

27 September 2011

Department of
**Environment and Resource
Management**

Mr Shaun Ferris
Environmental Manager – Approvals
& Communications
BHP Billiton Project Hub
GPO Box 971
FORTITUDE VALLEY QLD 4006

Dear Mr Ferris

Environmental Authority (EA) MIN101827410 – Caval Ridge Mine.

The Department of Environment and Resource Management (the department) received written notification from the Coordinator General in a letter dated 26 September 2011 that both Caval Ridge Mine Environmental Authority (EA) (Permit Number: MIN101827410) and the Peak Downs Mine Environmental Authority (EA) (Permit Number: MIN100496107) are able to take effect.

The CG is satisfied that the requirements of Condition 2 (Mine Water Management) and Condition 13 (Mineral Waste) of the Coordinator General's Evaluation Report dated 9 August 2010 and as amended by Change Report 4 pursuant to Division 3A of the *State Development and Public Works Organisation Act 1971* have been met.

Accordingly, the department wishes to advise BHP Mitsubishi Alliance (BMA) that the EA for Caval Ridge Mine that was originally granted on 17 November 2010 will take effect on 27 September 2011.

The EA for Peak Downs Mine that includes the revised model water conditions has been granted and will also take effect on 27 September 2011.

Should you have any further enquiries, please contact Tenille Nielsen, Senior Environmental Officer of the department on (07) 4987 9341.

Yours sincerely,

sch4-Signature

Melissa Wells
**Regional Manager
Environmental Services – Mining
Central West Region**

Department of Environment and Resource Management
99 Hospital Road, Emerald
PO Box 19
Emerald QLD 4720
Telephone (07) 4987 9320
Facsimile (07) 4987 9399
www.derm.qld.gov.au
ABN 46 640 294 485

Notice of Decision – Environmental Authority

This notice is issued by the Department of Environment and Resource Management to advise of a statutory decision made under section 228 of the Environmental Protection Act 1994.

REGISTERED POST – SENDER TO KEEP
558586284012

Ms Deborah Wood
The Mining Registrar
Queensland Mines and Energy
Department of Employment, Economic Development
and Innovation
PO Box 245
Emerald Qld 4720

C/c Mr Craig Bancroft
Senior Environmental Advisor
BHP Billiton Mitsubishi Alliance
GPO Box 1389
Brisbane Qld 4001

C/c Mr Peter Roe
Manager Environment
BHP Billiton Mitsubishi Alliance
GPO Box 1389
Brisbane Qld 4001

Our Reference: 352554

Dear Ms Wood

Re: Application for Environmental Authority (Mining Lease) Non Code Compliant Level 1 Mining Project – Caval Ridge Coal Mine.

The Department of Environment and Resource Management (the department) has assessed an application for Environmental Authority (Mining Lease) Non Code Compliant Level 1 Mining Project received on 30 August 2010 and wishes to advise you of our decision as specified below:

Principal Holder	Joint Holder(s)	Mining Tenements	Environmental Authority number	Decision
BHP Coal Pty Ltd	Umal Consolidated Pty Ltd BHP Queensland Coal Investments Pty Ltd Mitsubishi Development Pty Ltd QCT Investment Pty Ltd QCT Mining Pty Ltd QCT Resources Pty Ltd	MLa70403 (part) ML1775 (part)	MIN101827410	Granted

Notice of Decision – Environmental Authority

If you require more information, please contact the telephone number listed below.

sch4-Signature

Clancy Mackaway
Delegate
Environmental Protection Act 1994
17 November 2010

Enquiries:

Department of Environment and Resource Management
Environmental Services Mining
Central West Region (Emerald)
PO Box 19
99 Hospital Rd
Emerald QLD 4720
Ph. (07) 4980 6200
Fax. (07) 4982 2568

RTI DL RELEASE - EHP

Environmental Authority (Mining Activities) Non Code Compliant**Level 1 Mining Project****Permit¹ Number: MIN101827410 – Caval Ridge Coal Mine****Section 228 - Environmental Protection Act 1994****Takes effect from:**

The Environmental Authority is not to take effect until written notification is provided to the Department of Environment and Resource Management by the Coordinator-General notifying that Condition 2 (Mine Water Management) and Condition 13 (Mineral Waste) in Appendix 1, Schedule 1 of the Coordinator-General Evaluation Report dated August 2010 and as amended by any subsequent Change Reports pursuant to Division 3A of the *State Development and Public Works Organisation Act 1971*, have been satisfied.

