

Environmental authority EPML00853413 Goonyella Riverside and Broadmeadow

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

Permit¹ number: EPML00853413

Environmental authority takes effect on 10 August 2015.

The anniversary date of this environmental authority is 15th September. An annual return and the payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

Name	Registered address
BHP Coal Pty Ltd	Waterfront Place Level 20 1 Eagle Street BRISBANE CITY QLD 4000
Umal Consolidated Pty Ltd	'Water Place' Level 20 1 Eagle Street BRISBANE CITY QLD 4000
BHP Queensland Coal Investments Pty Ltd	'Water Place', Level 20 1 Eagle Street BRISBANE CITY QLD 4000
Mitsubishi Development Pty Ltd	Level 36 50 Bridge Street SYDNEY NSW 2000
QCT Investment Pty Ltd	C/-BHP Coal Pty Ltd GPO Box 1389 BRISBANE QLD 4001
QCT Mining Pty Ltd	C/- BHP Coal Pty Ltd GPO Box 1389 BRISBANE QLD 4001
QCT Resources Pty Limited	Level 23, Riparian Plaza 71 Eagle Street BRISBANE QLD 4001

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
<i>Schedule 2A</i> Mining - ML black coal - 13, Site Specific	ML1763; ML1764; ML1802; ML1900; ML70038; ML70121; ML70193; ML70194; ML70287; ML70288; ML70289; ML70468; ML70493; ML70494 ML70469; ML70478; ML70479; ML700003
<i>Schedule 2</i> 8 Chemical Storage 31 Mineral Processing 56 Regulated Waste Storage 63 Sewage Treatment	

Additional information for applicants**Environmentally relevant activities**

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

An environmental authority authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the authority 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 if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being, contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.

Signature

Christopher Loveday
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

10 August 2015

Date

Enquiries:
Business Centre (Coal)
Department of Environment and Heritage
Protection
PO Box 3028
EMERALD QLD 4720
Phone: (07) 4987 9320
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Obligations under the *Environmental Protection Act 1994*

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

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

Conditions of environmental authority

Agency Interest: General	
Condition number	Condition
A1	<p>Financial assurance</p> <p>Provide financial assurance in the amount and form required by the administering authority prior to the commencement of activities proposed under this environmental authority.</p> <p><i>Note: The calculation of financial assurance for condition A1 must be in accordance with DERM Guideline – Financial Assurance for Mining Activities (or its successor), and may include a performance discount. The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas, which may vary on an annual basis due to progressive rehabilitation. The amount required for the financial assurance must be the highest total rehabilitation cost calculated for any year of the Plan of Operations and calculated using the formula: (Financial Assurance = Highest total annual rehabilitation cost x Percentage required).</i></p>
A2	<p>The financial assurance is to remain in force until the administering authority is satisfied that no claim on the assurance is likely.</p> <p><i>Note: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.</i></p>

A3	<p>Prevent and / or minimise likelihood of environmental harm</p> <p>In carrying out the environmentally relevant activities, you must take all reasonable and practicable measures to prevent and / or to minimise the likelihood of environmental harm being caused. Any environmentally relevant activity, that, if carried out incompetently, or negligently, may cause environmental harm, in a manner that could have been prevented, shall be carried out in a proper manner in accordance with the conditions of this authority.</p> <p><i>Note: This authority authorises the environmentally relevant activity. It does not authorise environmental harm unless a condition contained within this authority explicitly authorises that harm. Where there is no condition or the authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.</i></p>
A4	<p>Maintenance of measures, plant and equipment</p> <p>The environmental authority holder must ensure:</p> <ul style="list-style-type: none"> a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; b) that such measures, plant and equipment are maintained in a proper condition; and c) that such measures, plant and equipment are operated in a proper manner.
A5	<p>Monitoring and records</p> <p>Record, compile and keep for a minimum of five (5) years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.</p>
A6	<p>Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.</p>
A7	<p>Notification of emergencies, incidents and exceptions</p> <p>As soon as practicable 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, the administering authority must be notified of the release by telephone, email or facsimile.</p>
A8	<p>The notification of emergencies or incidents as required by condition A7 must include but not be limited to the following:</p> <ul style="list-style-type: none"> a) the holder of the environmental authority; b) the location of the emergency or incident; c) the number of the environmental authority; d) the name and telephone number of the designated contact person; e) the time of the release; f) the time the holder of the environmental authority became aware of the release; g) the suspected cause of the release; h) the environmental harm caused, threatened, or suspected to be caused by the release; and i) actions taken to prevent any further release and mitigate any environmental harm caused by

	the release.
A9	Not more than fourteen (14) days following the initial notification of an emergency or incident, written advice must be provided of the information supplied in accordance with condition number A7 in relation to: a) proposed actions to prevent a recurrence of the emergency or incident; and b) outcomes of actions taken at the time to prevent or minimise environmental harm.
A10	As soon as practicable, but not more than six (6) weeks following the conduct of any environmental monitoring performed in relation to the 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, written advice must be provided of the results of any such monitoring performed to the administering authority.
A11	No mining to be undertaken on ML70478 and ML70479.
Agency Interest: Air	
Condition number	Condition
B1	Dust nuisance The release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance, at any nuisance sensitive or commercial place.

B2	<p>When requested by the administering authority or as a result of a complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer), dust and particulate monitoring must be undertaken, and the results thereof notified to the administering authority within fourteen (14) days following completion of monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place. Dust and particulate matter must not exceed the following levels when measured at any nuisance sensitive or commercial place:</p> <ul style="list-style-type: none"> a) Dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with AS 3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulates - Deposited matter - Gravimetric method of 1991; and b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM10) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time, at a sensitive or commercial place downwind of the operational land, when monitored in accordance with: <ul style="list-style-type: none"> i. particulate matter - Determination of suspended particulate PM10 high-volume sampler with size-selective inlet - Gravimetric method, when monitored in accordance with AS 3580.9.6 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM (sub) 10 high volume sampler with size-selective inlet - Gravimetric method of 1990; and ii. any alternative method of sampling PM10, which may be permitted by the current edition of the <i>Air Quality Sampling Manual</i> as published by the administering authority.
B3	<p>If monitoring indicates exceedence of the relevant limits in condition B2, then the environmental authority holder must:</p> <ul style="list-style-type: none"> a) address the complaint including the use of appropriate dispute resolution if required; and b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.
B4	<p>Odour nuisance</p> <p>The release of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not cause an environmental nuisance at any nuisance sensitive or commercial place.</p>
B5	<p>When requested by the administering authority, odour monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.</p>
B6	<p>If the administering authority determines the odour released to constitute an environmental nuisance, then the environmental authority holder must:</p> <ul style="list-style-type: none"> a) address the complaint including the use of appropriate dispute resolution if required; and b) immediately implement odour abatement measures so that emissions of odour from the activity do not result in further environmental nuisance.

Agency Interest: Water	
Condition number	Condition
C1	<p>Contaminant Release</p> <p>Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.</p>
C2	<p>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) and depicted in Figure 1 attached to this environmental authority.</p>
C3	<p>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 conditions C30 to C32 inclusive is permitted.</p>

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

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Mine Affected Water Source and Location	Monitoring Point	Receiving Waters Description
Discharge Point 1	602659	7588935	GS4a Dam (Eureka Creek)	Upstream of spillway (MP1)	Isaac River

C4	<p>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) when measured at the monitoring points specified in Table C1 (Mine affected water release points, sources and receiving waters) for each quality characteristic.</p>
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Table C2 (Mine affected water release limits)

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity ($\mu\text{S}/\text{cm}$)	10,000 $\mu\text{S}/\text{cm}$	Real time telemetry for EC and pH with grab samples at commencement and weekly thereafter when safe to do so and access permits
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily grab samples if telemetry not available (the first sample must be taken as soon as practicable)^
Sulphate (SO_4^{2-}) (mg/L)	N/A (correlated with EC)	Commencement of release and weekly thereafter during release when safe to do so and access permits

^Generally during daylight hours.

