Permit

Environmental Protection Act 1994

Environmental authority EPML00720413

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

Environmental authority number: EPML00720413

Environmental authority takes effect on 7 August 2023.

Environmental authority holder(s)

Name(s)	Registered address
BATCHFIRE CALLIDE PTY LTD	'S2', Level 11, 141 Queen Street, Brisbane Qld 4000, Australia
BATCHFIRE CALLIDE NO. 2 PTY LTD	'S2', Level 11, 141 Queen Street, Brisbane Qld 4000, Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 - 13: Mining black coal	ML5632, ML5641, ML5653, ML5654, ML5655, ML5662, ML6993, ML6994, ML700059, ML80030, ML80092, ML80093, ML80107, ML80115, ML80117, ML80118, ML80122, ML80151, ML80186
Ancillary 08 – Chemical storage 3: storing more than 500m3 of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML 80030, ML 5655, ML5632, ML5653, ML5654, ML5655, ML5662, ML6994, ML700059, ML80030, ML80093, ML80117, ML80118, ML80122, ML80186
Ancillary 08 – Chemical storage 5: storing 200m^3 or more of chemicals that are liquids, other than chemicals mentioned in items 1 to 3, under subsection (1)(d)	ML5662
Ancillary 33 - Crushing, milling, grinding or screening Crushing, grinding, milling or screening more than 5000t of material in a year	ML5632, ML5641, ML5653, ML5654, ML5655, ML5662, ML6993, ML6994, ML700059, ML80030, ML80092, ML80093, ML80107,

Environmentally relevant activity/activities	Location(s)
	ML80115, ML80117, ML80118, ML80122, ML80151, ML80186
Ancillary 63 - Sewage Treatment 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (b-i) more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML5632, ML5641, ML5653, ML5654, ML5655, ML5662, ML6993, ML6994, ML700059, ML80030, ML80092, ML80093, ML80107, ML80115, ML801170, ML80118, ML80122, ML80151, ML80186

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority – on the nominated day; or

b) if the authority states a day or an event for it to take effect – on the stated day or when the stated event happens; or

c) otherwise – on the day the authority is issued.

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

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

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

eburgess	7 August 2023
Signature	Date

Dr. Emma Burgess
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Business Centre (Coal)
Department of Environment and Science
PO Box 3028
EMERALD QLD 4720
Phone: (07) 4987 9320
Email: CRMining@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 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

The environmentally relevant activity(ies) conducted at the location as described above must be conducted in accordance with the following site-specific conditions of approval. This environmental authority consists of the following Schedules and Appendices:

Schedule A	General
Schedule B	Air
Schedule C	Surface water
Schedule D	Groundwater
Schedule E	Acoustic
Schedule F	Land
Schedule G	Regulated Structures
Schedule H	Waste
Schedule I	Sewage Treatment
Schedule J	Offsets

Schedule A – General	
Condition number	**Condition**
A1	All reasonable and practicable measures must be taken to prevent or minimise environmental harm caused by the activities authorised by this environmental authority.
A2	The activities conducted under this environmental authority on the Boundary Hill South Mining Area (ML80186) must not exceed the disturbance footprint in Appendix 2, **Figure 1 – Callide Mine Boundary Hill South authorised disturbance footprint**.
A3	Mining activities must not be carried out in the Mount Murchison Nature Refuge (Protected Area Plan number PA 1111) as shown in Appendix 2, **Figure 3 – Mount Murchison Nature Refuge**, except for activities necessary to comply with the conditions of the mining lease, environmental authority, or other legislative obligations, such as managing tracks, fences, firebreaks, and communication infrastructure.
A4	The holder of this environmental authority is authorised to extract **five (5)** million tonnes per annum (Mtpa) of run-of-mine (ROM) coal from ML80186 (Boundary Hill South Mining Area).

A5	**Maintenance of measures, plant and equipment** The holder of this environmental authority must: (a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority; (b) maintain such measures, plant and equipment in a proper and efficient condition; (c) operate such measures, plant and equipment in a proper and efficient manner; and (d) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.
A6	**Monitoring** Except where specified otherwise in another condition of this environmental authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than **five (5) years**.
A7	**Management plans and reports** All management plans and reports required under any condition of this environmental authority must be developed by an appropriately qualified person(s).
A8	Upon request from the administering authority, copies of monitoring results, records, registers, management plans, reports, and spatial information required by the conditions of this environmental authority must unless otherwise specified be made available and provided to the administering authority within **fourteen (14) days**.
A9	**Notification of emergencies, incidents and exceptions** The holder of this environmental authority must notify the administering authority by written notification within **twenty-four (24) hours**, after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this environmental authority.
A10	Within **ten (10) business days** following the notification in accordance with condition **A9,** 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.

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 and within a reasonable timeframe nominated or agreed to by the administering authority: (a) investigate any complaint of environmental harm; (b) undertake the relevant specified monitoring; and (c) within **ten (10) business days** of completion of the investigation, or no later than **ten (10) business days** after the end of the timeframe nominated by the administering authority to undertake the investigation, provide to the administering authority the results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented.
A13	Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority, the holder of this environmental authority must: (a) comply with the amended or changed standard, policy or guideline within **two (2) years** of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures referred to in condition **G33**, the time specified in that condition; and (b) until compliance with the amended or changed standard, policy or guideline is achieved, continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.
A14	**Risk management** The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (ISO31000:2018), or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management.

A15	**Third-party reporting** The holder of this environmental authority must: (a) within **one (1) year** of the commencement of this environmental authority, obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority; (b) obtain further such reports at regular intervals, not exceeding three-yearly intervals, from the completion of the report referred to above; and (c) provide each report to the administering authority within **ninety (90) days** of its completion.
A16	**Storage and handling of flammable and combustible liquids** All flammable and combustible liquids must be stored and handled in accordance with the most recent version of AS1940 – The Storage and Handling of Flammable and Combustible Liquids.
A17	All hazardous chemicals must be stored and handled in accordance with the relevant Australian Standards, including AS4326 – The Storage and Handling of Oxidising Agents.
A18	Any spillage of chemicals or flammable or combustible liquids must be cleaned up in accordance with the AS1940 or the relevant Australian Standard.
A19	The Trap Gully Bulk Storage Facility permitted to be carried out under this environmental authority on ML5662 must not exceed the disturbance footprint in Appendix 2, **Figure 4 – Callide Mine - Trap Gully Bulk Storage Facility footprint**.

Schedule B – Air	
Condition number	**Condition**
B1	**Dust and particulate matter monitoring** The environmental authority holder must 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 (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 (PM_{10}) suspended in the atmosphere of 50 micrograms per cubic metre over a **twenty-four (24)-hour** averaging time when monitored in accordance with the most recent version of either: (i) Australian Standard AS3580.9.9 *Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM_{10} low volume sampler—Gravimetric method*; or (ii) Any alternative method of monitoring PM_{10} which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority. (c) A concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a **one (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	If the dust deposition monitoring undertaken as per condition **B1(a)** indicates an exceedance of the relevant limits, and a complaint is received from any sensitive or commercial place within **thirty-one (31) days** prior to the exceedance being recorded or within **thirty-one (31 days)** after the exceedance being recorded, the environmental authority holder must within **ninety (90) days** of receiving the monitoring results indicating the exceedance, complete an investigation into the exceedance, and submit to the administering authority a report detailing the investigation undertaken. The report must: (a) provide details of the investigation; and (b) detail whether the result is directly associated with mining activities and if so; (i) any dust abatement measures implemented; (ii) whether any environmental harm has occurred; and (iii) outline any actions required to mitigate environmental harm.

B3	If the particulate matter monitoring undertaken as per condition **B1(b)** and **B1(c)** indicates an exceedance of the relevant limits, the environmental authority holder must within **ninety (90) days** of receiving the monitoring results indicating the exceedance, complete an investigation into the exceedance, and submit to the administering authority a report detailing the investigation undertaken. The report must: (a) provide details of the investigation; and (b) detail whether the result is directly associated with mining activities and if so; (i) any dust abatement measures implemented; (ii) whether any environmental harm has occurred; and (iii) outline any actions required to mitigate environmental harm.
B4	The results of dust deposition and particulate matter monitoring undertaken as per condition **B1** must be made available upon request by the administering authority.

Schedule C – Surface Water	
Condition number	**Condition**
C1	**Contaminant Release** 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	Unless otherwise permitted under the conditions of this environmental authority, 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.**
C3	The release of mine affected water to internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with condition **C25** is permitted.

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

Release Point (RP)	Latitude (GDA94)	Longitude (GDA94)	Mine Affected Water Source and Location	Monitoring Point	Receiving waters description
RP1	-24.3293	150.6269	Dunn Creek Dam spillway overflow	Dam Spillway	Dunn Creek
RP1a	-24.2638	150.6208	Turkey's Nest Storage	Flow: End of pipe flow monitor, Quality: Storage	Oaky Creek
RP1b	-24.2686	150.5528	Trap Gully Pipeline	Flow: End of pipe flow monitor, Quality: Storage (Ghost Ryder's Storage)	Oaky Creek
RP2	-24.3019	150.5628	Ghost Ryders Storage	Flow: End of pipe flow monitor, Quality: Downstream of pipe	Oaky Creek
RP3	-24.2115	150.4793	Lake Gasteen	Flow: End of pipe flow monitor, Quality: Downstream of pipe	Gate Creek

C4	The release of mine affected water to waters in accordance with condition **C2** must not exceed the release limits stated in **Table - C2 Mine affected water release limits (Dunn Creek Dam)** and **Table C3 - Mine affected water release limits (other than for Dunn Creek Dam)** when measured at the monitoring points specified in **Table C1 - Mine affected water release points, sources and receiving waters** for each quality characteristic.

Table C2 - Mine affected water release limits (Dunn Creek Dam)

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (µS/cm)	1,400	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum), 9.0 (maximum)	
Suspended Solids (mg/L)	200	
Sulfate (mg/L)	400	

Table C3 - Mine affected water release limits (other than for Dunn Creek Dam)

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (µS/cm)	1800 maximum	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum), 9.0 (maximum)	
Suspended Solids (mg/L)	1,000	
Sulfate (mg/L)	520	

C5	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 (Dunn Creek Dam), Table C3 - Mine affected water release limits (other than for Dunn Creek Dam)** and **Table C4 - Release contaminant trigger investigation levels – potential contaminants**. *Note: the administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition **C5** is contravened due to a temporary lack of safe or practical access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.*
C6	All analysis and tests for water quality that are required under this environmental authority must be performed by a laboratory that has National Association of Testing Authorities' certification for such analysis and tests. The only exception to this condition is for the monitoring of pH, electrical conductivity, dissolved oxygen, temperature and turbidity in-situ.

Table C4 - Release contaminant trigger investigation levels – potential contaminants

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	55	*For aquatic ecosystem protection, based on SMD guideline*	Commencement of release and thereafter weekly during release
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	4	*For aquatic ecosystem protection, based on SMD guideline*	
Mercury	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	1.4	*For aquatic ecosystem protection, based on low reliability guideline*	
Manganese	1,900	*For aquatic ecosystem protection, based on SMD guideline*	
Molybdenum	34	*For aquatic ecosystem protection, based on SMD 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	1,100	*For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN*	
Fluoride (Total)	2,000	*Protection of livestock and short-term irrigation guideline*	
Sodium	180,000	*Australian Drinking Water Guidelines (2004)*	

Table C4 – Release contaminant trigger investigation levels, potential contaminants *notes:*

1. *All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.*
2. *The quality characteristics required to be monitored as per* ***Table C4 - Release Contaminant Trigger Investigation Levels – Potential Contaminants*** *can be reviewed once the results of two years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk, and it may be determined that a reduced monitoring frequency is appropriate or that certain quality characteristics can be removed from* ***Table C4 - Release Contaminant Trigger Investigation Levels – Potential Contaminants*** *by amendment.*
3. *SMD – slightly moderately disturbed level of protection; guideline refers ANZECC & ARMCANZ (2000).*
4. *LOR – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.*

C7	If quality characteristics of the release exceed any of the trigger levels specified in **Table C4 - Release contaminant trigger investigation levels – potential contaminants** during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in **Table C4 - Release contaminant trigger investigation levels – potential contaminants** and: (a) where the trigger values are not exceeded then no action is to be taken; or where the downstream results exceed the trigger values specified for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and: (i) if the result is less than the background monitoring site data, then no action is to be taken; or (ii) if the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining: 1. details of the investigations carried out; and 2. actions taken to prevent environmental harm. *Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **C7(2)(b)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*
C8	If an exceedance in accordance with condition **C7(a)(ii)** is identified, the environmental authority holder must notify the administering authority within **fourteen (14) days** of receiving the result.
C9	**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 C5 - Mine affected water release during flow events.**
C10	Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with condition **C2** must only take place during periods of natural flow events in accordance with the receiving water flow criteria for discharge specified in **Table C5 - Mine affected water release during flow events** for the release points specified in **Table C1 - Mine affected water release points, sources and receiving waters.**
C11	The 80th percentile of electrical conductivity (EC) values recorded at the downstream monitoring points listed in **Table C6 - Receiving water upstream background sites and downstream monitoring points (Dunn Creek Dam)** and **Table C7 - Receiving water upstream background sites and downstream monitoring points (other than Dunn Creek Dam)** must not exceed 1600μS/cm over the duration of the release influence period. The 80th percentile must be calculated using all EC values recorded by the monitoring station during the release influence period. *Note: The release influence period is the period during which the downstream monitoring points are influenced by mine affected water from Callide Mine and includes both the duration of release and any lag time between release points and downstream monitoring points.*