Details

Permit holder(s)	Name	Address
Principal Holder	BHP Coal Pty Ltd	Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	Umal Consolidated Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	BHP Queensland Coal Investments Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	Mitsubishi Development Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	QCT Investment Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	QCT Mining Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	QCT Resources Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Department of Environment and Resource Management.

Activity(s)	Location(s)
Mining Lease	MLa70403 (part), ML1775 (part)

The anniversary date of the environmental authority is *date of grant relevant mining tenement*.

The environmental authority is subject to the attached conditions of approval.

sch4-Signature

Clancy Mackaway
Delegate
Environmental Protection Act 1994
17 November 2010

RTI DL RELEASE - EHP

Departmental Interest: General environment

Financial assurance

- A1** Provide a financial assurance in the amount and form required by the administering authority prior to the commencement of activities proposed under this environmental authority.

Note: The calculation of financial assurance for condition A1 must be in accordance with Guideline 17 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)

- A2** The financial assurance is to remain in force until the administering authority is satisfied that no claim on the assurance is likely.

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.

Maintenance of measures, plant and equipment

- A3** The environmental authority holder must ensure:
- a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed,
 - b) that such measures, plant and equipment are maintained in a proper condition, and
 - c) that such measures, plant and equipment are operated in a proper manner.

Monitoring

- A4** Record, compile and keep for a minimum of five 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.
- A5** Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

Storage and handling of flammable and combustible materials

- A6** Spillage of all flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and maintained in accordance with Section 5.8 of AS 1940 - *Storage and Handling of Flammable and Combustible Liquids of 2004*.

Definitions

- A7** Words and phrases used throughout the environmental authority are defined in the Definitions section at the end of the Environmental Authority. Where a definition for a term used in the environmental authority is sought and the term is not defined within the environmental authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

Notification of emergencies, incidents and exceptions

- A8** All reasonable actions are to be taken to minimise environmental harm, or the risk thereof, resulting from any emergency, incident or circumstances not in accordance with the conditions of this environmental authority.
- A9** As soon as practicable after becoming aware of any emergency, incident or information about circumstances which results or may result in environmental harm not in accordance with the conditions of this environmental authority, the administering authority must be notified in writing.
- A10** Not more than ten (10) business days following the initial notification of an emergency, incident or information about circumstances which result or may result in environmental harm, written advice must be provided to the administering authority in relation to:
- proposed actions to prevent a recurrence of the emergency or incident,
 - the outcomes of actions taken at the time to prevent or minimise environmental harm, and
 - proposed actions to respond to the information about circumstances which result or may result in environmental harm.
- A11** 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.

A12 The holder of this environmental authority must not commence activities on mining lease 70403 and mining lease 1775 unless:

- a) the environmental authority holder has submitted to the administering authority a report on the water balance model used during the *Caval Ridge Mine Project - Environmental Impact Statement* in accordance with the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinator General's evaluation report for an Environmental Impact Statement (9 August 2010)*.

The report must include:

- i. details of all the assumptions used in the water balance model,
- ii. an explanation of how water quality predications were derived, and
- iii. a demonstration that contaminated run-off and pump-out of pits for an Annual Exceedence Probability (AEP) 0.05 wet season can be contained within the storages provided.

- b) the administering authority has accepted, in writing, that the report meets the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinator General's evaluation report for an Environmental Impact Statement (9 August 2010)*.

A13 Should the report submitted under condition A12 indicate that the water management system will not operate to ensure that contaminated run-off and pump-out of pits for an Annual Exceedence Probability (AEP) 0.05 wet season will be contained within the storages provided, the environmental authority holder is required to adjust the operating levels of the water management system to prevent releases of mine affected water to an appropriate AEP standard not exceeding 0.05 over the operating life of the mine.

Note: Conditions A12 and A13 shall not be interpreted so as to interfere with other conditions regarding the general performance of water management systems over the operating life of the mine estimated based on water balance modelling or otherwise.

A14 Any design changes to water supply, storage and transfer components of the sites water management system, identified by conditions A12 and A13 will require an amendment to this environmental authority and the submitted Environmental Management Plan.