C5	<p>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 characteristics and at the frequency specified in Table C2 (Mine affected water release limits) and Table C3 (Release contaminant trigger investigation levels).</p> <p><i>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.</i></p>
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Table C3 (Release contaminant trigger investigation levels)

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	1530	<i>Based on 80th percentile of 4 background sites and comparison with upstream values.</i>	Commencement of release and weekly thereafter during release, when safe to do so and access permits.
Chromium	3	<i>Based on 80th percentile of 4 background sites and comparison with upstream values.</i>	
Copper	3	<i>Based on 80th percentile of 4 background sites and comparison with upstream values.</i>	
Iron	970	<i>Based on 80th percentile of 4 background sites and comparison with upstream values.</i>	
Nickel	11	<i>For aquatic ecosystem protection, based on SMD guideline.</i>	
Zinc	8	<i>For aquatic ecosystem protection, based on SMD guideline.</i>	
Molybdenum	34	<i>For aquatic ecosystem protection, based on low reliability guideline.</i>	
Selenium	10	<i>For aquatic ecosystem protection, based on LOR for ICPMS.</i>	
Uranium	1	<i>For aquatic ecosystem protection, based on LOR for ICPMS.</i>	
Vanadium	10	<i>For aquatic ecosystem protection, based on LOR for ICPMS.</i>	
Nitrate	1100	<i>For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN.</i>	
Petroleum hydrocarbons (C6-C9)	50	<i>Based on LOR for P&T/GC/FID/MSD.</i>	
Petroleum hydrocarbons (C10-C36)	200	<i>Based on LOR for C15-C28 fraction using GC/FID.</i>	
Total Nitrogen	500	<i>For aquatic ecosystem protection, based on Isaac River Sub-basin Environmental Values and Water Quality Objectives (September 2011)</i>	
Total Phosphorus	50	<i>For aquatic ecosystem protection, based on Isaac River Sub-basin Environmental Values and Water Quality Objectives (September 2011)</i>	

Note: 1. All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metals/metalloids apply if dissolved results exceed trigger.
 2. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC & ARMCANZ (2000).
 3. LOR – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.

C6	<p>If quality characteristics of the release exceed any of the trigger levels specified in Table C3 (Release contaminant trigger investigation levels) during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in Table C3 (Release contaminant trigger investigation levels). and:</p> <ol style="list-style-type: none"> 1. where the trigger values are not exceeded then no action is to be taken; or 2. where the downstream results exceed the trigger values specified Table C3 (Release contaminant trigger investigation levels) for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and: <ol style="list-style-type: none"> a) if the result is less than the background monitoring site data, then no action is to be taken; or b) if the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining: <ol style="list-style-type: none"> i. details of the investigations carried out; and ii. actions taken to prevent environmental harm. <p>Note: <i>Where an exceedance of a trigger level has occurred and is being investigated, in accordance with C6 2(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.</i></p>
C7	<p>If an exceedance in accordance with condition C6 2(b) is identified, the holder of the authority must notify the administering authority within fourteen (14) days of receiving the result.</p>
C8	<p>Mine Affected Water Release Events</p> <p>The holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in Table C4 (Mine affected water release during flow events).</p>
C9	<p>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 C4 (Mine affected water release during flow events) for the release point(s) specified in Table C1 (Mine affected water release points, sources and receiving waters).</p>
C10	<p>Notwithstanding condition C9, releases from Discharge Point 1 may occur during periods of no flow in the Isaac River, provided:</p> <ol style="list-style-type: none"> a) a surface flow has been recorded in Eureka Creek at Monitoring Point 2 within the 24 hour period prior to release; and b) the release serves only to allow for the total volume of inflow into GS4a Dam resulting from natural flows in Eureka Creek to be conveyed through GS4a Dam into the Isaac River during periods of no flow in the Isaac River.

Table C4 (Mine affected water release during flow events)

Receiving water description	Release Point	Gauging station description	Easting (GDA94)	Northing (GDA94)	Minimum Flow in Receiving Water for Release Event	Flow recording Frequency
Isaac River	Discharge Point 1	Upper Isaac River	605135.6	7596130.9	> or = 3m ³ /s	Daily

C11	<p>The 80th percentile of electrical conductivity (EC) values recorded at the downstream monitoring points listed in Table C6 (Receiving water upstream background sites, release point monitoring and down stream monitoring points) must not exceed 2000uS/cm at any time during the release influence period. The 80th percentile must be calculated using all EC values recorded by the monitoring station during the release influence period.</p> <p><i>Note: The release influence period is the period during which the downstream monitoring points are influenced by mine affected water released from Goonyella Riverside and Broadmeadow Mines and includes both the duration of release and any lag time between release point/s and downstream monitoring points.</i></p>
C12	<p>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).</p>
C13	<p>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.</p>
C14	<p>Notification of Release Event</p> <p>The environmental authority holder must notify the administering authority as soon as practicable and no later than 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:</p> <ol style="list-style-type: none"> a) release commencement date/time; b) expected release cessation date/time; c) release point/s; d) release volume (estimated); e) receiving water/s including the natural flow rate; and f) any details (including available data) regarding likely impacts on the receiving water(s). <p><i>Note: Notification to the administering authority must be addressed to the Manager and Project Manager of the local Administering Authority via email (Manager.MiningCWR@ehp.qld.gov.au) or facsimile.</i></p>

C15	<p>The environmental authority holder must notify the administering authority as soon as practicable (nominally within twenty-four (24) hours after cessation of a release event) of the cessation of a release notified under Condition C14 and within twenty-eight (28) days provide the following information in writing:</p> <ul style="list-style-type: none"> a) release cessation date/time; b) natural flow volume in receiving water; c) volume of water released; d) details regarding the compliance of the release with the conditions of Agency Interest: Water of this environmental authority (i.e. contamination limits, natural flow, discharge volume); e) all in-situ water quality monitoring results; and f) any other matters pertinent to the water release event. <p><i>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 and C15, provided the relevant details of the release are included within the notification provided in accordance with conditions C14 and C15.</i></p>
C16	<p>Notification of Release Event Exceedance</p> <p>If the release limits defined in Table C2 (Mine affected water release limits) are exceeded, the holder of the environmental authority must notify the administering authority within twenty-four (24) hours of receiving the results.</p>
C17	<p>The authority holder must, within twenty-eight (28) days of a release that exceeds the conditions of this authority, provide a report to the administering authority detailing:</p> <ul style="list-style-type: none"> a) the reason for the release; b) the location of the release; c) all water quality monitoring results; d) any general observations; e) all calculations; and f) any other matters pertinent to the water release event.
C18	<p>Receiving Environment Monitoring and Contaminant Trigger Levels</p> <p>The quality of the receiving waters must be monitored at the locations specified in Table C6 (Receiving water upstream background sites, release point monitoring and down stream monitoring points) and depicted in Figure 2 for each quality characteristic and at the monitoring frequency stated in Table C5 (Receiving waters contaminant trigger levels).</p>

Table C5 (Receiving waters contaminant trigger levels)

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 – 9.0	Real time telemetry for EC and pH with grab samples at commencement and weekly thereafter when safe to do so and access permits
Electrical Conductivity ($\mu\text{S/cm}$)	2,000 – Cease the release	Daily grab samples if telemetry not available (the first sample must be taken as soon as practicable)^
Sulphate (SO_4^{2-}) (mg/L)	1000	Commencement of release and weekly thereafter during release when safe to do so and access permits^

^Generally during daylight hours.

Table C6 (Receiving water upstream background sites, release point monitoring and down stream monitoring points)

Monitoring Points	Receiving Waters Location Description	Easting (GDA94)	Northing (GDA94)
Upstream Background Monitoring Points			
Monitoring Point 2 Upstream Eureka Creek	Eureka Creek	596053	7592205
Monitoring Point 3 Upstream Isaac River – Drop Structure	Isaac River upstream of Eureka Creek	604997	7590722
Release Point Monitoring Points			
Monitoring Point 1 Eureka Creek Diversion (GS4a Dam)	Eureka Creek	602659	7588935
Downstream Monitoring Points			
Monitoring Point 4 Isaac River (Downstream) Railway Bridge	Isaac River	600563	7582858

Note:

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

<p>C19</p>	<p>If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table C5 (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:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> i. details of the investigations carried out; and ii. actions taken to prevent environmental harm. <p><i>Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with C19(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.</i></p>
<p>C20</p>	<p>Receiving Environment Monitoring Program</p> <p>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.</p> <p>For the purposes of the REMP, the receiving environment is the waters of the Isaac River and connected or surrounding waterways within 10 km 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.</p>

C21	<p>The REMP must:</p> <ul style="list-style-type: none"> a) Assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality); and b) Be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected; and c) Include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in Table C6); and d) Specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the <i>Queensland Water Quality Guidelines 2006</i>. This should include monitoring during periods of natural flow irrespective of mine or other discharges; and e) Include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in Tables C2 and C3; and f) Include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.1 <i>Guidance on Sampling of Bottom Sediments</i>); and g) Include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology; and h) Apply procedures and/or guidelines from ANZECC & ARMCANZ 2000 and other relevant guideline documents; and i) Describe sampling and analysis methods and quality assurance and control; and j) Incorporate stream flow and hydrological information in the interpretations of water quality and biological data.
C22	<p>A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with conditions C19 and C20 must be prepared annually and made available on request to the administrating authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.</p>
C23	<p>Water reuse</p> <p>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 for the purpose of:</p> <ul style="list-style-type: none"> a) supplying stock water subject to compliance with the quality release limits specified in Table C7 (Stock water release limits); or b) supplying irrigation water subject to compliance with quality release limits in Table C8 (Irrigation water release limits); or c) supplying water for construction and/or road maintenance in accordance with the conditions of this environmental authority.