Table C5 - Mine affected water release during flow events

Receiving water/stream	Release Point	Gauging station	Gauging Station Latitude (GDA94)	Gauging Station Longitude (GDA94)	Minimum Flow in Receiving Water Required for a Release Event[a]	Flow recording Frequency
Dunn Creek	Dunn Creek Dam (RP1)	Callide Dam headwaters	-24.32305	150.68501	1.5 m^3/s	Continuous (minimum daily)
Both: Callide Creek And Oaky Creek	Turkey's Nest Storage (RP1a) and Trap Gully Pipeline (RP1b)	Goovigen Gauging Station (GS4)	- 24.1065	150.2872	Both: ≥ 3 m^3/s	
		Oaky Creek Downstream (GS1)	- 24.2617	150.5961	And ≥ 0.1 m^3/s	
Both: Callide Creek And Oaky Creek	Ghost Ryder's Storage (RP2)	Goovigen Gauging Station (GS4)	- 24.1065	150.2872	Both: ≥ 3 m^3/s	
		Oaky Creek Trap Gully Confluence (GS2)	- 24.2952	150.5326	And ≥ 0.1 m^3/s	
Callide Creek	Lake Gasteen Dam (RP3)	Goovigen Gauging Station (GS4)	- 24.1065	150.2872	≥ 3 m^3/s	

Note:
a) In addition, at the tail end of a natural flow event, low flow releases continue to be authorised for a period of ***fourteen (14) calendar days*** *from the moment that natural flow has receded below the threshold in column 6 and the electrical conductivity is limited to 1220μS/cm. Maximum release rate during this period must not exceed 0.5 m^3/s.*

C12	The daily quantity of mine affected water released from each release point must be measured and recorded at the monitoring points in **Table C1 - Mine affected water release points, sources and receiving waters**.
C13	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.

C14	**Notification of Release Event** The environmental authority holder must notify the administering authority via WaTERS within **twenty-four (24) hours** after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information: (a) release commencement date/time; (b) release point/s; (c) release rate; (d) release volume (estimated); (e) receiving water/s including the natural flow rate in the receiving water(s); and (f) any details (including available data) regarding likely impacts on the receiving water(s).
C15	The environmental authority holder must notify the administering authority via WaTERS within **twenty-four (24) hours** after the cessation of a release event notified under condition **C14**. Notification must include the submission of written advice to the administering authority of the following information: (a) release cessation date and time; (b) natural flow volume in receiving water; and (c) volume of water released. *Note: Successive or intermittent releases occurring within **twenty-four (24) hours** of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with conditions **C14, C15 and C16**, provided the relevant details of the release are included within the notification provided in accordance with conditions **C14, C15 and C16**.*
C16	Within **twenty-eight (28) days** of notification under condition **C15,** provide the administering authority via WaTERS the following information: (a) confirmation of: (i) the release commencement date and time; (ii) the release cessation date and time; (iii) receiving water(s) including the natural flow rate; and (iv) volume of water released; (b) all in-situ and laboratory water quality monitoring results; (c) details regarding the compliance of the release with the conditions in **Schedule C: Surface Water** of this environmental authority; (d) whether the release of water resulted in any impacts to the receiving environment; and (e) any other matter(s) pertinent to the water release event.

C17	**Notification of release event exceedance** If the release limits defined in **Table C2 - Contaminant release limits (Dunn Creek Dam)** and **Table C3 - Mine affected water release limits (other than for Dunn Creek Dam)** are exceeded, the holder of the environmental authority must notify the administering authority within **twenty-four (24) hours** of receiving the results.
C18	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; (b) the location of the release; (c) the total volume of the release and which (if any) part of this volume was non-compliant; (d) the total duration of the release and which (if any) part of this period was non-compliant; (e) all water quality monitoring results (including all laboratory analyses); (f) identification of any environmental harm as a result of the non-compliance; (g) all calculations; and (h) any other matters pertinent to the water release event.
C19	**Receiving environment monitoring and contaminant trigger levels** The quality of the receiving waters must be monitored for each quality characteristic and at the monitoring locations specified in **Table C6 - Receiving waters contaminant trigger levels** at the locations specified in: (a) **Table C7 - Receiving water upstream background sites and downstream monitoring points (Dunn Creek Dam);** and (b) **Table C8 - Receiving water upstream background sites and downstream monitoring points (other than Dunn Creek Dam).**

Table C6 - Receiving waters contaminant trigger levels

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 - 8.0	Daily during the release
Electrical Conductivity (µS/cm)	80th Percentile: 1,600, Maximum: 1,920	
Suspended solids (mg/L)	1,000	
Sulfate (mg/L)	250 (Protection of drinking water Environmental Value)	
Sodium (mg/L)	180 (Australian Drinking Water Guidelines, 2004)	

Table C7 - Receiving water upstream background sites and downstream monitoring points (Dunn Creek Dam)

Monitoring Points	Receiving Waters Location Description	Latitude (GDA94)	Longitude (GDA94)
Upstream Background Monitoring Point			
Dunn Creek Dam	Callide Dam headwaters	- 24.3224	150.66994
Downstream Background Monitoring Point			
Dunn Creek Dam	Callide Dam	- 24.3693	150.6143

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

Table C8 - Receiving water upstream background sites and downstream monitoring points (other than Dunn Creek Dam)

Monitoring Points	Receiving Waters Location Description	Latitude (GDA94)	Longitude (GDA94)
Upstream Background Monitoring Points			
Monitoring Point 1	Dingo Gully 3700 metres upstream of RP1a	- 24.2772	150.6447
Monitoring Point 2	Timber Reserve Background 3000 metres Upstream of RP1b	- 24.2487	150.5666
Monitoring Point 3	Trap Gully 5000 metres upstream of RP2 unnamed gully confluence with Oaky Creek	- 24.2826	150.5708
Monitoring Point 4	Gate Creek 1500 metres upstream of RP3 unnamed gully confluence with Gate Creek.	- 24.2287	150.4867
Monitoring Point 5	Callide Creek at Dawson Highway Crossing	- 24.3707	150.5322
Downstream Monitoring Points			
CC1	NRM Goovigen Gauging Station on Callide Creek	- 24.1054	150.2866
CC2	Callide Creek Main Channel –Electrical Conductivity Gauge	- 24.2649	150.4132
CC3	Callide Creek old Channel –Electrical Conductivity Gauge	- 24.2581	150.4263
Monitoring Point 6	Kroombit Creek at McCann's Road Crossing	- 24.2394	150.3872

Notes:

a) The upstream monitoring point should be within 15km of the release point.

b) The downstream point should not be greater than 15km from the release point.

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

C20	If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in **Table C6 - 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: (a) 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 (b) where the downstream results exceed the upstream results, complete an investigation into the potential for environmental harm and provide a written report to the 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 **F20(b)(ii)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*
C21	**Receiving Environment Monitoring Program (REMP)** 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 as described in **Table C7 - Receiving water upstream background sites and downstream monitoring points (Dunn Creek Dam)** and **Table C8 - Receiving water upstream background sites and downstream monitoring points (other than Dunn Creek Dam)** and connected waterways within 8.3km downstream of the Dunn Creek Dam release, and additionally the Callide Creek and Oaky Creek 15km downstream of the respective releases and connected or surrounding waterways within the Callide Catchment (15km) downstream of the release. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.
C22	A report outlining the findings of the REMP, including all monitoring results and interpretations must be prepared annually. This must include: (a) an assessment of background reference water quality; (b) the condition of downstream water quality compared against water quality objectives; and (c) the suitability of current discharge limits to protect downstream environmental values.
C23	**Water reuse** 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 consent of the third party).

C24	**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: (a) the date on which the sample was taken; (b) the time at which the sample was taken; (c) the monitoring point at which the sample was taken; (d) the measured or estimated daily quantity of mine affected water released from all release points; (e) the release flow rate at the time of sampling for each release point; and (f) the results of all monitoring and details of any exceedances of the conditions of this environmental authority.
C25	**Water management plan** A Water Management Plan must be developed by an appropriately qualified person and implemented.
C26	**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 and must demonstrate how erosion and sediment control measures adequately minimise: (a) erosion; (b) the release of sediment to receiving waters; and (c) contamination of stormwater.
C27	Stormwater, other than mine affected water, is permitted to be released to waters from: (a) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition **C26**; and (b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan for the purpose of ensuring water does not become mine affected water.

Schedule D - Groundwater	
Condition number	**Condition**
D1	The holder of this environmental authority must not release contaminants to groundwater.
D2	**Monitoring and reporting** Groundwater quality must be monitored at the locations and frequencies defined in **Table D1 - Groundwater monitoring locations and frequency** as identified in **Table D2 - Groundwater quality triggers.**
D3	Groundwater levels must be monitored at the locations defined in **Table D1 - Groundwater monitoring locations and frequency** at the frequencies defined in **Table D3 - Groundwater level monitoring frequency and groundwater level trigger thresholds**.
D4	Groundwater quality triggers must be amended to replace all TBA values with appropriate values once at least eight (8) representative measurements are available for bores MB06, MB20 and MB25. Appropriate values must be determined in accordance with the latest edition of the administering authorities guideline '*Using monitoring data to assess groundwater quality and potential environmental impacts*'.
D5	The method of sampling of surface and groundwater must comply with that set out in the latest edition of the administering authority's *Monitoring and Sampling Manual*.
D6	The holder of this environmental authority must complete an annual groundwater monitoring report by 31 March 2023 and each year thereafter and submit this report to the administering authority upon request. The report must be prepared by an appropriately qualified person and must address the following requirements as a minimum: (a) analyses of groundwater chemistry and hydrogeological data for all groundwater monitoring bores listed in **Table D1 - Groundwater monitoring locations and frequency**; (b) discuss effectiveness of the groundwater monitoring program described in **Table D1 - Groundwater monitoring locations and frequency** and any improvements necessary to ensure early detection of unexpected changes in groundwater levels and quality; (c) Ensure that all unexpected changes to groundwater levels and quality due to the mining activity are identified and monitored. Where unexpected changes to groundwater levels and quality are identified, describe any monitoring and management measures necessary to minimise the potential for significant environmental harm due to the approved mining activities (d) Include a conceptual groundwater model that is reviewed, updated and validated once every 2 years in accordance with findings of the groundwater monitoring; (e) changes in groundwater levels plotted as a function of time to identify seasonal patterns and possible draw-down effects; (f) groundwater elevation contours and flow direction; and (g) interpretation and discussion of groundwater monitoring data.

D7	Groundwater quality results when measured at the monitoring locations specified in **Table D1 - Groundwater monitoring locations and frequency** must not exceed the groundwater quality trigger levels of specified in **Table D2 - Groundwater quality triggers** on any three (3) consecutive sampling occasions in accordance with the sampling frequency specified in **Table D1 - Groundwater monitoring locations and frequency.**
D8	Groundwater levels when measured at the monitoring locations specified in **Table D1 – Groundwater monitoring locations and frequency** must not exceed the groundwater level trigger thresholds specified in **Table D3 – Groundwater level monitoring frequency and groundwater level trigger thresholds**.
D9	If groundwater quality characteristics from compliance groundwater monitoring bores identified in **Table D1 - Groundwater monitoring locations and frequency** exceed any of the trigger levels stated in **Table D2 - Groundwater quality triggers** or any of the groundwater level trigger thresholds stated in **Table D3 - Groundwater level monitoring frequency and groundwater level trigger thresholds**, an investigation must be undertaken by the holder of the environmental authority within **fourteen (14) days** of detection to determine if the exceedance is a result of: (a) mining activities authorised under this environmental authority; or (b) natural variation; or (c) neighbouring land use resulting in groundwater impacts.
D10	The holder of this environmental authority must provide a report of the investigation to the administering authority via WaTERS within **twenty-eight (28) days** of completion of the investigation under condition **D9**.
D11	**Bore construction and maintenance and decommissioning** The construction, maintenance, management and decommissioning of groundwater bores (including groundwater monitoring bores) must be undertaken in a manner that prevents or minimises impacts to the environment and ensures the integrity of the bores to obtain accurate monitoring.
D12	The groundwater trigger levels listed in **Table D3 - Groundwater level monitoring frequency and groundwater level trigger thresholds** must be revised based on outputs from an updated groundwater model and must be provided to the administering authority by 30 December 2023.

