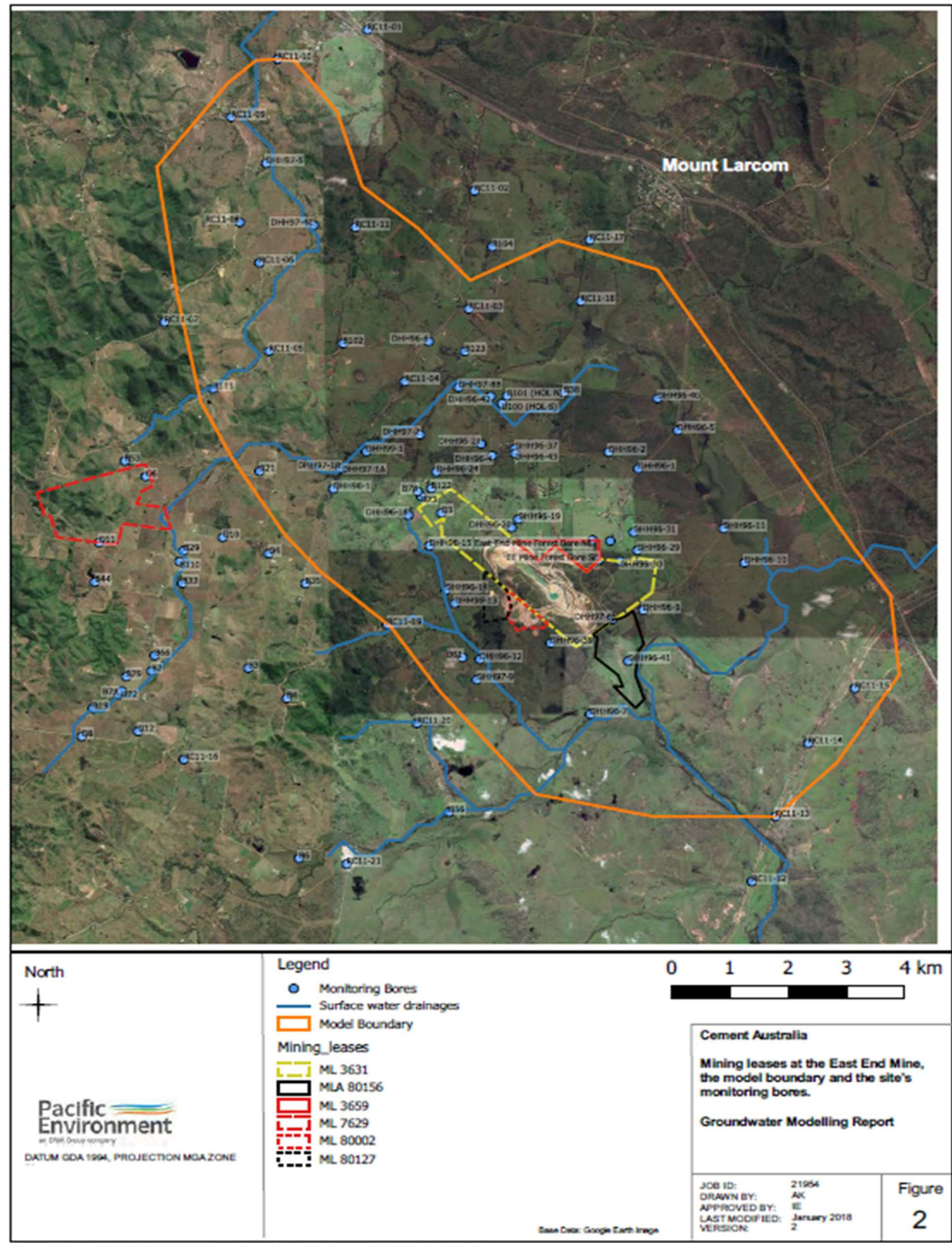


Figure 4 – Groundwater Zone of Influence. (Modelled 'zone of influence' (5m Drawdown Curve 2045) - - Pit Extension – Scenario 3 – MLA80156). Source: Groundwater modelling report: Conceptualisation and Modelling approach. 11 January 2018 (eDOCS#6428179).