Table C7 (Stock water release limits)

Quality characteristic	Units	Minimum	Maximum
pH	pH units	6.5	8.5
Electrical Conductivity	µS/cm	N/A	5000

Table C8 (Irrigation water release limits)

Quality characteristic	Units	Minimum	Maximum
pH	pH units	6.5	8.5
Electrical Conductivity	µS/cm	N/A	Site specific value to be determined in accordance with ANZECC & ARMCANZ (2000) Irrigation Guidelines

C24	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 dams or tanks, for the purpose of supplying water to North Goonyella Mine or to properties directly adjoining properties owned by the environmental authority holder. The volume, pH and electrical conductivity of water transferred must be monitored and recorded.
C25	<p>If the responsibility for mine affected water is given or transferred to another person in accordance with conditions C23 or C24:</p> <ul style="list-style-type: none"> a) the responsibility for the mine affected water must only be given or transferred in accordance with a written agreement (the third party agreement); and b) the third party agreement must include a commitment from the person utilising the mine affected water to use it in such a way as to prevent environmental harm or public health incidents and specifically make the persons aware of the General Environmental Duty (GED) under section 319 of the <i>Environmental Protection Act 1994</i>, environmental sustainability of the water disposal and protection of environmental values of waters; and c) the third party agreement must be signed by both parties to the agreement.

<p>C26</p>	<p>Water General</p> <p>All determinations of water quality and biological monitoring must be:</p> <ol style="list-style-type: none"> performed by a person or body possessing appropriate experience and qualifications to perform the required measurements; made in accordance with methods prescribed in the latest edition of the administering authorities Monitoring and Sampling Manual; collected from the monitoring locations identified within this environmental authority, within ten (10) hours of each other where possible; carried out on representative samples; and analysed at a laboratory accredited (e.g. NATA) for the method of analysis being used. <p><i>Note: Condition C26 requires the Monitoring and Sampling Manual to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.</i></p>
<p>C27</p>	<p>The release of any contaminants as permitted by this environmental authority, directly or indirectly to waters, other than internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with conditions C30 to C32 inclusive:</p> <ol style="list-style-type: none"> must not produce any visible discolouration of receiving waters; and must not produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.
<p>C28</p>	<p>Annual Water Monitoring Reporting</p> <p>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:</p> <ol style="list-style-type: none"> the date on which the sample was taken; the time at which the sample was taken; the monitoring point at which the sample was taken; the measured or estimated daily quantity of mine affected water released from all release points; the release flow rate at the time of sampling for each release point; the results of all monitoring and details of any exceedances of the conditions of this environmental authority; and water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.
<p>C29</p>	<p>Temporary Interference with waterways</p> <p>Destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with Department of Natural Resources and Mines (or it's successor) Guideline - <i>Activities in a Watercourse, Lake or Spring associated with Mining Activities</i>.</p>

C30	<p>Water Management Plan</p> <p>A Water Management Plan must be developed by an appropriately qualified person and implemented.</p> <p>The Water Management Plan must:</p> <ol style="list-style-type: none"> a) provide for effective management of actual and potential environmental impacts resulting from water management associated with the mining activity carried out under this environmental authority; and b) be developed in accordance with Department of Environment and Heritage Protection guideline <i>Preparation of water management plans for mining activities</i> and include: <ol style="list-style-type: none"> i. a study of the source of contaminants; ii. a water balance model for the site; iii. a water management system for the site; iv. measures to manage and prevent saline drainage; v. measures to manage and prevent acid rock drainage; vi. contingency procedures for emergencies; and vii. a program for monitoring and review of the effectiveness of the water management plan.
C31	The Water Management Plan must be reviewed each calendar year by an appropriately qualified person.
C32	A copy of the Water Management Plan must be provided to the administering authority on request.
C33	<p>Saline drainage</p> <p>The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline drainage.</p>
C34	<p>Acid rock drainage</p> <p>The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of acid rock drainage.</p>
C35	<p>Stormwater and water sediment controls</p> <p>An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.</p>

C36	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 C35 ; and b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with conditions C30 to C32 inclusive, for the purpose of ensuring water does not become mine affected water.
C37	The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas from which contaminants can be released into any receiving waters.
C38	Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to minimise the release of wastes, contaminants or materials to any stormwater drainage system or receiving waters.
C39	Sewage effluent Sewage effluent is permitted to be released to land in compliance with the release limits stated in Table C9 (Contaminant release limits to land).

Table C9 (Contaminant release limits to land)

Quality characteristics	Release limit	Units	Limit type	Monitoring frequency
5-day Biochemical Oxygen Demand (uninhibited)	50	mg/L	Maximum	Monthly
pH	6.0 to 9.0	pH Units	Range	Monthly
Free Chlorine Residual	0.7	mg/L	Maximum	Monthly
Faecal Coliforms, based on the average of a minimum of five samples collected	1000	Colonies per 100 millilitres	Maximum	Monthly

C40	The application of treated effluent to land must be carried out in a manner such that: a) vegetation is not damaged b) there is no surface ponding or effluent c) there is no runoff of effluent
C41	If areas irrigated with effluent are accessible to employees or the general public, prominent signage must be provided advising that effluent is present and care should be taken to avoid consuming or otherwise coming into unprotected contact with the effluent.

C42	All sewage effluent released to land must be monitored at the frequency and for the parameters specified in Table C9 (Contaminant release limits to land).
C43	The volume of effluent must be measured and records kept of the volumes of effluent released.
C44	Treated sewage effluent must only be supplied to another person or organisation that has a written plan detailing how the user of the treated sewage effluent will comply with their general environmental duty under section 319 of the Act whilst using the treated sewage effluent.

Agency Interest: Noise	
Condition number	Condition
D1	Noise from activities must not cause an environmental nuisance at any noise sensitive or commercial place.
D2	All noise from activities must not exceed the levels specified in Table D10 (Noise limits) at any noise affected place.
D3	When requested by the administering authority, noise monitoring must be undertaken to investigate any complaint of noise nuisance, and the results notified within fourteen (14) days to the administering authority. Monitoring must include: <ul style="list-style-type: none"> a) $L_{A\ 10, \text{adj}, 10 \text{ mins}}$; b) $L_{A\ 1, \text{adj}, 10 \text{ mins}}$; c) the level and frequency of occurrence of impulsive or tonal noise; d) atmospheric conditions including wind speed and direction; e) effects due to extraneous factors such as traffic noise; and f) location date and time of recording.
D4	Noise is not considered to be a nuisance under condition D1 if monitoring shows that noise does not exceed the following levels in the time periods specified in Table D10 (Noise limits).

Table D10 (Noise limits)

Noise level dB(A)	Monday to Saturday			Sundays and public holidays		
	7am - 6pm	6pm - 10pm	10pm - 7am	9am - 6pm	6pm - 10pm	10pm - 9am
	Noise measured at a 'Noise sensitive place'					
$L_{A10, \text{adj, 10 mins}}$	B/g + 5	B/g + 5	B/g + 0	B/g + 5	B/g + 5	B/g + 0
$L_{A1, \text{adj, 10 mins}}$	B/g + 10	B/g + 10	B/g + 5	B/g + 10	B/g + 10	B/g + 5
	Noise measured at a 'Commercial place'					
$L_{A10, \text{adj, 10 mins}}$	B/g + 10	B/g + 10	B/g + 5	B/g + 10	B/g + 10	B/g + 5
$L_{A1, \text{adj, 10 mins}}$	B/g + 15	B/g + 15	B/g + 10	B/g + 15	B/g + 15	B/g + 10

D5	The method of measurement and reporting of noise monitoring must comply with the latest edition of the administering authority's <i>Noise Measurement Manual</i> .
D6	If monitoring indicated exceedence of the limits in condition D4 , then the environmental holder must: <ul style="list-style-type: none"> a) address the complaint including the use of appropriate dispute resolution if required; and b) immediately implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.
D7	Vibration nuisance Vibration from the licensed activities must not cause an environmental nuisance, at any sensitive or commercial place.
D8	When requested by the administering authority, vibration monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.
D9	Airblast overpressure nuisance The airblast overpressure level from blasting operations on the premises must not exceed the limits defined in Table D11 (Airblast overpressure level) at any nuisance sensitive or commercial place.