Table D1 – Groundwater monitoring locations and frequency

Mining Area	Monitoring Bore[a]	Aquifer (Boundary Hill Mining Area only)	Latitude (GDA94)	Longitude (GDA94)	Surface RL[b]	Monitoring Frequency - Groundwater Quality
Compliance Bores						
Dunn Creek	1900	Biloela Formation	-24.32425	150.62783	270.32 m	Quarterly
	DC01	Precipice Sandstone	-24.328032	150.613433	291.50 m	Quarterly
	DC02	Precipice Sandstone	-24.32697	150.62417	267.50 m	Quarterly
	DC040C	Callide Coal Measures	-24.29879	150.62687	367.25 m	Quarterly
	DC040P	Callide Coal Measures	-24.29879	150.62681	367.16 m	Quarterly
Trap Gully	TG01	Callide Coal Measures	-24.28296	150.55309	240.66 m	Quarterly
The Hut	HUT01	Callide Coal Measures	-24.28107	150.63558	368.69 m	Quarterly
	HUT03	Callide Coal Measures	-24.27211	150.58539	291.83 m	Quarterly
Boundary Hill	MB28	Alluvium	-24.228950	150.487121	197.05 m	Quarterly
	BH01	Volcanic Basement	-24.20777303	150.4821598	204.29 m	Quarterly
	MB06	Precipice Sandstone	-24.20262922	150.525687	321.30 m	Quarterly
	MB15	Precipice Sandstone	-24.25580493	150.545524	271.40 m	Quarterly
	MB16	Precipice Sandstone	-24.6867484	150.541733	244.30 m	Quarterly
	R3076	Precipice Sandstone	-24.24780817	150.510641	224.57m	Quarterly
	R3079	Precipice Sandstone	-24.25313096	150.502303	242.92 m	Quarterly
	R3084	Precipice Sandstone	-24.25901641	150.522215	244.46 m	Quarterly
	MB20	Precipice Sandstone	-24.224820	150.496828	226.29 m	Quarterly
	MB29	Precipice Sandstone	-24.240958	150.529475	268.98 m	Quarterly
	MB25	Precipice Sandstone	-24.236390	150.546893	308.67 m	Quarterly
	MB07	Callide Coal Measures	-24.20257622	150.525757	321.90 m	Quarterly
	R3055	Callide Coal Measures	-24.22095248	150.521706	274.12 m	Quarterly
	R3072	Callide Coal Measures	-24.24242136	150.516331	248.25 m	Quarterly

Mining Area	Monitoring Bore[a]	Aquifer (Boundary Hill Mining Area only)	Latitude (GDA94)	Longitude (GDA94)	Surface RL[b]	Monitoring Frequency - Groundwater Quality
	C0507663	Callide Coal Measures	-24.2389979	150.498856	246.96 m	Quarterly
	R3038	Precipice Sandstone	-24.23664965	150.496354	238.25 m	Quarterly
	R3070	Callide Coal Measures	-24.24264353	150.504219	233.77 m	Quarterly
	MB23	Callide Coal Measures	-24.240900	150.529433	269.07 m	Quarterly
	MB26	Callide Coal Measures	-24.236324	150.546920	308.98 m	Quarterly
	MB27	Callide Coal Measures	-24.2216495	150.5475178	335.70 m	Quarterly
	MB18	Volcanic Basement	-24.2325391	150.4978631	177.60 m	Quarterly
	MB08	Volcanic Basement	-24.20823912	150.485014	202.81m	Quarterly
	VWP01	Precipice Sandstone and Callide Coal Measures	-24.26079359	150.542443	285.30m	Quarterly

Notes:

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

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

Table D2 - Groundwater quality triggers

Mining area	Monitoring bore	pH Triggers[a] (pH units)	EC Triggers[b] (µS/cm)
Dunn Creek	DC01	6.56 – 6.94	7,104
	DC02	6.78 – 7.40	5,662
	DC040C	6.68 – 6.90	2,407
	DC040P	6.67 – 7.19	1,429
Trap Gully	TG01	6.38 – 6.72	1,744
Boundary Hill	C0507663	6.68 – 7.17	1,753
	MB06	TBA	TBA
	MB07	6.27 – 6.90	1,780
	MB15	5.96 – 6.87	1,189
	MB16	5.70 – 6.75	1,701
	MB20	TBA	TBA
	MB23	6.50 – 7.05	1,793
	MB25	TBA	TBA
	MB26	6.02 – 6.41	1,638
	MB27	5.88 – 6.69	2,142
	MB28	5.44 – 6.61	6,843
	MB29	4.46 – 6.06	928
	R3038	6.08 – 6.87	1,689
	R3055	6.65 – 7.09	2,232
	R3070	6.25 – 6.85	1,296
	R3072	6.68 – 7.67	2,012
	R3076	6.49 – 7.06	1,668
	R3079	6.67 – 7.12	3,554
	R3084	6.62 – 7.13	1,305

Notes:

a) Acceptable pH range. For the purpose of condition D7 an exceedance is 3 consecutive results above the acceptable pH range or 3 consecutive results below the acceptable pH range.

b) Maximum EC value.

Table D3 - Groundwater level monitoring frequency and groundwater level trigger thresholds

Mining Area	Monitoring location	Level trigger threshold	Monitoring frequency
Dunn Creek	1900	2m drawdown per year	Quarterly
	DC01	2m drawdown per year	Quarterly
	DC02	2m drawdown per year	Quarterly
	DC040C	2m drawdown per year	Quarterly
	DC040P	2m drawdown per year	Quarterly
Trap Gully	TG01	2m drawdown per year	Quarterly
The Hut	HUT01	2m drawdown per year	Quarterly
	HUT03	2m drawdown per year	Quarterly
Boundary Hill[a]	BH01	< 199.32 mRL	Quarterly
	C0507663	< 177.09 mRL	Quarterly
	MB06	< 188.34 mRL	Quarterly
	MB07	< 222.09 mRL	Quarterly
	MB15	< 192.91 mRL	Quarterly
	MB16	< 191.71 mRL	Quarterly
	MB20	< 177.74 mRL	Quarterly
	MB23	< 177.42 mRL	Quarterly
	MB25	< 189.90 mRL	Quarterly
	MB26	< 189.96 mRL	Quarterly
	MB27	< 211.92 mRL	Quarterly
	R3038	< 176.86 mRL	Quarterly
	R3055	< 132.17 mRL	Quarterly
	R3070	< 177.20 mRL	Quarterly
	R3072	< 206.41 mRL	Quarterly
	R3076	< 178.52 mRL	Quarterly
	R3079	< 180.11 mRL	Quarterly
	R3084	< 186.09 mRL	Quarterly
	MB08	< 193.40 mRL	Quarterly
	VWP01	< 191.89 mRL	Quarterly
	MB28	< 178.23 mRL	Quarterly
	MB29	< 177.50 mRL	Quarterly

Note:

a) Amalgamation of Boundary Hill and Boundary Hill South bores.

Schedule E – Acoustic	
Condition number	**Condition**
E1	**Noise Nuisance** Noise from the mining activity must not cause an environmental nuisance at any sensitive place.
E2	When requested by the administering authority, noise 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 place, and the results must be notified within **ten (10) business days** to the administering authority following completion of monitoring.
E3	The method of measurement and reporting of noise levels must comply with the latest edition of the administering authority's '*Noise Measurement Manual'.*
E4	Airblast overpressure and ground vibration from the mining activity must not cause an environmental nuisance at any sensitive place.
E5	When requested by the administering authority, airblast overpressure and ground 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 place, and the results must be notified within **ten (10) business days** to the administering authority following completion of monitoring.
E6	Monitoring required by condition **E5** must include: (a) location of the blast/s within the mining area (including which bench level); (b) atmospheric conditions including temperature, relative humidity and wind speed and direction; and (c) location, date and time of recording.

Table E1 – Blasting noise limits

	Blasting noise limits at any sensitive place or commercial place		
	Monday to Saturday 9.00am – 5.00pm	**Sundays and Public Holidays 9.00am-5.00pm**	**All days 5.00pm-9.00am**
Airblast overpressure	**All mining areas:** Maximum air blast overpressure level (linear peak) all blasts in any given 12-month period: (a) less than 115 dBL for 90% of blasts; and (b) 115 to 120 dBL for 9% of blasts; and (c) 120 to 125 dBL for 1% of blasts.	**At The Hut mining area only:** All blasts permitted. **All other mining areas:** (a) interburden and coal blasts only and no overburden blasts permitted. (b) Maximum air blast overpressure level (linear peak) all blasts in any given 12-month period: (i) Less than 115 dBL for 90% of blasts; (ii) 115 to 120 dBL for 9% of blasts; and (iii) 120 to 125 dBL for 1% of blasts.	No blasting
Ground vibration peak particle velocity	5mm/s peak particle velocity for any four (4) out of five (5) consecutive blasts and a maximum of 10 mm/s.	**The Hut Mining Area:** (a) All blasts permitted. (b) Vibration limits: 10mm/s peak particle velocity for any 4 out of 5 consecutive blasts and a maximum of 10 mm/s. **Other Mining Areas:** (a) Interburden and coal blasts only. No overburden blasts permitted.	No blasting

Note: The method of measurement and reporting of vibration levels must comply with the latest edition of the administering authority's vibration and air blast overpressure monitoring guideline.

E7	If it can be demonstrated to the administering authority that an exceedance of the limits defined in **Table E1 - Blasting noise limits** is caused by activities other than mining activities the administering authority may determine that the holder is not in breach of condition **E4.**
E8	If monitoring indicates an exceedance of the relevant limits in **Table E1 - Blasting noise limits**, then the environmental authority holder must: (a) address any noise complaint received, including the use of appropriate dispute resolution if required; or immediately implement air blast overpressure and/or vibration abatement measures so that air blast overpressure and/or vibration from the activity does not result in further environmental nuisance.

Schedule F – Land	
Condition number	**Condition**
F1	All land disturbed by mining activities must be rehabilitated in a manner that ensures it is: (a) safe for humans and wildlife; (b) stable; (c) able to sustain vegetation; and (d) non-polluting.
F2	**Rehabilitation Management Plan** A Rehabilitation Management Plan must be developed by a suitably qualified person and implemented for all areas disturbed by mining activities by **30 November 2020**. The Rehabilitation Management Plan must: (a) be reviewed every **three (3) years**; and (b) identify milestones for mine closure.
F3	At a minimum the Rehabilitation Management plan must include: (a) map existing areas of rehabilitation including classification of stage (i.e. time since establishment) and quality; (b) a strategy for progressive rehabilitation; (c) detail the design objectives for rehabilitation of each domain to achieve rehabilitation success criteria and the identified post mining land uses; (d) specify spoil characteristics, soil analysis, soil separation for use on rehabilitation; (e) specify the topsoil requirements for the site and provide details of how topsoil will be managed for use in rehabilitation; (f) detail any topsoil deficit and how any deficit will be managed for successful rehabilitation, including, if applicable, the proposal of surrogate growth media; (g) detail rehabilitation methods applied to areas; (h) detail landform design including end of mine design; (i) detail how landform design will be consistent with surrounding topography; (j) identify and detail planned native vegetation rehabilitation areas and corridors; (k) identify at least a minimum of **three (3)** reference sites for use in rehabilitation monitoring; (l) describe rehabilitation indicators and how these will be monitored; (m) describe management actions to address unsuccessful rehabilitation or redesign; (n) describe end of mine landform design planning and post mining land uses across the mine; and include a triple bottom line assessment (or a comparative alternative assessment method) of the proposed final landform design criteria and alternatives.

F5	**Rehabilitation requirements – All mining areas (Boundary Hill, Dunn Creek, Trap Gully, The Hut, The Bluff and Boundary Hill South)** Rehabilitation must commence progressively as soon as areas become available.
F6	**Rehabilitation requirements – All mining areas (Boundary Hill, Dunn Creek, Trap Gully, The Hut and The Bluff Mining Areas)** All areas significantly disturbed by the Boundary Hill, Dunn Creek, Trap Gully, The Hut and The Bluff Mining Areas must be rehabilitated to the final land description as defined in: (a) **Table F1 - Final land use capability and projective area (Boundary Hill, Dunn Creek, Trap Gully, The Hut and The Bluff Mining Areas);** (b) **Table F2 - Final landform design criteria (Boundary Hill, Dunn Creek, Trap Gully, The Hut and The Bluff Mining Areas);** and (c) The acceptance criteria stated in "Callide Mine Report on Rehabilitation Acceptance (Completion) Criteria", Barcode C1554627, December 2003.