- A15** The holder of this environmental authority must not commence activities on mining lease 70403 and mining lease 1775 unless:
- a) the environmental authority holder has submitted to the administering authority either a final design plan or a conceptual design plan, together with the certification (for final design plan) or endorsement (conceptual design plan) of a suitably qualified and experienced person that the submitted final or conceptual design plan of the flood protection levee will deliver the performance stated in that submitted design plan, meeting the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinator Generals evaluation report for an Environmental Impact Statement (9 August 2010)*, and
 - b) the administering authority has accepted, in writing, that the design plan meets the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinator Generals evaluation report for an Environmental Impact Statement (9 August 2010)*.
- A16** Any design changes to the flood protection levee from the commitments made in the *Caval Ridge Mine Project Environmental Impact Statement* and the Environmental Management Plan, identified by condition A15 will require an amendment to this environmental authority and the submitted Environmental Management Plan.
- A17** The holder of this environmental authority must not commence activities on mining lease 70403 and mining lease 1775 unless:
- a) the environmental authority holder has submitted to the administering authority:
 - i. sufficient evidence to justify the effectiveness and reliability of the proposed belt press filter technology (e.g. processing results from a statistical relevant sample of material that would be representative of the tailings to be produced at the site), meeting the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinators Generals evaluation report for an Environmental Impact (9 August 2010)*, and
 - ii. a report on the most recent results and analysis of the testing of the belt filter press pilot plant at the Peak Downs Mine, meeting the requirements of *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinators Generals evaluation report for an Environmental Impact (9 August 2010)*.
 - b) the administering authority has accepted, in writing, that the evidence provided meets the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinators Generals evaluation report for an Environmental Impact (9 August 2010)*.
- A18** Should the information supplied to the administering authority in accordance with condition A17 indicate that the proposed belt press filter technology indicate that the residual shear strength of the tailings waste is less than 1000 Pascals, then the environmental authority holder is required to adjust the sites tailings waste disposal management systems.

- A19** Any changes to the site tailings waste disposal management systems, including the production of tailings waste less than 1000 Pascals will require an amendment to this environmental authority and the submitted Environmental Management Plan.
- A20** The construction or operation of a regulated structure for the purpose of storing or disposal of tailings or reject material is not authorised under this environmental authority.

Department Interest: Air

- B1** The release of noxious or offensive odours, or any other noxious or offensive airborne contaminants resulting from the activities to which this environmental authority relates, must not cause a nuisance at any sensitive or commercial place.
- B2** The holder must implement and maintain best practice environmental management dust control procedures that incorporate a program for continuous improvement for the management of dust resulting from the mining activities with respect to, but not limited to equipment selection, mine planning, design and operation, and staff training.
- B3** Dust generated by the mining activities must not cause any of the following air quality objectives to be exceeded at a sensitive or commercial place:
- a) A level of deposited dust of 120 milligrams per square metre per day based on a monthly average, and
 - b) A concentration of total particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1 year averaging time.
- B4** The holder must take all reasonable and practical measures to limit the concentration of particulate matter generated by the mining activities with an aerodynamic diameter of less than 10 micrometres (PM_{10}), to 50 micrograms per cubic metre ($50\mu g/m^3$) suspended in the atmosphere over a 24 hour averaging time with not more than 5 exceedences recorded over 12 months at any sensitive or commercial place.

Dust and particulate matter monitoring, control and reporting

- B5** The holder of the environmental authority must develop and implement a dust and particulate matter monitoring and control program.

- B6** The program must include:
- a) the collection of air quality and meteorological data at locations and using the monitoring methods described in Table B1a (Dust and Particulate Matter Monitoring) and Table B1b (Dust and Particulate Matter Monitoring Locations),
 - b) a system to identify adverse meteorological conditions likely to produce elevated levels of PM₁₀ at a sensitive or commercial place due to the mining activities, and
 - c) a dust control strategy that would activate the timely implementation of high management dust control actions (listed in Table B2 (Dust and Particulate Control Actions)) in addition to the best practice environmental management dust control measures during periods identified in (b).
- B7** The dust and particulate matter monitoring and control program must be submitted to the administering authority with the plan of operations.
- B8** Where monitoring identifies instances where the concentration specified in Condition B4 is exceeded, the holder should report to the administering authority within 14 days:
- a) the concentration of PM₁₀ particulates at the sensitive or commercial site,
 - b) a description of meteorological conditions recorded in accordance with Table B1a (Dust and Particulate Monitoring) occurring at the time,
 - c) the concentration of PM₁₀ particulates upwind of the mining activities (if known), and
 - d) measures taken to reduce dust generated by the mining activities.
- B9** Notwithstanding condition B6, if requested by the administering authority, dust and particulate monitoring must be undertaken for a stated period at a specified sensitive or commercial place, and the results provided to the administering authority within fourteen (14) days following completion of monitoring.
- B10** If the monitoring required by condition B9 is undertaken for over one month, then monthly interim reports should be provided to the administering authority.