Table D11 (Airblast overpressure level)

Location	Airblast overpressure measured
Sensitive or commercial place	Air blast overpressure level of 115 db (Linear peak) for nine (9) out of ten (10) consecutive blasts initiated and not greater than 120 db (Linear peak) at any time.

D10	When requested by the administering authority, airblast overpressure monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.
D11	Airblast overpressure monitoring must include the following descriptors, characteristics and conditions: 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.
D12	If monitoring indicates exceedence of the relevant limits in Table D11 (Airblast overpressure level), then the environmental authority holder must: a) address the complaint including the use of appropriate dispute resolution if required; and b) immediately implement airblast overpressure abatement measures so that airblast overpressure from the activity does not result in further environmental nuisance
D13	The method of measurement and reporting of airblast overpressure levels must comply with the latest edition of the administering authority's <i>Noise Measurement Manual</i> .
D14	EA holder cannot undertake any blasting on ML70478 and ML70479.
Agency Interest: Waste	
Condition number	Condition
E1	Storage of Tyres Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste-to-energy options must be stored in stable stacks and at least ten (10) metres from any other scrap tyre storage area, or combustible or flammable material, including vegetation.

E2	All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a ten (10) metre radius of the scrap tyre storage area.
E3	Disposing of scrap tyres resulting from the authorised activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as reasonably practicable. A record must be kept of the number and location for tyres disposed.
E4	Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform.
E5	<p>Waste Management</p> <p>A Waste Management Plan, in accordance with the <i>Environmental Protection (Waste Management) Regulation 2000</i>, must be implemented and must cover:</p> <ul style="list-style-type: none"> a) describe how Goonyella Riverside Mine recognise and apply the waste management hierarchy; b) identify characterisations of wastes generated from the project and general volume trends over the past 5 years; c) a program for safe recycling or disposal of all wastes- reusing and recycling where possible; d) waste commitments with auditable targets to reduce, reuse and recycle; e) The waste management control strategies must consider: <ul style="list-style-type: none"> i. The type of wastes; ii. segregation of the wastes; iii. storage of the wastes; iv. transport of the wastes; v. monitoring and reporting matters concerning the waste; vi. emergency response planning; vii. disposal, reused and recycling options; f) identify the potential adverse and beneficial impacts of the wastes generated; <ul style="list-style-type: none"> a) detail the hazardous characteristics of the waste generated (if any); b) cover a disposal procedure for hazardous wastes; c) outline the process to be implemented to allow for continuous improvement of the waste management systems; d) identify responsible staff (positions) for implementing, managing and reporting the Waste Management Plan; and e) cover a staff awareness and induction program that encourages re-use and recycling.
E6	Waste must not be burned or allowed to be burned on the licensed site unless by approval of the administering authority.

E7	A designated area must be set aside for the segregation of economically viable, recyclable solid and liquid waste.
E8	<p>Records must be kept for five (5) years, and must include the following information:</p> <ul style="list-style-type: none"> a) date of pickup of waste; b) description of waste; c) cross reference to relevant waste transport documentation; d) quantity of waste; e) origin of the waste; f) destination of the waste; and g) intended fate of the waste, for example, type of waste treatment, reprocessing or disposal. <p><i>Note: Records of documents maintained in compliance with a waste tracking system established under the Environmental Protection Act 1994 or any other law for regulated waste will be deemed to satisfy this condition.</i></p>
E9	Records of trade and regulated wastes or material leaving the mining lease for recycling or disposal, including the final destination and method of treatment, must be in accordance with the <i>Environmental Protection (Waste Management) Regulation 2000</i> .
E10	All regulated waste received at and removed from the site must be transported by a person who holds a current authority to transport such waste under the provisions of the <i>Environmental Protection Act 1994</i> .
E11	Except as otherwise provided by the conditions of this authority, all waste removed from the site must be taken to a facility that is lawfully allowed to accept such waste under the provisions of the <i>Environmental Protection Act 1994</i> .
Agency Interest: Land	
Condition number	Condition
F1	<p>Topsoil</p> <p>Topsoil resources that are suitable for use in rehabilitation must be salvaged ahead of mining for strategic use in rehabilitation of the mine area.</p>
F2	Topsoil that is suitable for rehabilitation will meet the characteristics in Table F12 (Topsoil suitability characteristics). Soils that do not meet the characteristics in Table F12 (Topsoil suitability characteristics) will not be considered as suitable for rehabilitation.

Table F12 (Topsoil suitability characteristics)

Quality Characteristics	Limit
Soil Salinity	<0.6 dS/m
Soil pH	Between 5.5 and 8.5
Soil Exchangeable Sodium Percentage (ESP)	< 40%

F3	<p>Rehabilitation landform criteria</p> <p>All areas significantly disturbed by mining activities must be rehabilitated to a stable landform with a self-sustaining vegetation cover.</p>
F4	<p>Progressive rehabilitation must commence within two (2) years when areas become available within the operational land.</p>
F5	<p>Complete an investigation into rehabilitation of disturbed areas and submit a report to the administering authority proposing acceptance criteria for Department review and comment. The investigation report must be reviewed and updated every three (3) years, commencing on 30 June 2008. The rehabilitation management plan must include, at a minimum:</p> <ul style="list-style-type: none"> a) map existing areas of rehabilitation; b) develop design objectives for rehabilitation of disturbed areas and post mining land uses across the mine; c) specify spoil characteristics, soil analysis, soil separation for use on rehabilitation; d) detail rehabilitation methods applied to areas; e) contain landform design criteria including end of mine design; f) detail how landform design will be consistent with the surrounding topography g) identify success criteria for areas and itemize revegetation criteria; h) explain planned native vegetation rehabilitation areas and corridors; i) identify at least a minimum of three (3) reference and three (3) rehabilitation sites to be used to develop rehabilitation success criteria; j) describe rehabilitation indicators and the monitoring program to be used; k) develop a contingency plan for rehabilitation maintenance or redesign; l) describe end of mine landform design plan and post mining land uses across the mine; and m) include a cost benefit analysis / triple bottom line assessment (or an alternative assessment method) of the proposed final landform design criteria and alternatives.

F6	<p>Residual void outcome</p> <p>Residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself and subject to any other condition within this environmental authority.</p>
F7	<p>Complete an investigation into residual voids and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in condition F6 and landform design criteria in Table F13 (Rehabilitation design parameters) by must be reviewed and updated every three (3) years, commencing on 30 June 2008. The investigation must at a minimum include the following:</p> <ul style="list-style-type: none"> a) a study of options available for minimising final void area and volume; b) a void hydrology study, addressing the long-term water balance in the voids, connections to groundwater resources and water quality parameters in the long term; c) a pit wall stability study, considering the effects of long-term erosion and weathering of the pit wall and the effects of significant hydrological events; d) a hydrological study into the long-term risk of the Isaac River / final void interaction, including erosion of the banks and spoil and extreme hydrological events, and the consequences of such interaction to the long-term stability of the final voids; e) a study of void capability to support native flora and fauna; f) proposal/s for end of mine void rehabilitation success criteria and final void areas and volume; and g) the recommendations of this these studies are to be followed during the life of the mine, and will include detailed research and modelling.

Table F13 (Rehabilitation design parameters)

Rehabilitation area	Approximate Final Area (ha)	Design Criteria	Qualifications
Final Highwalls: competent rock incompetent rock	100 – 200 ha 100 – 200 ha	<65° slope <17° slope	Competency certified by an appropriately qualified professional accredited by a credible third party
Low walls	100 – 200 ha	<17° slope	Angle of repose / benched / graded
Spoil emplacement areas	10000 – 15000 ha	no less than 75% of area <11° slope up to 25% of area >11° slope	Erosion control structures are to be installed at vertical intervals not to exceed 7m
Rejects disposal areas	200 – 400 ha	Minimum 1.5m of inert cover material	Externally draining or in pit. No acidic leachate. Must be sufficient to break capillary rise of solutes.
Tailings disposal areas	500 – 1000 ha	Minimum 1.5m of inert cover material	Externally draining or in pit. No acidic leachate. Must be sufficient to break capillary rise of solutes.
Industrial areas	400 – 800 ha	<2° slope	
Evaporation Dams	250 – 500 ha	Walls breached and dam drained and either: – salt impacted material stripped and disposed of in tailings or rejects impoundment; or – capped with sufficient inert material to break the capillary rise of salts and prevent lateral migration of solutes.	