Table F1 - Final land use capability and projective area schedule
(Boundary Hill, Dunn Creek, Trap Gully, The Hut and The Bluff Mining Areas)

Southern Pits		**Boundary Hill**	
Tenure ID: Mining leases 5632, 5641, 5662, 5653, 5654, 80093, 6993, 80030, 80092, 80118, 80117, 80122		Tenure ID: Mining leases 5655, 6994, 80115, 80107, 80151, 80186	
Post Mine land capability classification	Projective surface area (ha)	Post mine land capability classification	Projective surface area (ha)
4	100	4	64
5	6.9	5	0
6	239.4	6	360
7	2,203.70	7	567
8	2,028.70	8	173

Table F2 - Final landform design criteria
(Boundary Hill, Dunn Creek, Trap Gully, The Hut and The Bluff Mining Areas)

Disturbance type	Slope	Drainage
Dragline and pre-strip soil (except Dunn Creek A and S Cut spoil) – outer slopes	Overall slope angle of 15% on outer slopes.	Graded banks at 10m vertical intervals (approx. every 60m along the slope).
Dunn Creek A & S Cut spoil – outer slopes	Overall slope angle of 25%, 120m slope length, basalt mulch cladding.	Berms or graded banks at 120m spacing along the slope.
Internal slopes	Generally, 15% or flatter.	Graded banks at 10m vertical intervals
Trial slopes	From 15% to 25% with topsoil or basalt mulch cladding.	Graded banks at 10m vertical intervals.
	Up to 37% (angle of repose).	Cut off drain/diversion bund across top of slope

F7	Areas which are to be progressively rehabilitated to native ecosystem must comply with the following outcomes: (a) all areas disturbed by mining activities must be rehabilitated to the landform design criteria defined in **Table F2 - Final landform design criteria (Boundary Hill, Dunn Creek, Trap Gully, The Hut and The Bluff Mining Areas);** and (b) landforms are stable with erosion comparable and similar to analogue sites.
F8	Residual voids must comply with the following outcomes: (a) residual voids must not cause any serious environmental harm to land, surface waters or any recognised ground water 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; and (b) residual voids must comply with **Table F3 - Residual void design outcomes (Boundary Hill, Dunn Creek, Trap Gully, The Hut and The Bluff Mining Areas);** and (c) residual voids must meet the acceptance criteria stated in the **"**Callide Mine Report on Rehabilitation Acceptance (Completion) Criteria", Barcode C1554627, December 2003.
F9	**Rehabilitation requirements - Boundary Hill South Mining Area** Land disturbed within the Boundary Hill South Mining Area must be rehabilitated in accordance with **Appendix 1 - Rehabilitation requirements (Boundary Hill South Mining Area)** and **Appendix 2, Figure 2 – Boundary Hill South Mining Area conceptual final landform**.

Table F3 - Residual void design outcomes
(Boundary Hill, Dunn Creek, Trap Gully, The Hut and The Bluff Mining Areas)

Void Identification	Configuration
High wall	75° slope angle. Safety bunds will be constructed along the top of the high walls and along the crest of the pre-strip benches. The pre-strip benches will be shaped to shed runoff over the high wall at several locations to limit erosion.
Low wall	Generally at angle of repose.
Ramp Spoil	Generally at angle of repose.

F10	**Contaminated land** Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the *Environmental Protection Act 1994* in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.
F11	Before applying for progressive rehabilitation certification for an area, the holder must (if applicable) provide to the administering authority a site investigation report under the *Environmental Protection Act 1994*, in relation to any part of the area the subject of the application which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use under conditions of this schedule relating to final land use.
F12	Minimise the potential for contamination of land by hazardous contaminants.

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 and experienced person in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* at the following times: (a) prior to the design and construction of the structure, if it is not an existing structure; or (b) prior to any change in its purpose or the nature of its stored contents.
G2	A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.
G3	Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.
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 and experienced person in accordance with the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.
G6	Construction of a regulated structure is prohibited unless the environmental authority holder has submitted a consequence category assessment report and certification to the administering authority has been certified by a suitably qualified and experienced person for the design and design plan and the associated operating procedures in compliance with the relevant condition of this environmental authority.
G7	Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan in the form set out in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* and must be recorded in the Register of Regulated Structures.

G8	Regulated structures must: (a) be designed and constructed in accordance with and conform to the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635);* (b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of: (i) floodwaters from entering the regulated dam from any watercourse or drainage line; and (ii) 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.
G9	Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that: (a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure; and (b) construction of the regulated structure is in accordance with the design plan.
G10	**Operation of a regulated structure** 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 paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition **G7**; and (b) a set of 'as constructed' drawings and specifications; and (c) certification of those 'as constructed drawings and specifications' in accordance with condition **G9**; and (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; and (e) the requirements of this environmental authority relating to the construction of the regulated structure have been met; and (f) the environmental authority holder has entered the details required under this environmental authority, into a Register of Regulated Structures; and (g) there is a current operational plan for the regulated structures.

G11	For existing structures that are regulated structures: (a) where the existing structure that is a regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the holder must submit to the administering authority a copy of the certified design plan including that structure; and (b) there must be a current operational plan for the existing structure.
G12	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.
G13	**Mandatory reporting level** Conditions **G14** to **G17** inclusive only apply to regulated structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
G14	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.
G15	The environmental authority holder must, as soon as practical and within **forty-eight (48) hours** of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.
G16	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.
G17	The environmental authority holder must record any changes to the MRL in the Register of Regulated Structures.
G18	**Design storage allowance** 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.
G19	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).
G20	The environmental authority holder must, as soon as possible and 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.

G21	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.
G22	**Annual inspection report** Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
G23	At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include recommended actions to ensure the integrity of the regulated structure.
G24	The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.
G25	The environmental authority holder must within **twenty (20) business days** of receipt of the annual inspection report, provide to the administering authority: (i) the recommendations section of the annual inspection report; (ii) if applicable, any actions being taken in response to those recommendations.
G26	**Transfer arrangements** The environmental authority holder must provide a copy of any reports, documentation and certifications prepared under this environmental authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this environmental authority.
G27	**Register of Regulated Structures** A Register of Regulated Structures must be established and maintained by the environmental authority holder for each regulated structure.
G28	The environmental authority holder must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated dam is submitted to the administering authority.
G29	The environmental authority holder must make a final entry of the required information in the Register of Regulated Structures once compliance with condition **G10** and **G12** has been achieved.
G30	The environmental authority holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
G31	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.

G32	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.
G33	**Transitional arrangements** All existing structures that have not been assessed in accordance with either the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* or the former *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* must be assessed and certified in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.
G34	All existing structures must subsequently comply with the timetable for any further assessments in accordance with the Manual *for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* specified in **Table G1 - Transitional requirements for existing structures**, depending on the consequence category for each existing structure assessed in the most recent previous certification for that structure.
G35	**Table G1 - Transitional requirements for existing structures** ceases to apply for a structure once any of the following events has occurred: (a) it has been brought into compliance with the hydraulic performance criteria applicable to the structure under the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*; or (b) it has been decommissioned; or (c) it has been certified as no longer being assessed as a regulated structure.

Table G1 - Transitional hydraulic performance requirements for existing structures

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

G36	Certification of the transitional assessment required by **G33** and **G34** (as applicable) must be provided to the administering authority.

Schedule H – Waste	
Condition number	**Condition**
H1	**Storage of Tyres** Tyres stored awaiting disposal or transport for take-back and, recycling, or waste-to-energy options, should be stockpiled in volumes less than 3m in height and 200 square metres in area and at least 10m from any other tyre storage area.
H2	All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of the scrap tyre storage area.
H3	Disposing of scrap tyres resulting from the mining activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as possible but not directly on the pit floor.
H4	Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers and compromise the stability of the consolidated landform.
H5	Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.
H6	The holder of this environmental authority may burn vegetation provided the activity does not cause environmental harm at any sensitive or commercial place.

Schedule I – Sewage Treatment	
Condition number	**Condition**
I1	All effluent released from the sewage treatment plants at Dunn Creek and Boundary Hill must be monitored at end of pipe; at the location specified in **Table I1 - Sewage effluent quality targets for irrigation**; at the frequency specified in **Table I1 - Sewage effluent quality targets for irrigation;** and for the parameters specified in **Table I1 - Sewage effluent quality targets for irrigation**.

Table I1 - Sewage effluent quality targets for irrigation

Quality characteristics	Release limit	Units	Limit type	Monitoring frequency
pH	6.0 to 9.0	-	range	Monthly
Free Chlorine Residual	5	mg/L	Max	Monthly
Faecal Coliforms, based on the average of a minimum of five samples collected	<10	Colonies per 100 millilitres	Max	Monthly
Total Nitrogen	60	mg/L	Max	Monthly
Total Phosphorus	20	mg/L	Max	Monthly

I2	Sewage effluent used for dust suppression or irrigation must not exceed sewage effluent release limits defined in **Table I1 - Sewage effluent quality targets for irrigation**.
I3	Sewage effluent used for dust suppression or irrigation must not cause spray drift or over spray to any sensitive place.
I4	Subject to conditions **I1, I2 and I3**, sewage effluent from sewage treatment facilities must be reused or evaporated and must not be directly released from the sewage treatment plant to any water way or drainage line.

Schedule J – Offsets	
Condition number	**Condition**
J1	**Biodiversity offsets** Significant residual impacts to prescribed environmental matters in the Boundary Hill South mining area are only authorised to occur under this environmental authority if the impacts: (a) are specified in **Table J1 – Significant residual impacts to prescribed environmental matters (Boundary Hill South);** (b) are no greater than the maximum extent of impact for each prescribed environmental matter specified in **Table J1 – Significant residual impacts to prescribed environmental matters (Boundary Hill South);** and (c) offsets are provided if required by the Boundary Hill South EPBC Act 1999 (Commonwealth) approval (EPBC 2012/6324).

Table J1 – Significant residual impacts to prescribed environmental matters (Boundary Hill South)

Prescribed environmental matters	Maximum extent of impact (ha)	Offset requirement under *Environmental Offsets Act 2014* (Qld)
Habitat for an animal that is vulnerable wildlife – Squatter Pigeon – *Geophaps scripta scripta* [1]	266	No
Habitat for an animal that is vulnerable wildlife – Koala – *Phascolarctos cinereus* [1]	257	No
Habitat for an animal that is vulnerable wildlife – South-eastern long-eared bat – *Nyctophilus corbeni* [1]	244	No

Note:
[1] These matters are addressed in the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC) approval for Boundary Hill South (EPBC2012/6324).

END OF CONDITIONS

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

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

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

a) against recommendations contained in previous annual inspections reports;

b) against recognised dam safety deficiency indicators;

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

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

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

f) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems); and

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

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

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

"background" with reference to **Schedule C - Surface Water** means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.

"**blasting**" means the use of explosive material 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.

"Boundary Hill" means mining leases ML5655, ML6994, ML80107, ML80115 and ML80151.

"Boundary Hill South Mining Area" means the mining area within ML80186.

"certification" means assessment and approval must be undertaken by a suitably qualified and experienced 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 RPEQs (ID: 1.4 (2A)).

"certifying, **certify or certified"** have a corresponding meaning 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 *Australian Code for the Transport of Dangerous Goods by Road and Rail* approved by the Australian Transport Council; or

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

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

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

   i) a pesticide, insecticide, fungicide, herbicide, rodenticide, nematicide, miticide, fumigant or related product; or

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

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

   iv) a fertiliser for agricultural, horticultural or garden use; or

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

   vi) 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 employee accommodation or public roads. While the Non-residency Agreement between the environmental authority holder and the owner of Kilburnie Homestead is in effect, Kilburnie Homestead is not a commercial place for the purpose of this environmental authority.

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

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

"consequence category" means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

"dam" means a land-based structure or a void that contains, diverts 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 solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (for example, via spillway).

"design plan" is a document 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 (EM635)* published by the administering authority, must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that Manual.

"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.

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

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

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

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

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

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

"Dunn Creek" means mining leases ML5632, ML5641, ML80030, ML80092, ML80093, ML80118.

"EC" means electrical conductivity.

"effluent" treated waste water discharged from sewage treatment plants.

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

"ERC decision" means a decision made by the administering authority under section 300 of the *Environmental Protection Act 1994* about the estimated rehabilitation cost for a resource activity.

"ERC period for the estimated rehabilitation cost for a resource activity" means:

a) if a PRCP schedule applies for the activity, the period of between 1 and 5 years stated in the application for an ERC decision under section 298(2)(b); or

b) if the activity is a petroleum activity that is an ineligible ERA, other than a petroleum activity to which a plan of operations applies, or the activity relates to a 1923 Act petroleum tenure granted under the *Petroleum Act 1923*, the period of between 1 and 5 years stated in the ERC decision about the estimated rehabilitation cost; or

c) if a plan of operations applies for the activities, the plan period for the plan of operations; or

d) otherwise, the total period during which the resource activity is likely to be carried out under the environmental authority for the activity.