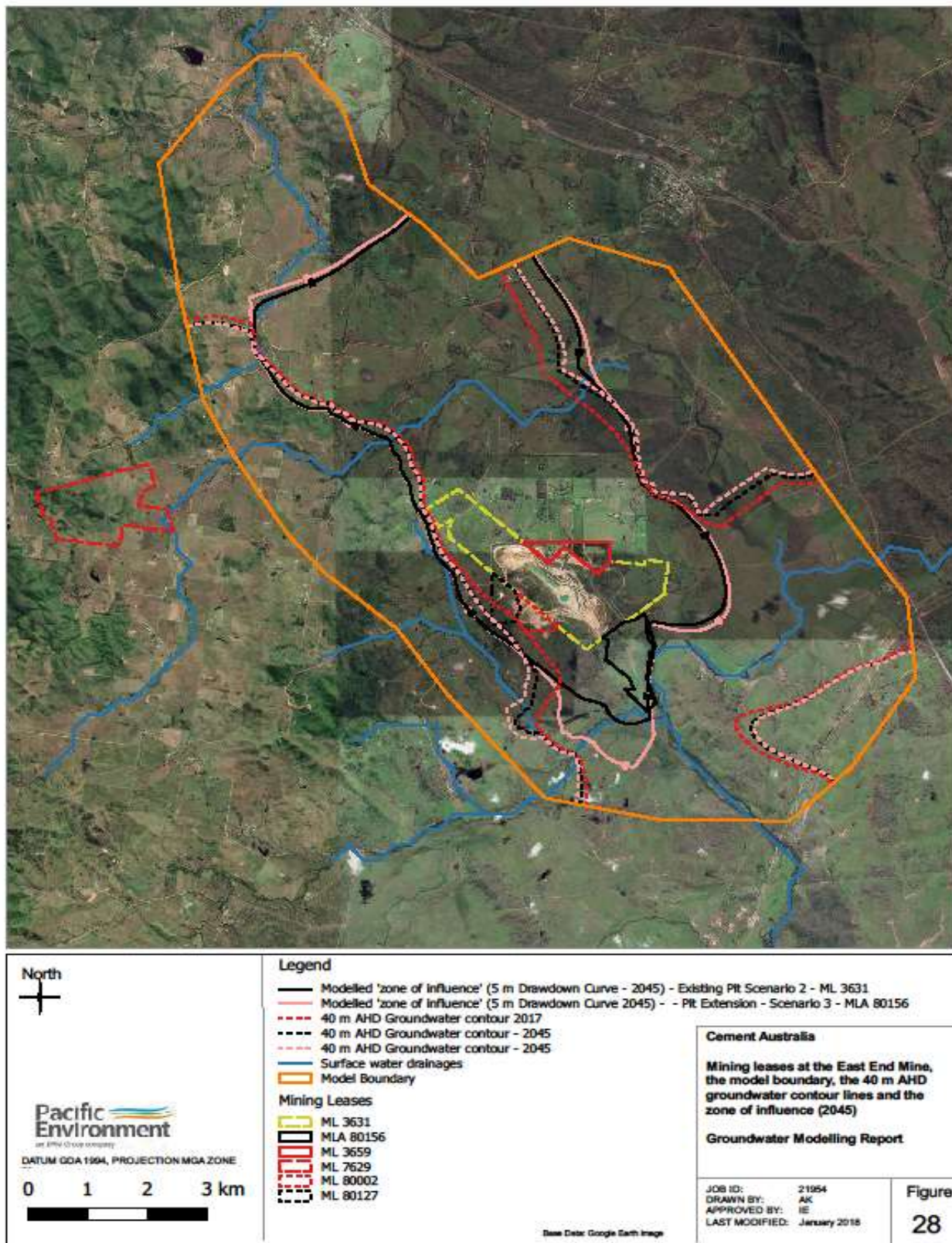
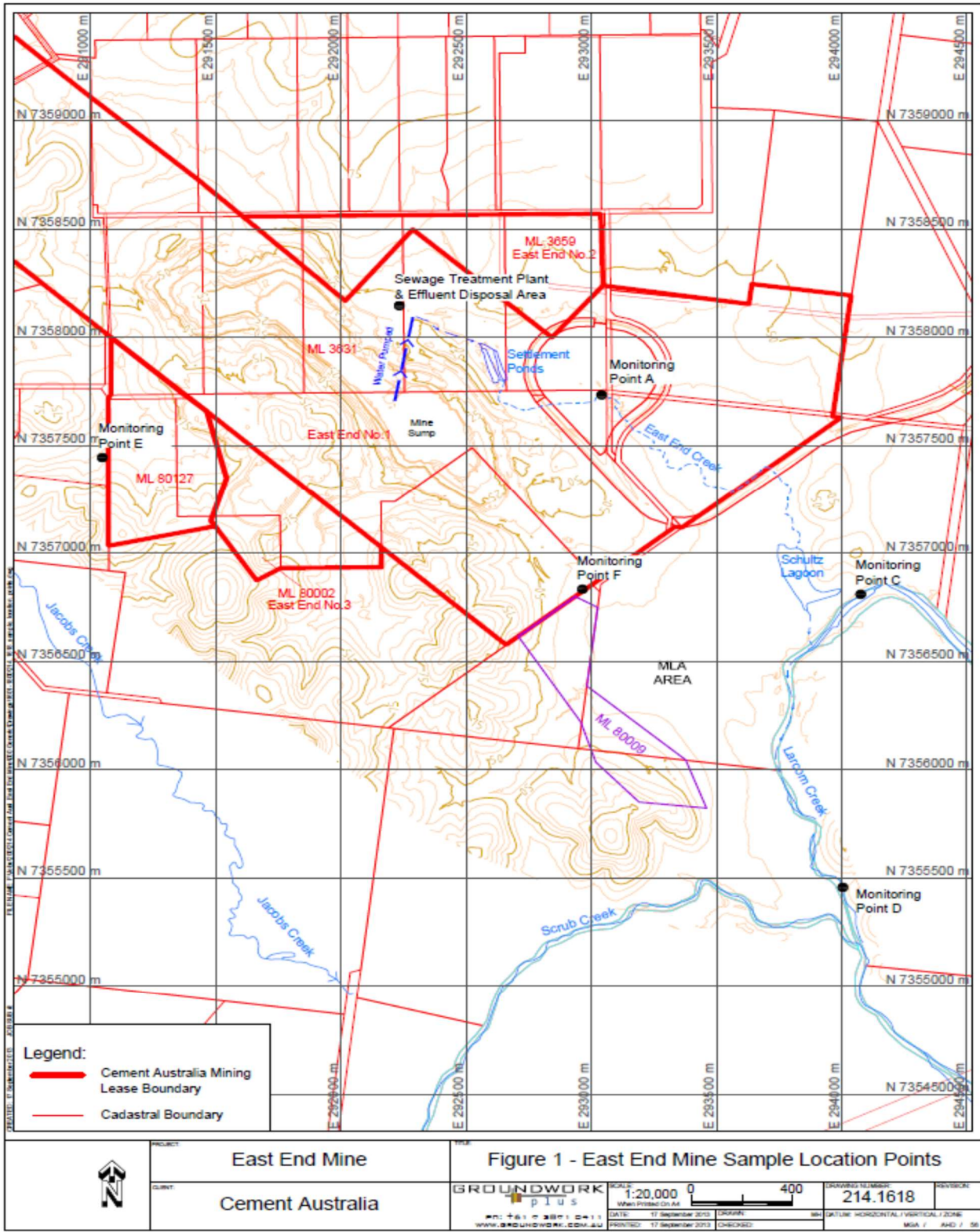


Figure 5: Location of sewage effluent disposal area



END OF ENVIRONMENTAL AUTHORITY