F8	<p>Subsidence</p> <p>The post mining land use for areas affected by subsidence as a result of underground mining must be:</p> <ul style="list-style-type: none"> a) if agricultural land use prior to mining – agricultural land use; or b) If a land use other than agricultural use – the same land use as existed prior to mining.
F9	<p>Subsidence management procedures must be developed and implemented during the continuation of the environmental authority. The subsidence management strategies must be detailed in the Subsidence Management Plan and must at a minimum include:</p> <ul style="list-style-type: none"> a) subsidence modelling prior to mining; b) rehabilitation methodology; and c) land management practices pre and post subsidence.
F10	No subsidence permitted on ML70478 and ML70479.
F11	<p>Preventing contaminant release to land</p> <p>Contaminants must not be released to land in manner which constitutes nuisance, material or serious environmental harm.</p>
F12	<p>Storage and handling of flammable or combustible liquids</p> <p>All flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm and maintained in accordance with the current version of <i>AS 1940 – Storage and Handling of Flammable and Combustible Liquids</i> (or a more recent edition).</p>
F13	Spillage of all flammable and combustible liquids must be controlled in a manner that prevents environmental harm.
F14	<p>Storage and handling of chemicals</p> <p>All chemicals must be contained within an on-site containment system and controlled in a manner that prevents environmental harm and maintained in accordance with the current version of the relevant Australian Standard.</p>
F15	Spillage of all chemicals must be controlled in a manner that prevents environmental harm.
F16	<p>Infrastructure</p> <p>All infrastructure, constructed by or for the environmental authority holder during the licensed activities including water storage structures, must be removed from the site prior to surrender, except where agreed in writing by the post mining land owner / holder.</p> <p><i>Note: This is not applicable where the landowner / holder is also the environmental authority holder.</i></p>

F17	No impact on State Significant Biodiversity Values (SSBV) or Matters of State Environmental Significance (MSES) on ML70478 and ML70479.
Agency Interest: Community	
Condition number	Condition
G1	Complaint response All complaints received must be recorded including investigations undertaken, conclusions formed and action taken. This information must be made available to the administering authority on request.
G2	The holder of this environmental authority must record the following details for all complaints received and provide this information to the administering authority on request: a) time, date, name and contact details of the complainant; b) reasons for the complaint; c) conclusions formed; and d) any actions taken.
G3	In consultation with the administering authority, cooperate with and participate in any community environmental liaison committee established in respect of either the licensed place specifically or the industrial estate where the licensed place is located.
Agency interest: Structures	
Condition Number	Condition
H1	The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (Version 4, 10 April 2014) (EM635)</i> at the following times: a) prior to the design and construction of the structure, if it is not an existing structure; or b) prior to any change in its purpose or the nature of its stored contents.
H2	A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.
H3	Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (Version 4, 10 April 2014) (EM635)</i> .

H4	<p>Design and construction¹ of a regulated structure</p> <p>Conditions H5 to H9 inclusive do not apply to existing structures.</p> <p>Note¹: <i>Construction of a dam includes modification of an existing dam—refer to the definitions.</i></p>
H5	<p>All regulated structures must be designed by, and constructed² under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (Version 4, 10 April 2014) (EM635)</i>.</p> <p>Note²: <i>Certification of design and construction may be undertaken by different persons.</i></p>
H6	<p>Construction of a regulated structure is prohibited unless the holder has submitted a consequence category assessment report and certification to the administering authority which has been certified by a suitably qualified and experienced person for the design and design plan and the associated operating procedures in compliance with the relevant condition of this authority.</p>
H7	<p>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 <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (Version 4, 10 April 2014) (EM635)</i>, and must be recorded in the Regulated Dams/Levees register.</p>
H8	<p>Regulated structures must:</p> <ul style="list-style-type: none"> a) be designed and constructed in accordance with and conform to the requirements of the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (Version 4, 10 April 2014) (EM635)</i>; b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of: <ul style="list-style-type: none"> 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) For regulated dams associated with a failure to contain - seepage, 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.
H9	<p>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:</p> <ul style="list-style-type: none"> a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure; b) construction of the regulated structure is in accordance with the design plan.

H10	<p>Operation of a regulated structure, except for an existing structure, is prohibited unless:</p> <p>a) the holder has submitted to the administering authority:</p> <ul style="list-style-type: none"> i) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition H6; ii) a set of 'as constructed' drawings and specifications; iii) certification of those 'as constructed drawings and specifications' in accordance with condition H9; iv) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan; v) the requirements of this authority relating to the construction of the regulated structure have been met; vi) the holder has entered the details required under this authority, into a Register of Regulated Dams; and vii) there is a current operational plan for the regulated structures.
H11	<p>For existing structures that are regulated structures:</p> <p>a) where the existing structure that is a regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the holder must submit to the administering authority within 12 months of the commencement of this condition a copy of the certified system design plan including that structure; and</p> <p>b) there must be a current operational plan for the existing structures.</p>
H12	<p>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.</p>
H13	<p>Conditions H14 to H17 inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.</p>
H14	<p>The Mandatory Reporting Level (the MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.</p>
H15	<p>The holder must, as soon as practical and within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.</p>
H16	<p>The holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.</p>
H17	<p>The holder must record any changes to the MRL in the Register of Regulated Structures.</p>

H18	<p>Design storage allowance</p> <p>The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.</p>
H19	<p>By 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the dam (or network of linked containment systems).</p>
H20	<p>The 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.</p>
H21	<p>The holder must, immediately on becoming aware that a regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.</p>
H22	<p>Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.</p>
H23	<p>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.</p>
H24	<p>The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (Version 4, 10 April 2014) (EM635)</i>.</p>
H25	<p>The holder must:</p> <ul style="list-style-type: none"> a) Within 20 business days of receipt of the annual inspection report, provide to the administering authority: <ul style="list-style-type: none"> i) The recommendations section of the annual inspection report; and ii) If applicable, any actions being taken in response to those recommendations; and b) If, following receipt of the recommendations and (if applicable) actions, the administering authority requests a full copy of the annual inspection report from the holder, provide this to the administering authority within 10 business days³ of receipt of the request. <p>Note³: <i>Some model conditions, such as model conditions for dams associated with a resource activity - non mining activity, the notification requirements may be located in a separate part of the conditions of an environmental authority (e.g. under notification requirement conditions).</i></p>

H26	<p>Transfer arrangements</p> <p>The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.</p>
H27	<p>Decommissioning and rehabilitation</p> <p>Dams must not be abandoned but be either:</p> <ul style="list-style-type: none"> a) decommissioned and rehabilitated to achieve compliance with condition H28; or b) be left in-situ for a beneficial use(s) provided that: <ul style="list-style-type: none"> i) it no longer contains contaminants that will migrate into the environment; and ii) it contains water of a quality that is demonstrated to be suitable for its intended beneficial use(s); and iii) the administering authority, the holder of the environmental authority and the landholder agree in writing that the dam will be used by the landholder following the cessation of the environmentally relevant activity(ies).
H28	<p>After decommissioning, all significantly disturbed land caused by the carrying out of the environmentally relevant activity(ies) must be rehabilitated to meet the following final acceptance criteria:</p> <ul style="list-style-type: none"> a) the landform is safe for humans and fauna; b) the landform is stable with no subsidence or erosion gullies for at least three (3) years; c) any contaminated land (e.g. contaminated soils) is remediated and rehabilitated; d) not allowing for acid mine drainage; or e) there is no ongoing contamination to waters (including groundwater); f) rehabilitation is undertaken in a manner such that any actual or potential acid sulfate soils on the area of significant disturbance are treated to prevent or minimise environmental harm in accordance with the Instructions for the treatment and management of acid sulfate soils (2001); g) all significantly disturbed land is reinstated to the pre-disturbed land suitability class; h) for land that is not being cultivated by the landholder: <ul style="list-style-type: none"> a. groundcover, that is not a declared pest species is established and self-sustaining b. vegetation of similar species richness and species diversity to pre-selected analogue sites is established and self-sustaining, and c. the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance caused by carrying out the mining activity(ies). <ul style="list-style-type: none"> i) for land that is to be cultivated by the landholder, cover crop is revegetated, unless the landholder will be preparing the site for cropping within 3 months of mining activities being completed.