"Estimated rehabilitation cost or **"ERC"** for a resource activity, see section 300(2) of the *Environmental Protection Act 1994.*

"existing structure" means a structure that was in existence prior to 21 February 2014.

"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.

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

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

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

"Kilburnie Homestead" means the place located on Lot 77 on SP163782 and registered on the Queensland Heritage Register as the Kilbirnie Homestead with Place ID 600016.

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

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

"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.

"m" means metres.

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

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

"**matters of state environmental significance**" or "**MSES**" has the meaning in schedule 2 of the *Environmental Offsets Regulation 2014*.

"**maximum extent of impact**" means the total, cumulative, residual extent and duration of impact to a prescribed environmental matter that will occur over a project's life after all reasonable avoidance and reasonable on-site mitigation measures have been, or will be, undertaken.

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

"mine 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 such runoff, 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; or

f) a mix of mine affected water (under any of paragraphs a) – e) and other water.

Does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by mining activities that have not yet been completely rehabilitated, has only been in contact with:

a) land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success; or

b) land that has partially been rehabilitated and monitoring demonstrates the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example:

   i) areas that have been capped and have monitoring data demonstrating hazardous material adequately contained with the site;

   ii) evidence provided through monitoring that the relevant surface water would have met the water quality parameters for mine affected water release limits in this environmental authority, if those parameters had been applicable to the surface water runoff; or

c) both a) and b) above.

"Mining activity / mining activities" means the following activities:

a) authorised as per the definition of section 110 of the *Environmental Protection Act 1994;*

b) all environmentally relevant activities authorised under this environmental authority;

c) all mining disturbance including the construction of mining infrastructure, overburden removal and active mining;

d) all activities carried out while the mine is not operational (i.e. care and maintenance status);

e) exploration; and

f) rehabilitation.

"NATA" means National Association of Testing Authorities, Australia.

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

"**notice of election**" has the meaning in section 18(2) of the *Environmental Offsets Act 2014*.

"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" or **"ppv"** means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mms).

"**prescribed environmental matter**" has the same meaning as in section 10 of the *Environmental Offsets Act 2014*, limited to the matters of State environmental significance listed in schedule 2 of the *Environmental Offsets Regulation 2014*.

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

a) a watercourse;

b) groundwater; and

c) an area of land that is not specified as operational land of this environmental authority.

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

"Register of Regulated Structures" includes**:**

a) date of entry in the register;

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

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

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

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

f) for the regulated dam, other than in relation to any levees:

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

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

   iii) dam crest volume (megalitres);

   iv) spillway crest level (metres AHD).

   v) maximum operating level (metres AHD);

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

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

viii) mandatory reporting level (metres AHD);

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

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

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

j) details of the composition and construction of any liner;

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

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

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

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

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

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

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

"release event" means a surface water discharge from mine affected water storages or contaminated areas on the licensed place.

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

"secondary containment system" means a system designed, installed and operated to prevent any release of contaminants from the system, or containers within the system, to land, groundwater, or surface waters.

"sensitive place" means:

a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or

b) a motel, hotel or hostel; or

c) an educational institution; or

d) a medical centre or hospital; or

e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or

f) a public park or gardens.

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

lease and open to the public for use other than for sport or organised entertainment. A commercial place is inside or outside a commercial or retail activity.

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

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

"significant residual impacts" has the same meaning given in the *Environmental Offsets Act 2014*.

"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.

"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; and

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 either geomechanics, hydraulic design or engineering hydrology.

"The Bluff" means mining lease ML6993.

"The Hut" means mining lease ML5654.

"Trap Gully" means mining leases ML80122, ML80117, ML5653, ML5662 and ML700059.

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

"µS/cm" means microsiemens per centimetre.

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

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

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

END OF DEFINITIONS

Appendices

Appendix 1 - Rehabilitation requirements (Boundary Hill South Mining Area)

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
Open cut voids and slopes	Long term safety	The site is structurally safe and the environment is not exposed to contamination by heavy metals or other toxic materials.	Safety assessment of landform stability (geotechnical studies).	Certification by an appropriately qualified person in the Rehabilitation Report that slopes are now safe and exhibit characteristics for long term stability.
				A risk assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.
				Landform design meets the requirements of **Section 4.5 Land and rehabilitation in the Boundary Hill South Environmental Management Plan (December 2016)** and **Figure 2 – Boundary Hill South conceptual final landform.**
			Encapsulation depth and containment of potentially contaminating material.	Certification by an appropriately qualified person that the Rehabilitation Report includes predictions about future changes and that the specified cover thickness is in place.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
				Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in the environmental authority.
			Results of site contaminated land investigation report.	Evidence in the Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.
			Evidence of stream bank erosion.	Evidence in the Rehabilitation Report that creek diversions are stable at closure and exhibit characteristics for long term stability.
		Site is safe for humans and animals now and in the foreseeable future.	Safety assessment of landform stability (geotechnical studies).	An appropriately qualified person certifies the long-term geotechnical stability of the residual slopes and faces in the voids and evidence of this is documented in the Rehabilitation Report.
			Adequacy and predicted long-term performance of safety barriers.	Evidence in the Rehabilitation Report that a safety risk assessment of the open-cut voids and slopes has been completed and proposed mitigation measures are documented in a Safety Plan.
			Installation of safety barriers and human/wildlife exclusion fencing of open-cut void.	If required, mitigation measures documented in a Safety Plan, e.g. fencing or other suitable barrier around the open-cut void and slopes are installed to restrict access.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
Open cut voids and slopes (cont.)	No receiving waters are contaminated.	Mine affected water is contained on site.	Downstream surface water quality parameters stated in the project's environmental authority.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
			Groundwater quality parameters stated in the project's environmental authority.	Certification by an appropriately qualified person that groundwater quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
				Receiving water affected by surface water runoff has contaminant limits in accordance with the environmental authority.
		All permanent stream diversion will meet approved design criteria.	Approved design criteria.	Certification by an appropriately qualified person that all stream diversions have been constructed and are operating in accordance with approved design criteria.
		All permanent regulated structures will meet approved design criteria.	Approved design criteria.	The regulated structures are certified by a suitably qualified and experienced person.
		All non-permanent regulated structures are decommissioned appropriately.	The number and condition of non-permanent regulated structures.	Regulated structures are decommissioned in accordance with the administering authority requirements.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
		Open-cut voids protected from flooding.	Flood protection measures constructed around open-cut voids.	Certification by a suitably qualified and experienced person in the Rehabilitation Report that the open-cut voids have an adequate protection system to prevent inundation from a 1: 1,000 year annual exceedance probability flood event.
		Diversion design and maintenance.	Whether or not a water licence under the *Water Act 2000* (QLD) is required.	Confirmation in writing from the administering authority that the water licence under the *Water Act 2000* (QLD) is no longer required.
	Stable landform	Very low probability of rock falls with serious environmental consequences.	The number of rock falls during the life of the mine.	Evidence in the Rehabilitation Report that the number of rock falls has been acceptably low, and that appropriate control measures are in place to prevent rock falls with serious environmental consequences in the future.
Open cut voids and slopes (cont.)	Stable landform (cont.)	Landform design achieves appropriate erosion rates.	Slope angle and length.	Evidence in the Rehabilitation Report that the rehabilitated slopes have been designed to the specifications outlined in **Section 4.5 Land and rehabilitation in the Boundary Hill South Environmental Management Plan (December 2016)** and **Figure 2 – Boundary Hill South conceptual final landform.**
			Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and functioning.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Rates of soil loss.	Certification by an appropriately qualified person that land disturbed by mining activities does not exhibit any signs of continued erosion greater than that exhibited at a comparable reference site. The comparable reference site must have similar chemical and physical characteristics including slope as the rehabilitated landform.
			Dimensions and frequency of occurrence of erosion of rills and gullies.	Evidence in the Rehabilitation Report that the dimensions and frequency of occurrence of erosion rills and gullies are no greater than that in comparable reference site(s).
		Vegetation cover sufficient for a self-sustaining community and to minimise erosion.	Vegetation type and density.	Evidence that the vegetation type and density are of species suited to the site's characteristics including soil type, topography and climate and that soil erosion meets the goals set in this plan.
				Vegetation types and densities are comparable with the relevant reference site.
		The diversions and run-off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Documentation in the Rehabilitation Report how drainage diversions have changed over the life of mine and that they are stable at closure and are likely to remain that way into the foreseeable future.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
				To be designed and constructed in accordance with the Queensland Government Natural Resources and Mines, *Central West Water Management and Use Regional Guideline: Watercourse Diversions-Central Queensland Mining Industry* (2008) and with consideration of contemporary research, i.e. the ACARP report *Maintenance of Geomorphic Processes in Bowen Basin River diversions* (Project number C8030-C9068).
Open cut voids and slopes (cont.)	Stable landform (cont.)	Very low probability of rock falls with serious environmental consequences.	Geotechnical studies.	Evidence in the Rehabilitation Report that a risk assessment has been done and mitigation measures (if any) have been documented and implemented.
	Sustainable land-use	Soil properties support the desired land-use.	Chemical properties of the soil, including pH, salinity, nutrient content, and exchangeable sodium percentage.	Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following: - soil salinity content is <0.6 dS/m; - soil pH is between 5.5 and 8.5; - soil exchangeable sodium percentage (ESP) is <15%; - nutrient accumulation and recycling processes are occurring as evidenced by the presence of a litter layer, mycorrhizae and/or other microsymbionts; and - adequate macro and micro-nutrients are present.
			Physical properties of topsoil.	Certification in the Rehabilitation Report that the soil physical properties, e.g. rockiness, depth of soil, wetness and plant available water capacity are adequate for plant growth.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
				Certification in the Rehabilitation Report of suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995 *Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining*.
			Topsoil thickness.	Certification in the Rehabilitation Report that topsoil has been respread according to the depths required in the Topsoil Management Plan.
			Site soil characteristics.	Certification in the Rehabilitation Report that the site's soil characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition as defined in the *Australian Soil and Land Survey Field Handbook* (National Committee on Soil and Terrain 2009).
		Establish self-sustaining natural vegetation or habitat.	Presence of key plant species.	Certification by an appropriately qualified person that key plant species identified in the comparable reference site occur on the rehabilitation site. The presence of key plant species may also be guided by future vegetation trials for rehabilitation.
Open cut voids and slopes (cont.)	Sustainable land-use (cont.)	Establish self-sustaining natural vegetation or habitat.	Density of key plant species.	Certification by an appropriately qualified person that the density of key plant species in comparable reference sites is similar to the rehabilitation site. The density of key plant species may also be guided by future vegetation trials for rehabilitation.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Structure of vegetation habitat.	Certification by an appropriately qualified person that the structure of vegetation, i.e. groundcover, shrub and canopy structure is trending towards being similar to comparable reference sites.
			Abundance and diversity of native fauna species.	Certification by an appropriately qualified person that native fauna species identified in pre-mining baseline studies and the five years of reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.
			Abundance and health of desired plant species.	Certification by an appropriately qualified person that plants in rehabilitated areas show evidence of flowering, seed setting and seed germination.
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that the abundance of declared plants (weeds) identified in rehabilitated areas in no greater than comparable reference sites.
				Evidence to demonstrate that action has been taken to eradicate declared plants (weeds) under local or State legislation should they occur on the site.
				Records indicating that appropriate weed and seed hygiene procedures were implemented during rehabilitation.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person that the abundance of declared animals identified in rehabilitated areas is no greater than comparable reference sites.
				Evidence to demonstrate that action has been taken to control declared animals under local or State legislation should they occur on the site.
Open cut voids and slopes (cont.)	Sustainable land-use (cont.)	Agricultural grazing.	Livestock stocking rates.	An appropriately qualified person has predicted and defined the expected stocking rates of the rehabilitated land, and these have been agreed with relevant stakeholders.
			Landform stability when grazed.	Land maintenance requirements are comparable to comparable reference sites.
			Number and volume of water sources suitable for stock.	Stock has adequate access to water that meet accepted livestock drinking water guidelines.
Mining infrastructure area	Long term safety	Rehabilitation or conversion of exploration drill holes and groundwater monitoring bored.	Number of non-artesian exploration drill holes on the mining lease that have been, or have not been, rehabilitated or converted to water bores.	Certification by an appropriately qualified person that all non-artesian exploration drill holes that are not converted to either a water bore or a groundwater monitoring bore have been rehabilitated.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
				Certification by an appropriately qualified person, that all sub-artesian aquifers have been isolated where non-artesian exploration drill holes have intersected more than one sub-artesian water bearing strata, in accordance with *Minimum Construction Requirements for Water Bores in Australia* (Australian Government February 2012) or latest edition
				Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to a water bore have been converted in accordance with the *Minimum Construction Requirements for Water Bores in Australia* (Australian Government February 2012) or latest edition.
				Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to water bores are compliant with the *Water Act 2000* (QLD).
			Number of monitoring bores on the mining lease that have been, or have not been, rehabilitated.	Certification by an appropriately qualified person that all monitoring bores have been rehabilitated in accordance with the *Minimum Construction Requirements for Water Bores in Australia* (Australian Government February 2012) or latest edition.
Mining infrastructure area (cont.)	Long term safety (cont.)	Structurally safe with no hazardous materials.	Safety assessment of landform stability (geotechnical studies).	Certification by an appropriately qualified person in the Rehabilitation Report that slopes are now safe and exhibit characteristics for long term stability.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
				A risk assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards
				Landform design meets the requirements of **Section 4.5 Land and rehabilitation in the Boundary Hill South Environmental Management Plan (December 2016)** and **Figure 2 – Boundary Hill South conceptual final landform.**
		Site is safe for humans and animals now and in the foreseeable future.	The presence on site of infrastructure that requires decommissioning.	Certification by an appropriately qualified person in the site Rehabilitation Report that the infrastructure has been decommissioned and rehabilitated. Buildings, water storage(s), roads (except those used by the public) and other infrastructure have been removed unless stakeholders have entered into formal written agreements for their retention. Access to the area is conducive of the intended purpose of the post-mining land use including pastoral farming.
	No receiving waters are contaminated.	Mine affected water is contained on site.	Downstream surface water quality parameters stated in the project's environmental authority.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Groundwater quality parameters stated in the project's environmental authority.	Certification by an appropriately qualified person that groundwater quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
				Receiving water affected by surface water runoff has contaminant limits in accordance with the environmental authority.
		All permanent stream diversion will meet approved design criteria.	Approved design criteria.	Certification by an appropriately qualified person that all stream diversions have been constructed and are operating in accordance with approved design criteria.
Mining infrastructure area (cont.)	No receiving waters are contaminated. (cont.)	All permanent regulated structures will meet approved design criteria.	Approved design criteria.	The regulated structures are certified by a suitably qualified and experienced person.
		All non-permanent regulated structures decommissioned appropriately.	The number and condition of non-permanent regulated structures	Regulated structures are decommissioned in accordance with the administering authority requirements.
	Containment or removal of any potential sources of contamination.	Hazardous materials are adequately managed, and the environment is not exposed to contamination by heavy metals or other toxic materials.	Encapsulation depth, and containment of potentially contaminating material.	Certification by an appropriately qualified person that the Rehabilitation Report includes predictions about future changes and that the specified cover thickness is in place.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
				Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in the environmental authority.
		The site is free of material other than waste rock that could contaminate the land.	Results of site contaminated land investigation report.	Evidence in the Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.
	The final landform is stable	Landform design achieves appropriate erosion rates.	Slope angle and length.	Evidence in the Rehabilitation Report that the rehabilitated slopes have been designed to the specifications outlined in **Section 4.5 Land and rehabilitation in the Boundary Hill South Environmental Management Plan (December 2016)** and **Figure 2 – Boundary Hill South conceptual final landform.**
			Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and functioning.
			Rates of soil loss.	Certification by an appropriately qualified person that land disturbed by mining activities does not exhibit any signs of continued erosion greater than that exhibited at a comparable reference site. The comparable reference site must have similar chemical and physical characteristics including slope as the rehabilitated landform.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
		Vegetation cover is sufficient to form a self-sustaining community, and minimise erosion.	Vegetation type and density.	Evidence that the vegetation type and density are of species suited to the site's characteristics including soil type, topography and climate and that soil erosion meets the goals set in this plan.
Mining infrastructure area (cont.)	The final landform is stable (cont.)	Vegetation cover is sufficient to form a self-sustaining community, and minimise erosion.	Vegetation type and density.	Vegetation types and densities are comparable with the relevant reference site.
			Foliage cover.	Minimum of 70% groundcover is present (or 50% if rocks, logs or other features are present). No bare surfaces >20m^2 in area or >10m in length down slope.
		The diversions and run-off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Documentation in the Rehabilitation Report will show whether, and if so how, drainage diversions have changed over the life of mine; that they are stable at closure; and are likely to remain stable into the foreseeable future.
				Demonstration that drainage diversions have been designed and constructed in accordance with the Queensland Government Natural Resources and Mines, *Central West Water Management and Use Regional Guideline: Watercourse Diversions-Central Queensland Mining Industry* (2008) and with consideration of contemporary research, i.e. the ACARP report *Maintenance of Geomorphic Processes in Bowen Basin River diversions* (Project number C8030-C9068).