H29	<p>Register of Regulated Structures</p> <p>A Register of Regulated Structures must be established and maintained by the holder for each regulated structure.</p>
H30	The holder must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated structure is submitted to the administering authority.
H31	The holder must make a final entry of the required information in the Register of Regulated Structures once compliance with condition G10 and G11 has been achieved.
H32	The holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
H33	All entries in the Register of Regulated Structures must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.
H34	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.
H35	<p>Transitional arrangements</p> <p>All existing structures that have not been assessed in accordance with either the Manual or the former Manual for Assessing Hazard Categories and Hydraulic Performance of Dams must be assessed and certified in accordance with the Manual within 6 months of amendment of the authority adopting this schedule.</p>
H36	All existing structures must subsequently comply with the timetable for any further assessments in accordance with the Manual specified in Table H14 (Transitional hydraulic performance requirements for existing structures), depending on the consequence category for each existing structure assessed in the most recent previous certification for that structure.
H37	<p>Table H14 ceases to apply for a structure once any of the following events has occurred:</p> <ol style="list-style-type: none"> It has been brought into compliance with the hydraulic performance criteria applicable to the structure under the Manual; or It has been decommissioned; or It has been certified as no longer being assessed as a regulated structure.
H38	Certification of the transitional assessment required by H35 and H36 (as applicable) must be provided to the administering authority within 6 months of amendment of the authority adopting this schedule.

Table H14 (Transitional hydraulic performance requirements for existing structures)

Transition period required for existing structures to achieve the requirements of the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (Version 4, 10 April 2014)</i>			
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.

Agency Interest: Watercourse Subsidence	
Condition number	Condition
I1	<p>Authorised Subsidence</p> <p>Subject to conditions I2 through I11, the holder of this environmental authority is authorised to subside the Isaac River within longwall panels LW107, LW108, LW109 and LW110 as depicted in Figure 2 attached to this environmental authority. This subsidence is authorised to occur as a result of underground longwall mining activities.</p>
I2	<p>This environmental authority does not authorise the use of top coal caving (or thick seam mining) methods where it would result in subsidence of the bed or banks of the Isaac River.</p>
I3	<p>Subsidence Management Plan</p> <p>A subsidence management plan must be developed and implemented by the holder of this environmental authority prior to the commencement of activities that result in subsidence of a watercourse that provides for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity and to ensure compliance with the conditions of this environmental authority.</p>

14	<p>The subsidence management plan must be developed to the satisfaction of the administering authority in accordance with the departmental guideline “<i>Watercourse Subsidence – Central Queensland Mining Industry</i>” or any subsequent versions and must include at least the following components:</p> <ul style="list-style-type: none"> a) The condition of the existing watercourse (including a baseline assessment); b) The proposed impacts of subsidence on the watercourse and floodplain including but not limited to: <ul style="list-style-type: none"> i. Physical condition of surface drainages <ul style="list-style-type: none"> - Erosion - Areas susceptible to higher levels of erosion such as watercourse confluences - Incision processes - Stream widening - Tension cracking - Lowering of bed and banks - Creation of in stream waterholes - Changes to local drainage patterns ii. Overland Flow <ul style="list-style-type: none"> - Capture of overland flow by subsided long-wall panels - Increased overbank flows due to lowering of high bank of watercourses - The portion of local and large scale catchment likely to be captured by subsided long-wall panels and the associated impacts on downstream users iii. Water Quality <ul style="list-style-type: none"> - Surface water - Groundwater - Overland flow water detained in subsided long-wall panels iv. Land condition: Current land condition to be impacted by subsidence. v. Infrastructure <ul style="list-style-type: none"> - Detail of existing infrastructure (pipelines, railway, power lines and haul roads) should be identified where there is a potential impact from effects of land subsidence. c) Proposed options for mitigating any impacts associated with subsidence and how these mitigation methods will be implemented d) A risk assessment; e) A monitoring, evaluation and maintenance program. f) Cumulative Impacts on watercourse or catchments; g) Impacts on groundwater.
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I5	<p>The holder of this environmental authority must not commence subsidence of a longwall panel unless:</p> <p>a) the holder has submitted to the administering authority two copies of a subsidence management plan together with certification by a suitably qualified and experienced person that the plan is compliant in all respects with this environmental authority; and</p> <p>b) at least 28 days has passed since the submission of the subsidence management plan.</p>
I6	<p>Annual Inspection</p> <p>The holder of this environmental authority must arrange for each subsided longwall panel to be inspected within the bed and banks of the watercourse annually by a suitably qualified and experienced person, in accordance with conditions I7 to I10.</p>
I7	<p>The annual inspection must be conducted prior to 1 November each year.</p>
I8	<p>At each annual inspection, the condition of each subsided longwall panel must be assessed, including the structural, geotechnical and hydraulic adequacy of the subsided longwall panel and the adequacy of the works with respect to the subsidence management plan.</p>
I9	<p>For each inspection, two copies of a report certified by a suitably qualified and experienced person, including any recommendations must be provided to the administering authority within 28 days of the inspection.</p>
I10	<p>The report must detail any remedial works that have been undertaken and the outcomes of these works.</p>
I11	<p>Remedial Works</p> <p>The holder of the Environmental Authority, if directed by the administering authority, shall carry out any remedial works that are deemed necessary to minimise impacts on the physical integrity of the watercourse from subsidence.</p>

END OF CONDITIONS

Definitions:

Words and phrases used throughout this licence are defined below except where identified in the *Environmental Protection Act 1994* or subordinate legislation. Where a word or term is not defined, the ordinary English meaning applies, and regard should be given to the Macquarie Dictionary

20th percentile flow means the 20th percentile of all daily flow measurements (or estimations) of daily flow over a 10 year period for a particular site. The 20th percentile calculation should only include days where flow has been measured (or estimated), i.e. not dry weather days.

Accepted engineering standards in relation to dams, means those standards of design, construction, operation and maintenance that are broadly accepted within the profession of engineering as being good practice for the purpose and application being considered. In the case of dams, the most relevant documents would be publications of the Australian National Committee on Large Dams (ANCOLD), guidelines published by Queensland government departments, and relevant Australian and New Zealand Standards.

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

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

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

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

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

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

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

Ambient (or total) noise at a place, means the level of noise at the place from all sources (near and far), measured as the Leq for an appropriate time interval.

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

- a) against recommendations contained in previous annual inspections reports;
- b) against recognised dam safety deficiency indicators;
- c) for changes in circumstances potentially leading to a change in consequence category;
- d) for conformance with the conditions of this authority;
- e) for conformance with the 'as constructed drawings;
- f) for the adequacy of the available storage in each regulated dam, based on an actual observations or observations taken 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.

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

ANZECC means the *Australian and New Zealand Guidelines for Fresh Marine Water Quality 2000*

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

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

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

Associated works in relation to a dam, means:

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

Authority means environmental authority (mining activities) under the *Environmental Protection Act 1994*.

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

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

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

Biosolids means the treated and stabilised solids from sewage.

Blasting means the use of explosive materials to fracture-

- a) rock, coal and other minerals for later recovery; or
- b) structural components or other items to facilitate removal from a site or for reuse.

Bunded means within bunding consistent with *Australian Standard 1940*.

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

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

Certification Regulated structures means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures or this environmental authority, 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 dangerous goods code; or
- c) a lead hazardous substance within the meaning of the *Workplace Health and Safety Regulation 1997*; or
- d) a drug or poison in the *Standard for the Uniform Scheduling of Drugs and Poisons* prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth; or
- e) any substance used as, or intended for use as –
 - i. a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or
 - ii. a surface active agent, including, for example, soap or related detergent; or
 - iii. a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or
 - iv. a fertiliser for agricultural, horticultural or garden use; or
- f) a substance used for, or intended for use for –
 - i. mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or
 - ii. manufacture of plastic or synthetic rubber.

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

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

Consequence in relation to a structure a 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)*.

Construction (includes building a new dam and modifying or lifting an existing dam).

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

Contaminate means to render impure by contact or mixture.

Contaminated means the substance has come into contact with a contaminant.

Contaminant A contaminant can be –

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

Control measure means any action or activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level.

Cover material means any soil or rock suitable as a germination medium or landform armouring.