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
		Very low probability of rock falls with serious environmental consequences.	Geotechnical studies.	Evidence in the Rehabilitation Report that appropriate geotechnical risk assessment has been done and control measures put in place.
			The number of rock falls during the life of the mine.	Evidence in the Rehabilitation Report that the number of rock falls has been acceptably low, and that appropriate control measures are in place to prevent rock falls with serious environmental consequences in the future.
Mining infrastructure area (cont.)	Sustainable land-use	Soil properties support the desired land-use.	Chemical properties of the soil, including pH, salinity, nutrient content, exchangeable sodium percentage.	Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following: - soil salinity content is <0.6dS/m; - soil pH is between 5.5 and 8.5; - soil exchangeable sodium percentage (ESP) is <15%; - nutrient accumulation and recycling processes are occurring as evidenced by the presence of a litter layer, mycorrhizae and/or other microsymbionts; and - adequate macro- and micro-nutrients are present.
			Physical properties of topsoil.	Certification in the Rehabilitation Report that the soil physical properties, e.g. rockiness, depth of soil, wetness and plant available water capacity are adequate for plant growth.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
				Certification in the Rehabilitation Report of suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995 *Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining*.
			Topsoil thickness.	Certification in the Rehabilitation Report that topsoil has been respread according to the depths required in the Topsoil Management Plan.
			Site soil characteristics.	Certification in the Rehabilitation Report that the site's soil characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition as defined in the *Australian Soil and Land Survey Field Handbook* (National Committee on Soil and Terrain 2009).
		Establish self-sustaining natural vegetation or habitat.	Presence of key plant species.	Certification by an appropriately qualified person that key plant species identified in the comparable reference site occur on the rehabilitation site. The presence of key plant species may also be guided by future vegetation trials for rehabilitation.
Mining infrastructure area (cont.)	Sustainable land-use (cont.)	Establish self-sustaining natural vegetation or habitat.	Density of key plant species.	Certification by an appropriately qualified person that the density of key plant species in comparable reference sites is similar to the rehabilitation site. The density of key plant species may also be guided by future vegetation trials for rehabilitation.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Structure of vegetation habitat.	Certification by an appropriately qualified person that the structure of vegetation, i.e. groundcover, shrub and canopy structure is trending towards being similar to comparable reference sites.
		Self-sustaining natural vegetation or habitat.	Abundance and diversity of native fauna species.	Certification by an appropriately qualified person that native fauna species identified in pre-mining baseline studies and the five years of reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.
			Abundance and health of desired plant species.	Certification by an appropriately qualified person that plants in rehabilitated areas show evidence of flowering, seed setting and seed germination.
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that the abundance of declared plants (weeds) identified in rehabilitated areas in no greater than comparable reference sites.
				Evidence to demonstrate that action has been taken to eradicate declared plants (weeds) under local or State legislation should they occur on the site.
				Records indicating that appropriate weed and seed hygiene procedures were implemented during rehabilitation.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person that the abundance of declared animals identified in rehabilitated areas in no greater than comparable reference sites.
				Evidence to demonstrate that action has been taken to control declared animals under local or State legislation should they occur on the site.
Mining infrastructure area (cont.)	Sustainable land-use (cont.)	Agricultural grazing.	Livestock stocking rates.	An appropriately qualified person has predicted and defined the expected stocking rates of the rehabilitated land, and these have been agreed with relevant stakeholders.
			Landform stability when grazed.	Land maintenance requirements are comparable to comparable reference sites.
			Number and volume of water sources suitable for stock.	Stock has adequate access to water that meet accepted livestock drinking water guidelines.
Out-of-pit spoil dump areas	Long term safety	The site is structurally safe, and the environment is not exposed to contamination by heavy metals and other toxic materials.	Safety assessment of landform stability (geotechnical studies).	Certification by an appropriately qualified person in the Rehabilitation Report that slopes are now safe and exhibit characteristics for long term stability.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
				A risk assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards
				Landform design meets the requirements of **Section 4.5 Land and rehabilitation in the Boundary Hill South Environmental Management Plan (December 2016)** and **Figure 2 – Boundary Hill South conceptual final landform**.
			Encapsulation depth and containment of potentially contaminating material.	Certification by an appropriately qualified person that the Rehabilitation Report includes predictions about future changes and that the specified cover thickness is in place.
				Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in the environmental authority.
			Results of site contaminated land investigation report.	Evidence in the Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.
			Evidence of stream bank erosion.	Evidence in the Rehabilitation Report that creek diversions are stable at closure and exhibit characteristics for long term stability.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
		Site is safe for humans and animals now and in the foreseeable future.	Safety assessment of landform stability (geotechnical studies).	An appropriately qualified person certifies the long-term geotechnical stability of the residual slopes and faces and evidence of this is documented in the Rehabilitation Report.
Out-of-pit spoil dump areas (cont.)	Long term safety (cont.)	Site is safe for humans and animals now and in the foreseeable future.	Adequacy and predicted long-term performance of safety barriers.	Evidence in the Rehabilitation Report that a safety risk assessment of the slopes has been completed and proposed mitigation measures are documented in a Safety Plan.
			Installation of safety barriers and human/wildlife exclusion fencing.	If required, mitigation measures documented in a Safety Plan, e.g. fencing or other suitable barrier around the slopes are installed to restrict access.
	No receiving waters are contaminated.	Mine affected water contained on site.	Downstream surface water quality parameters stated in the project's environmental authority.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
			Groundwater quality parameters stated in the project's environmental authority.	Certification by an appropriately qualified person that groundwater quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Final landform water storages are contained on-site, with no overflows into external surface water systems.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
				Receiving water affected by surface water runoff has contaminant limits in accordance with the environmental authority.
		All permanent regulated structures will meet approved design criteria.	Approved design criteria.	The regulated structures are certified by a suitably qualified and experienced person.
		All non-permanent regulated structures decommissioned appropriately.	The number and condition of non-permanent regulated structures.	All regulated structures are decommissioned in accordance with the administering authority requirements.
Out-of-pit spoil dump areas (cont.)	No receiving waters are contaminated.	Acid mine drainage will not cause serious environmental harm.	Encapsulation depth and containment of potentially contaminating material.	Certification by suitably qualified person in the Rehabilitation Report that the emplacement cells for any potentially acid forming material have been constructed in accordance with recommendations in the Acid Mine Drainage Assessment report.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
	Stable landform	Landform design achieves appropriate erosion rates.	Slope angle and length.	Evidence in the Rehabilitation Report that the rehabilitated slopes have been designed to the specifications outlined in **Section 4.5 Land and rehabilitation in the Boundary Hill South Environmental Management Plan (December 2016)** and **Figure 2 – Boundary Hill South conceptual final landform.**
			Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and functioning as intended.
			Rates of soil loss.	Certification by an appropriately qualified person that land disturbed by mining activities does not exhibit any signs of continued erosion greater than that exhibited at a comparable reference site. The comparable reference site must have similar chemical and physical characteristics including slope as the rehabilitated landform.
			Dimensions and frequency of occurrence of erosion of rills and gullies.	Evidence in the Rehabilitation Report that the dimensions and frequency of occurrence of erosion rills and gullies are no greater than that in comparable reference site(s).

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
		Vegetation cover sufficient for a self-sustaining community and to minimise erosion.	Abundance and diversity of native fauna species.	Certification by an appropriately qualified person that native fauna species identified in pre-mining baseline studies and the five years of reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.
			Vegetation type and density.	Evidence that the vegetation type and density are of species suited to the site's characteristics including soil type, topography and climate and that soil erosion meets the goals set in this plan.
				Vegetation types and densities are comparable with the relevant reference site.
Out-of-pit spoil dump areas (cont.)	Stable landform (cont.)	The diversions and run-off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Documentation in the Rehabilitation Report how drainage diversions have changed over the life of mine and that they are stable at closure and are likely to remain that way into the foreseeable future.
				To be designed and constructed in accordance with the Queensland Government Natural Resources and Mines, *Central West Water Management and Use Regional Guideline: Watercourse Diversions-Central Queensland Mining Industry* (2008) and with consideration of contemporary research, i.e. the ACARP report *Maintenance of Geomorphic Processes in Bowen Basin River diversions* (Project number C8030-C9068).

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
	Sustainable land-use	Soil properties support the desired land-use.	Chemical properties of the soil, including pH, salinity, nutrient content and exchangeable sodium percentage.	Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following: - soil salinity content is <0.6dS/m; - soil pH is between 5.5 and 8.5; - soil exchangeable sodium percentage (ESP) is <15%; - nutrient accumulation and recycling processes are occurring as evidenced by the presence of a litter layer, mycorrhizae and/or other microsymbionts; and - adequate macro and micro-nutrients are present.
			Physical properties of topsoil.	Certification in the Rehabilitation Report that the soil physical properties, e.g. rockiness, depth of soil, wetness and plant available water capacity are adequate for plant growth.
				Certification in the Rehabilitation Report of suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995 *Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining*.
			Topsoil thickness.	Certification in the Rehabilitation Report that topsoil has been respread according to the depths required in the Topsoil Management Plan.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
Out-of-pit spoil dump areas (cont.)	Sustainable land-use (cont.)	Soil properties support the desired land-use.	Site soil characteristics.	Certification in the Rehabilitation Report that the site's soil characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition as defined in the *Australian Soil and Land Survey Field Handbook* (National Committee on Soil and Terrain 2009).
		Establish self-sustaining natural vegetation or habitat.	Presence of key plant species.	Certification by an appropriately qualified person that key plant species identified in the comparable reference site occur on the rehabilitation site. The presence of key plant species may also be guided by future vegetation trials for rehabilitation.
			Density of key plant species.	Certification by an appropriately qualified person that the density of key plant species in comparable reference sites is similar to the rehabilitation site. The density of key plant species may also be guided by future vegetation trials for rehabilitation.
			Structure of vegetation habitat.	Certification by an appropriately qualified person that the structure of vegetation, i.e. groundcover, shrub and canopy structure is trending towards being similar to comparable reference sites.
		Self-sustaining natural vegetation or habitat.	Abundance and diversity of native fauna species.	Certification by an appropriately qualified person that native fauna species identified in pre-mining baseline studies and the five years of reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Abundance and health of desired plant species.	Certification by an appropriately qualified person that plants in rehabilitated areas show evidence of flowering, seed setting and seed germination.
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that the abundance of declared plants (weeds) identified in rehabilitated areas in no greater than comparable reference sites.
				Evidence to demonstrate that action has been taken to eradicate declared plants (weeds) under local or State legislation should they occur on the site.
Out-of-pit spoil dump areas (cont.)	Sustainable land-use (cont.)	Self-sustaining natural vegetation or habitat.	Abundance of declared plants (weeds) identified through surveys.	Records indicating that appropriate weed and seed hygiene procedures were implemented during rehabilitation.
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person that the abundance of declared animals identified in rehabilitated areas is no greater than comparable reference sites.
				Evidence to demonstrate that action has been taken to control declared animals under local or State legislation should they occur on the site.
		Agricultural grazing.	Livestock stocking rates.	An appropriately qualified person has predicted and defined the expected stocking rates of the rehabilitated land, and these have been agreed with relevant stakeholders.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Landform stability when grazed.	Land maintenance requirements are comparable to comparable reference sites.
			Number and volume of water sources suitable for stock.	Stock has adequate access to water that meet accepted livestock drinking water guidelines.
Water storage areas	Long term safety	Structurally safe with no hazardous materials.	Safety assessment of landform stability (geotechnical studies).	Certification by an appropriately qualified person in the Rehabilitation Report that slopes are now safe and exhibit characteristics for long term stability.
				A risk assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.
				Landform design meets the requirements of **Section 4.5 Land and rehabilitation in the Boundary Hill South Environmental Management Plan (December 2016)** and **Figure 2 – Boundary Hill South conceptual final landform.**
		Site is safe for humans and animals now and in the foreseeable future.	The presence on site of regulated dams that need decommissioning.	Certification by a suitably qualified and experienced person in the site Rehabilitation Report that regulated dams and structures have been decommissioned and rehabilitated.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
Water storage areas (cont.)	No receiving waters are contaminated.	Mine affected water is contained on site.	Downstream surface water quality parameters stated in the project's environmental authority.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
			Groundwater quality parameters stated in the project's environmental authority.	Certification by an appropriately qualified person that groundwater quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
				Receiving water affected by surface water runoff has contaminant limits in accordance with the environmental authority.
		All permanent stream diversion will meet approved design criteria.	Approved design criteria.	Certification by an appropriately qualified person that all stream diversions have been constructed and are operating in accordance with approved design criteria.
		All permanent regulated structures will meet approved design criteria.	Approved design criteria.	The regulated structures are certified by a suitably qualified and experienced person.
		All non-permanent regulated structures decommissioned appropriately.	The number and condition of non-permanent regulated structures.	Regulated structures are decommissioned in accordance with the administering authority requirements.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Voids protected from flooding.	Certification by a suitably qualified and experienced person in the Rehabilitation Report that the voids have an adequate protection system to prevent inundation from a 1: 1,000 year annual exceedance probability flood event.
		Hazardous materials are adequately managed, and the environment is not exposed to contamination by heavy metals or other toxic material.	Encapsulation depth and containment of potentially contaminating material.	Certification by an appropriately qualified person that the Rehabilitation Report includes predictions about future changes and that the specified cover thickness is in place.
				Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in the environmental authority.
Water storage areas (cont.)	No receiving waters are contaminated.	The site is free of material other than waste rock that could contaminate the land.	Results of site contaminated land investigation report.	Evidence in the Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.
		Diversion design and maintenance.	The administering authority of the water licence under the *Water Act 2000* (QLD) has determined that the water licence is no longer required.	Confirmation in writing from the administering authority that the water licence under the *Water Act 2000* (QLD) is no longer required.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
		Landform design achieves appropriate erosion rates.	Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and functioning.
			Rates of soil loss.	Certification by an appropriately qualified person that land disturbed by mining activities does not exhibit any signs of continued erosion greater than that exhibited at a comparable reference site. The comparable reference site must have similar chemical and physical characteristics including slope as the rehabilitated landform.
			Dimensions and frequency of occurrence of erosion of rills and gullies.	Evidence in the Rehabilitation Report that the dimensions and frequency of occurrence of erosion rills and gullies are no greater than that in comparable reference site(s).
		Vegetation cover sufficient for a self-sustaining community and to minimise erosion.	Vegetation type and density.	Evidence that the vegetation type and density are of species suited to the site's characteristics including soil type, topography and climate and that soil erosion meets the goals set in this plan.
				Vegetation types and densities are comparable with the relevant reference site.
			Foliage cover.	Minimum of 70% groundcover is present (or 50% if rocks, logs or other features are present). No bare surfaces >20 m2 in area or > 10 m in length down slope.

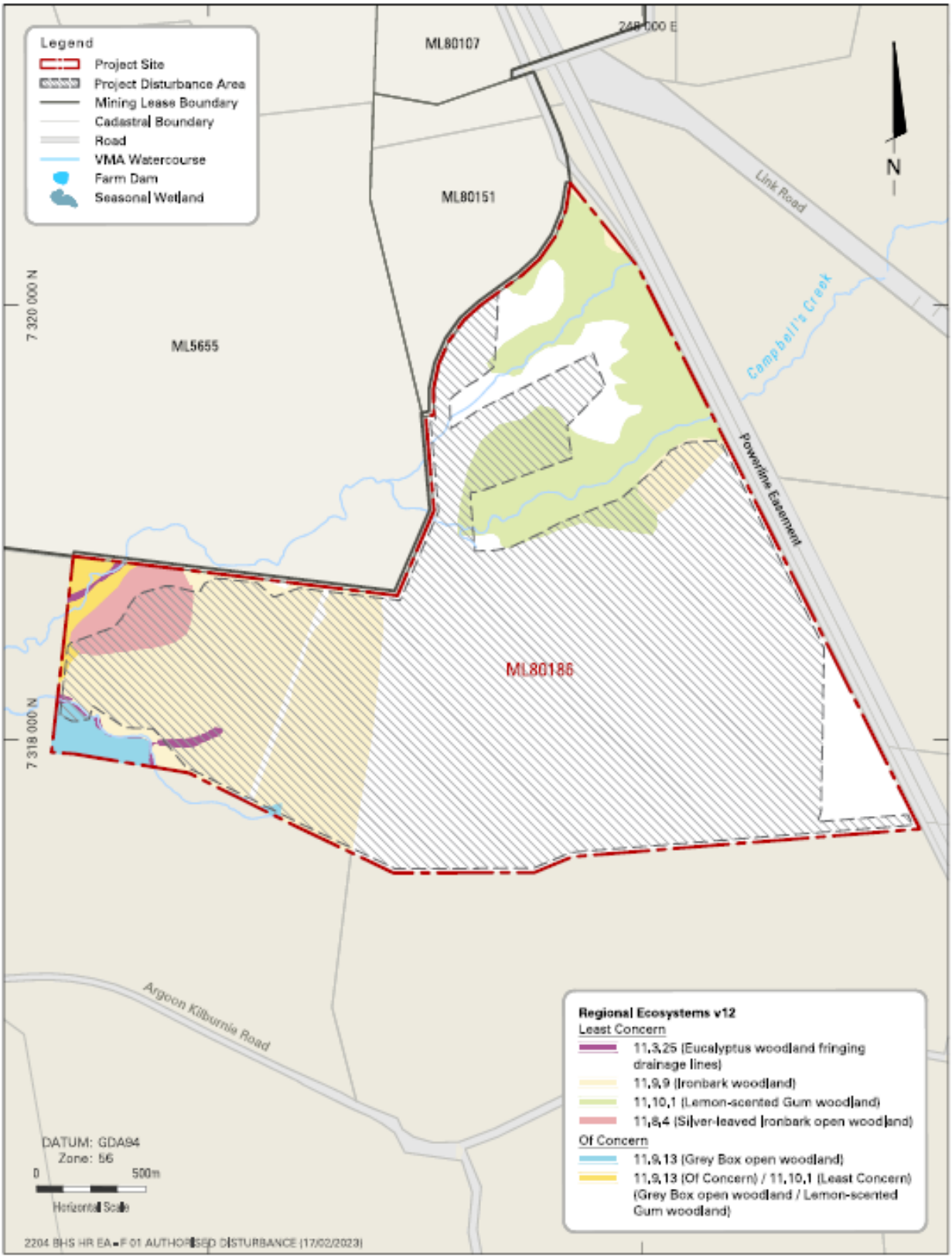
Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
		The diversions and run-off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Documentation in the Rehabilitation Report will show whether, and if so how, drainage diversions have changed over the life of mine; that they are stable at closure; and are likely to remain stable into the foreseeable future.
Water storage areas (cont.)	The final landform is stable.	The diversions and run-off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Demonstration that drainage diversions have been designed and constructed in accordance with the Queensland Government Natural Resources and Mines, *Central West Water Management and Use Regional Guideline: Watercourse Diversions-Central Queensland Mining Industry* (2008) and with consideration of contemporary research, i.e. the ACARP report *Maintenance of Geomorphic Processes in Bowen Basin River diversions* (Project number C8030-C9068).
	Sustainable land-use	Soil properties support the desired land-use.	Chemical properties, e.g. pH, salinity, nutrient content, sodium content of topsoil to support the proposed vegetation and land-use.	Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following: - soil salinity content is <0.6dS/m; - soil pH is between 5.5 and 8.5; soil exchangeable sodium percentage (ESP) is <15%; - nutrient accumulation and recycling processes are occurring as evidenced by the presence of a litter layer, mycorrhizae and/or other microsymbionts; and - adequate macro and micro-nutrients are present.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Physical properties of topsoil.	Certification in the Rehabilitation Report that the soil physical properties, e.g. rockiness, depth of soil, wetness and plant available water capacity are adequate for plant growth.
				Certification in the Rehabilitation Report of suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995 *Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining*.
			Topsoil thickness.	Certification in the Rehabilitation Report that topsoil has been respread according to the depths required in the Topsoil Management Plan.
Water storage areas (cont.)	Sustainable land-use (cont.)	Soil properties support the desired land-use.	Site soil characteristics.	Certification in the Rehabilitation Report that the site's soil characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition as defined in the *Australian Soil and Land Survey Field Handbook* (National Committee on Soil and Terrain 2009).
		Establish self-sustaining natural vegetation or habitat.	Presence of key plant species.	Certification by an appropriately qualified person that key plant species identified in the comparable reference site occur on the rehabilitation site. The presence of key plant species may also be guided by future vegetation trials for rehabilitation.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
			Density of key plant species.	Certification by an appropriately qualified person that the density of key plant species in comparable reference sites is similar to the rehabilitation site. The density of key plant species may also be guided by future vegetation trials for rehabilitation.
			Structure of vegetation habitat.	Certification by an appropriately qualified person that the structure of vegetation, i.e. groundcover, shrub and canopy structure is trending towards being similar to comparable reference sites.
		Self-sustaining natural vegetation or habitat.	Abundance and health of desired plant species.	Certification by an appropriately qualified person that plants in rehabilitated areas show evidence of flowering, seed setting and seed germination.
			Abundance and diversity of native fauna species.	Certification by an appropriately qualified person that native fauna species identified in pre-mining baseline studies and the five years of reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that the abundance of declared plants (weeds) identified in rehabilitated areas in no greater than comparable reference sites.
				Evidence to demonstrate that action has been taken to eradicate declared plants (weeds) under local or State legislation should they occur on the site.