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

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

Design plan is the documentation required to describe the physical dimensions of the dam, the materials and standards to be used for construction of the dam, and the criteria to be used for operating the dam. The documents must include design and investigation reports, specifications and certifications, together with the planned decommissioning and rehabilitation works and outcomes. A design plan may include 'as constructed' drawings.

Design storage allowance or DSA means an available volume, estimated in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structure (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 exceedences probability (AEP) specified in that Manual.

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

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

Domestic waste means waste, other than domestic clean-up waste, green waste, recyclable waste, interceptor waste or waste discharged to a sewer, produced as a result of the ordinary use or occupation of domestic premises.

Dwelling means any of the following structures or vehicles that is principally used as a residence –

- a) a house, unit, motel, nursing home or other building or part of a building; or
- b) a caravan, mobile home or other vehicle or structure on land; or
- c) a water craft in a marina.

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 warning to downstream communities and the implementation of protection measures. The plan must require dam owners to annually update contact.

End of pipe means the location at which water is released to waters or land.

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

Environmental authority holder means the holder of this environmental authority.

Environmentally relevant activity means an environmentally relevant activity as defined under Section 18 of the *Environmental Protection Act 1994* and listed under Schedule 1 of the *Environmental Protection Regulation 1998*.

Existing structure existing structure' means a structure that prior to 24 October 2014 meets any or both of the following:

- (a) a structure with a design that is in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635) and that is considerable in progress; or
- (b) a structure that is under considerable construction or that is constructed.

Extreme storm storage means a storm storage allowance determined in accordance with the criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

Financial assurance means a security required under the *Environmental Protection Act 1994* by the Administering Authority to cover the cost of rehabilitation or remediation of disturbed land or to secure compliance with the environmental authority.

Floodwater means water overflowing, or that has overflowed, from waters, river, creek, stream, lake, pond, wetland or dam onto or over riparian land that is not submerged when the watercourse or lake flows between or is contained within its bed and banks.

Flowable substance means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

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

General waste means waste other than regulated waste.

Hazardous waste means a substance, whether liquid, solid or gaseous that, if improperly treated, stored, disposed of or otherwise managed, is likely to cause environmental harm.

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

Hazard category means a category, either low significant or high, into which a dam is assessed as a result of the application of tables and other criteria in “Manual for Assessing Hazard Categories and Hydraulic Performance of Dams”, prepared by the Department of Environment and Heritage Protection, as amended from time to time.

Holder means:

- a) where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or
- b) where this document is a development approval, any person who is the registered operator for that development approval.

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

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

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

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

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

Lake includes –

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

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

Land capability as defined in the *Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995)*.

Land suitability as defined in the *Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995)*.

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

Landfill means land used as a waste disposal site for lawfully putting solid waste on the land.

Levee means a dam, dyke or bund that is designed only to provide for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from unplanned releases from other works of infrastructure, during the progress of those stormwater or flood flows or those unplanned releases; and does not store any significant volume of water or flowable substances at any other times.

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

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)*).

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

mg/L means milligrams per litre.

Mineral means a substance which normally occurs naturally as part of the earth’s crust or is dissolved or suspended in water within or upon the earth’s crust and includes a substance which may be extracted from such a substance, and includes—

- a) clay if mined for use for its ceramic properties, kaolin and bentonite;
- b) foundry sand;
- c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil there from;
- d) limestone if mined for use for its chemical properties;
- e) marble;
- f) mineral oil or gas extracted or produced from shale or coal by in situ processes;

- g) peat;
- h) salt including brine;
- i) shale from which mineral oil may be extracted or produced;
- j) silica, including silica sand, if mined for use for its chemical properties;
- k) rock mined in block or slab form for building or monumental purposes;

But does not include—

- l) living matter;
- m) petroleum within the meaning of the *Petroleum Act 1923*;
- n) soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form;
- o) water.

Mine affected water means the following types of water:

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

Mine water means process water and contaminated storm water.

Modification or modifying (see definition of 'construction')

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

Nature includes:

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

Noxious means harmful or injurious to health or physical wellbeing.

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

Operational land means the land associated with the project for which this environmental authority has been issued.

Operational Plan means a document that amongst other things sets out procedures and criteria to be used for operating a dam during a particular time period. The operational plan as defined herein may form part of a plan of operations or plan otherwise required in legislation.

Palletised means stored on a movable platform on which batteries are placed for storage or transportation.

Peak particle velocity (ppv) means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mms⁻¹).

Protected area means:

- a) a protected area under the *Nature Conservation Act 1992*; or
- b) a marine park under the *Marine Parks Act 1992*; or
- c) a World Heritage Area.

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

Process water means water used or produced during the mineral development activities.

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

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

Recycled water means appropriately treated effluent and urban stormwater suitable for further use.

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

Register of Regulated Dams includes:

- a) Date of entry in the register;
- b) Name of the dam, its purpose and intended/actual contents;
- c) The consequence category of the dam as assessed using the manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635);
- d) Dates, names, and reference for the design plan plus dates, names, and reference numbers of all documents(s) lodged as part of a design plan for the dam;
- e) Name qualifications of the suitability qualified and experienced person who certified and design plan and 'a constructed' drawings;
- f) For the regulated dam, other than in relation to any levees –
 - i. The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;
 - ii. Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area
 - iii. Dam crest volume (megalitres);
 - iv. Spillway crest level (metres AHD).
 - v. Maximum operating level (metres AHD);
 - vi. Storage rating table of stored volume versus level (metres AHD);
 - vii. Design storage allowance (megalitres) and associated level of the dam (metres AHD);
 - viii. Mandatory reporting level (metres AHD);

- g) The design plan title and reference relevant to the dam;
- h) The date construction was certified as compliant with the design plan;
- i) The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;
- j) Details of the composition and construction of any liner;
- k) The system for the detection of any leakage through the floor and sides of the dam;
- l) Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;
- m) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority;
- n) Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.
- o) 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 designer and constructed to an Australian Standard that deals with strength and structural integrity.

Regulated waste means non-domestic waste mentioned in schedule 7 of the *Environmental Protection Regulation 1998* (whether or not it has been treated or immobilised), and includes –

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

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

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

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

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

Self sustaining means an area of land which has been rehabilitated and has maintained the required acceptance criteria without human intervention for a period nominated by the administering authority.

Sensitive place means:

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

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

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

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

Structure means dam or levee.

Storm water means all surface water runoff from rainfall.

Suitably qualified and experienced person in relation to dams means one who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 1988*, OR registered as a National Professional Engineer (NPER) with the Institution of Engineers Australia, OR holds equivalent professional qualifications to the satisfaction of the administering authority for the Act; AND the administering authority for the Act is satisfied that person has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below:

- a) knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams; and
- b) a total of five years of suitable experience and demonstrated expertise in at least four of the following categories, with the 'geomechanics of dams' category being compulsory:
 - i. geomechanics of dams with particular emphasis on stability, geology and geochemistry.
 - ii. investigation, design or construction of dams.
 - iii. operation and maintenance of dams.
 - iv. hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology.
 - v. hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes.
 - vi. hydrogeology with particular reference to seepage, groundwater.
 - vii. solute transport processes and monitoring thereof.
 - viii. dam safety.

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:

1. for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design;
2. 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.

Suitably qualified and experienced person in relation to watercourse subsidence means one who holds relevant professional qualifications to the satisfaction of the administering authority; AND the administering authority is satisfied that person has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below:

- c) knowledge of engineering principles related to the structures, hydrology, hydraulics and environmental impact of watercourse subsidence; and

- d) a total of five years of suitable experience and demonstrated expertise in the following categories:
- i. hydrology with particular reference to flooding, estimation of extreme storms or water management.
 - ii. hydraulics with particular reference to sediment transport and deposition and erosion control.
 - iii. hydrogeology with particular reference to seepage, groundwater.

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

Trackable waste means a waste or combination of waste stated in Schedule 1 of the *Environmental Protection (Waste Management) Regulation 2000*.

Trivial harm means environmental harm which is not material or serious environmental harm and will not cause actual or potential loss or damage to property of an amount of, or amounts totalling more than \$5,000.

Tolerable limits means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values. For example, a range of settlement for a tailings capping, rather than a single value, could still meet the objective of draining the cap quickly, preventing pondage and limiting infiltration and percolation.

Void means any man-made, open excavation in the ground.

Waste as defined in section 13 of the *Environmental Protection Act 1994*.

Waste management hierarchy has the meaning given by the *Environmental Protection (Waste Management) Policy 2000*.