Domain	Rehabilitation goals	Rehabilitation objectives	Indicators	Completion criteria
Water storage areas (cont.)	Sustainable land-use (cont.)	Self-sustaining natural vegetation or habitat.	Abundance of declared plants (weeds) identified through surveys.	Records indicating that appropriate weed and seed hygiene procedures were implemented during rehabilitation.
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person that the abundance of declared animals identified in rehabilitated areas is not greater than comparable reference sites.
				Evidence to demonstrate that action has been taken to control declared animals under local or State legislation should they occur on the site.
		Agricultural grazing.	Landform stability when grazed.	Land maintenance requirements are comparable to comparable reference sites.
			Stock access to water sources.	Stock has adequate access to water that meets accepted livestock drinking water guidelines.

Appendix 2 - Figures



CALLIDE MINE

Boundary Hill South
Authorised Disturbance Footprint

FIGURE 1

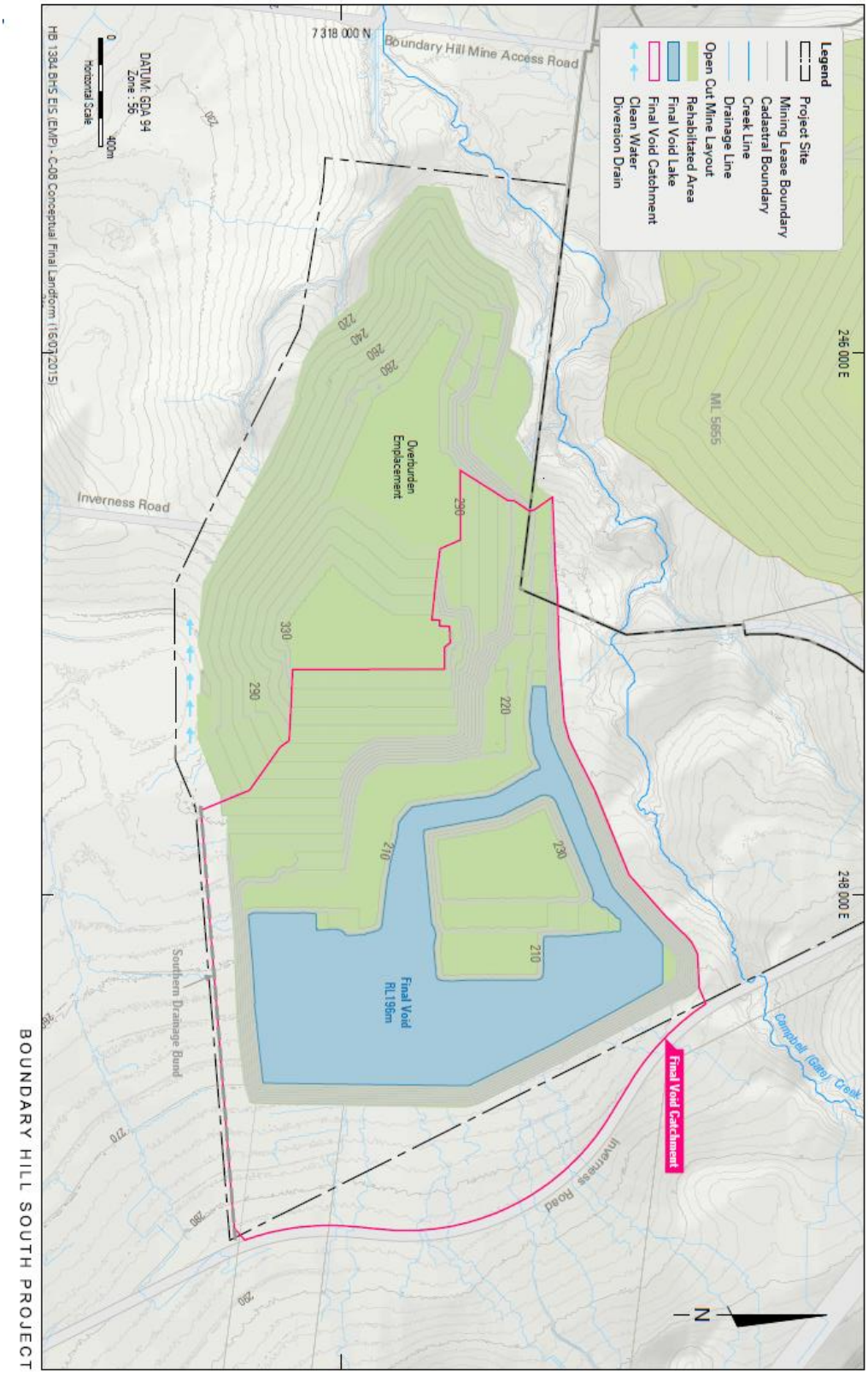
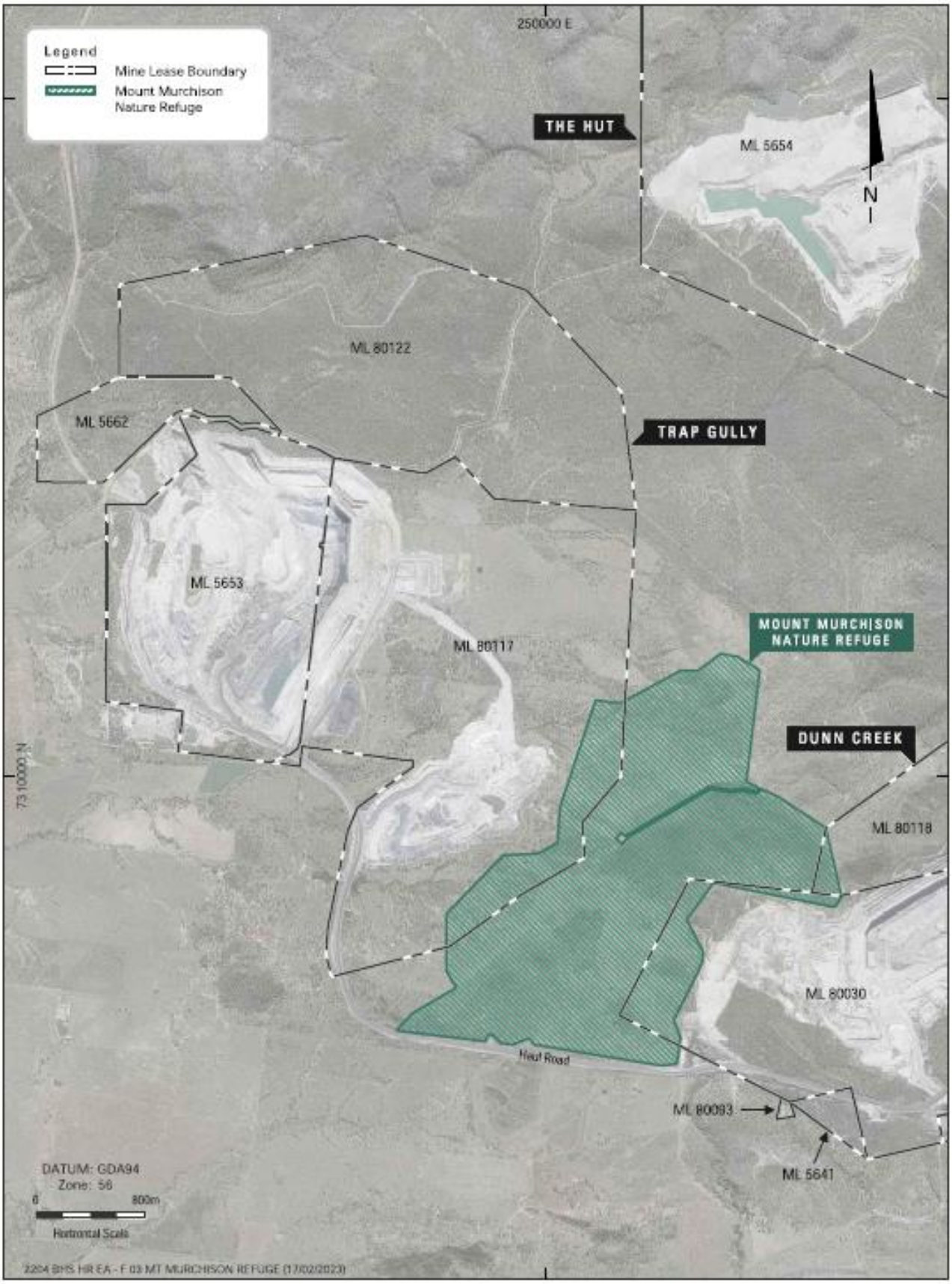


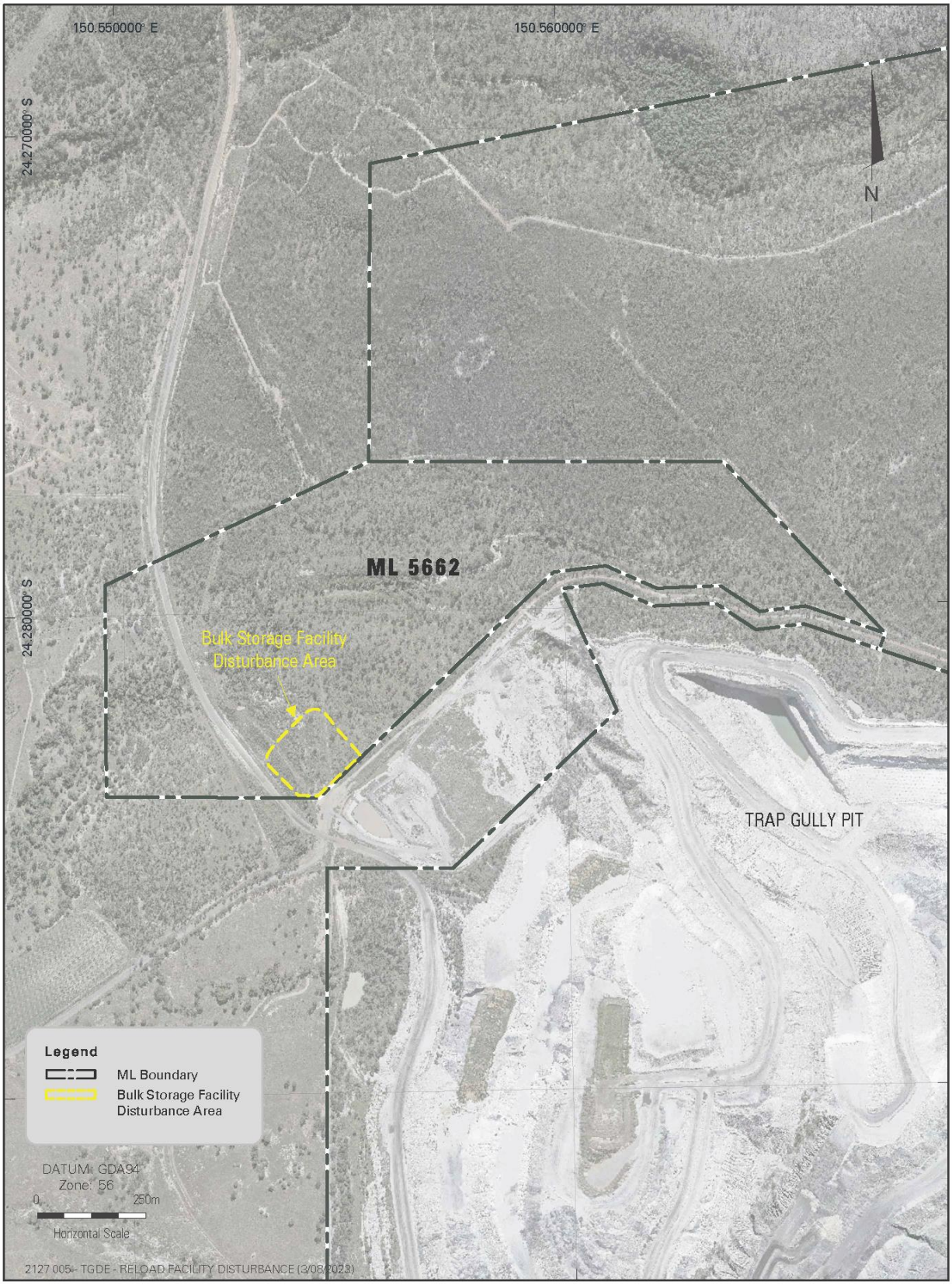
Figure 2 – Boundary Hill South conceptual final landform



CALLIDE MINE

Mount Murchison Nature Refuge

FIGURE 3



TRAP GULLY BULK STORAGE FACILITY

Bulk Storage Facility Disturbance Area

150° 33' 0" E
HANSEN ENVIRONMENTAL CONSULTING

FIGURE 4

END OF ENVIRONMENTAL AUTHORITY