Waste management principles has the meaning given by the *Environmental Protection (Waste Management) Policy 2000*.

Water means –

- a) water in waters or spring;
- b) underground water;
- c) overland flow water; or
- d) water that has been collected in a dam.

Waste water means used water from the activity, process water or contaminated storm water.

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

- a) in a natural channel, whether artificially improved or not; or
- b) in an artificial channel that has changed the course of the watercourse.

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

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

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

Water year means the 12-month period from 1 July to 30 June.

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

$\mu\text{g/L}$ means micrograms per litre

$\mu\text{S.cm}^{-1}\text{m}$ means micro Siemens per centimetre

END OF DEFINITIONS

Figure 1 - Goonyella Riverside Mine Water Monitoring Locations

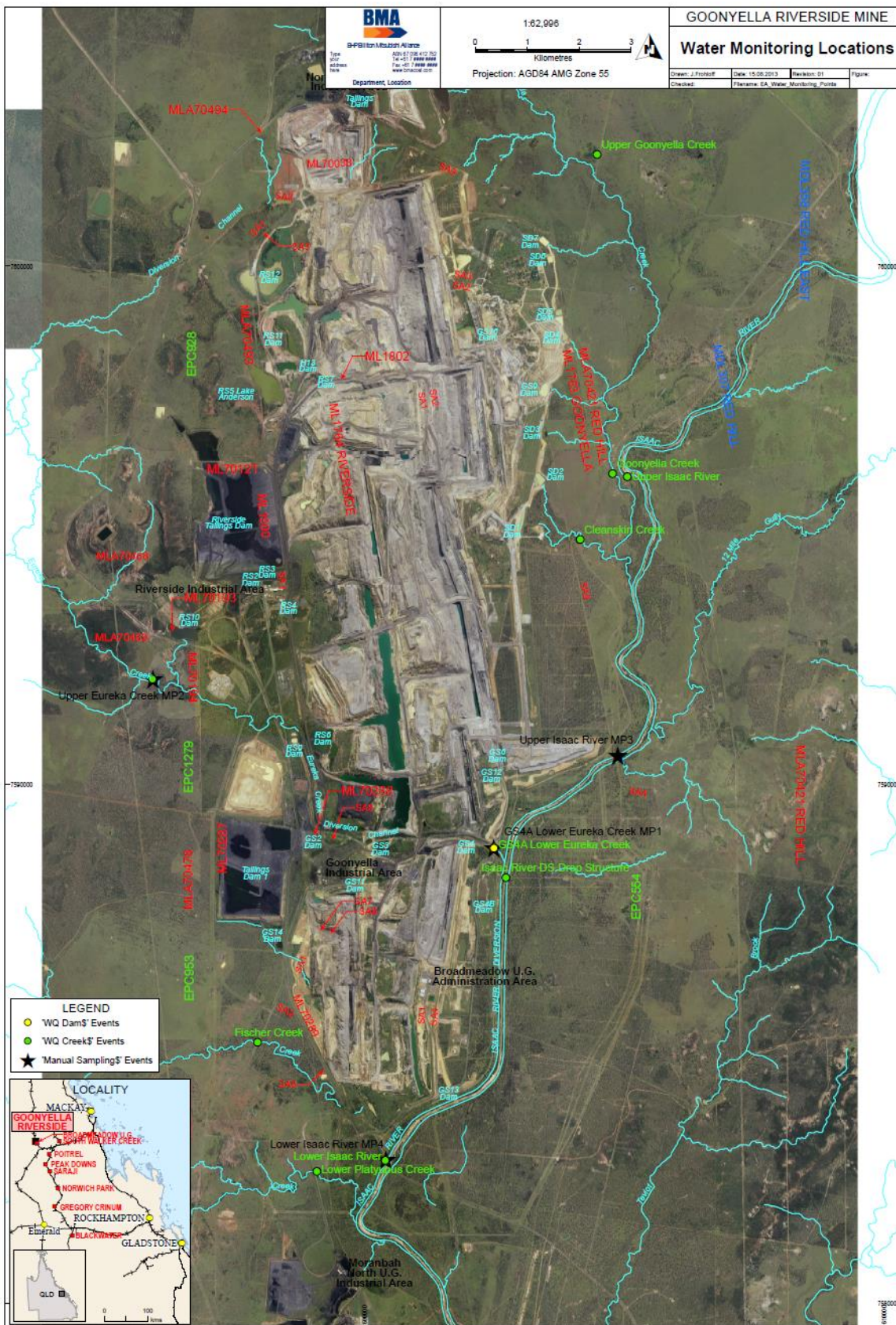
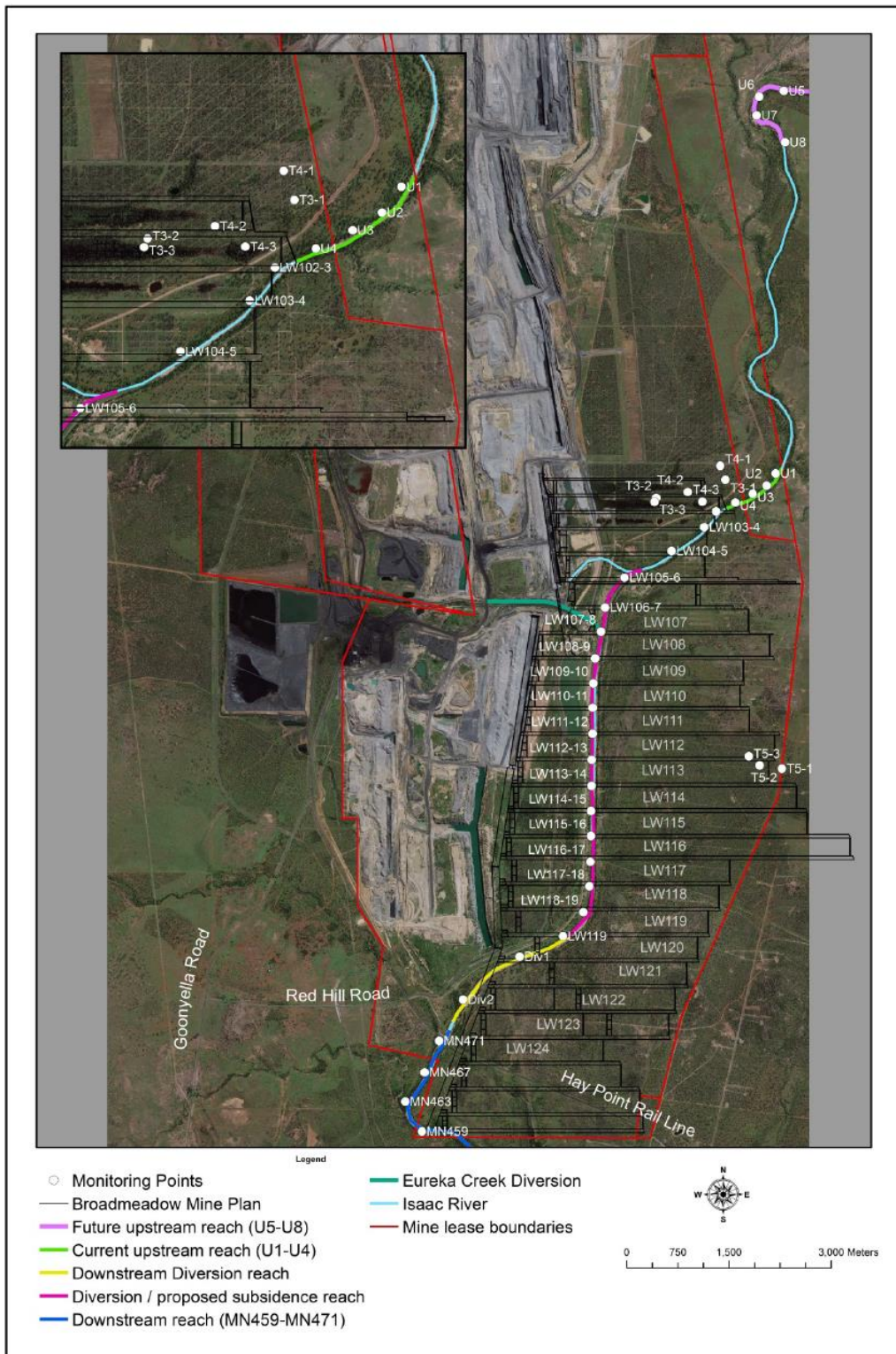


Figure 2 - Isaac River Longwall Panels and Monitoring Points



END OF PERMIT