B11 The holder of the environmental authority must report annually to the administering authority:

- a) the results and an analysis of dust and particulate matter monitoring, including consideration of the relevant meteorological data,
- b) details of the use of high management control measures including the dust and atmospheric conditions that triggered the action, when, where and what action was applied, and the effectiveness of the action meeting the requirements of conditions B3 and B4,
- c) identification of any trends that should be considered in management of the mining activities and dust management practices, and
- d) any changes to the dust and particulate control actions and monitoring resulting from an analysis of (a), (b) and (c).

Table B1a (Dust and Particulate Matter Monitoring)

Air Quality Determination	Monitoring method to be used
Concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM_{10}) suspended in the atmosphere over a 24 hour averaging time	Real-time monitoring of the 24 hour average. Australian Standard AS 3580.9.8:2008 <i>Determination of suspended PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser</i> (or the most recent version), or any alternative method of monitoring PM_{10} that may be permitted by the Air Quality Sampling Manual as published from time to time by the administering authority.
Concentration of particulate matter suspended in the atmosphere in micrograms per cubic metre over a 24 hr averaging time	AS/NZS 3580.9.3:2003 <i>Determination of suspended particulate matter - Total suspended particulate matter (TSP) - High volume sampler gravimetric method</i> (or the most recent version)
Deposited dust	Australian Standard AS 3580.10.1:2003 (or the most recent version);
Meteorological data (including but not limited to wind speed and direction, humidity, temperature and precipitation)	AS 2923:1987: <i>Guideline for measurement of horizontal wind for air quality applications</i> or as approved by the administering authority.
Siting of monitoring equipment	AS/NZS 3580.1.1:2007 Guide to siting air monitoring equipment

Table B1b (Dust and Particulate Matter Monitoring Locations)

Monitoring location	Receiving area on the receiving areas plan	Relevant upwind location	Monitoring Point Location (GDA94)		Monitoring Point Description
Site 2	Moranbah Township	Site 8, Site 12, Site 13, Site 16	608108	7563784	TEOM, Dust Deposition, Hi Vol and Met Station
Site 3	Long Pocket Road	Site 8, Site 9, Site 10, Site 11, Site 13	606420	7561806	Dust Deposition
Site 4	Moranbah Access Road north of site	Site 12, Site 15, Site 16	608776	7562285	Dust Deposition
Site 5	Long Pocket Road	Site 8, Site 13	603130	7560334	TEOM, Dust Deposition, Hi Vol and Met Station
Site 6	Long Pocket Road	Site 8, Site 9, Site 10, Site 11, Site 13	605758	7560933	Dust Deposition
Site 7	Moranbah Access Road north of site	Site 12, Site 15, Site 16	609639	7561176	Dust Deposition
Site 8	Moranbah Airport	Site 12, Site 5	610964	7560054	TEOM, Dust Deposition and Met Station
Site 9	Moranbah Access Road, east of site	Site 3, Site 5, Site 6, Site 12	611521	7557979	Dust Deposition
Site 10	Hornery Homestead	Site 3, Site 5, Site 6, Site 12	611916	7557486	Dust Deposition
Site 11	Peak Downs Highway near intersection with Dysart Moranbah Road	Site 12, Site 15, Site 16	612227	7555010	Dust Deposition
Site 12	Buffel Park Homestead	Site 8, Site 13	606359	7551294	TEOM, Dust Deposition, Hi Vol and Met Station
Site 13	East of mine on Dysart Moranbah Road	Site 5, Site 12, Site 16	614993	7552261	TEOM, Dust Deposition, Hi Vol and Met Station
Site 14	West of CHPP	Site 11, Site 13	608673	7549887	Dust Deposition and Met Station
Site 15	West of mine, just south of Peak Downs Highway	Site 11, Site 13	607695	7547304	Dust Deposition
Site 16	West of mine, south of Peak Downs Highway, west of Heyford Pit	Site 2, Site 13	611179	7545941	TEOM, Dust Deposition, Hi Vol and Met Station

sch4-Signature

Table B2 (Dust and Particulate Control Actions)

Activity	High management control
Dragline - overburden	Check operators are working to standards (eg. Drop height), modification of swing pattern
Truck and Shovel	Additional watering, Relocation (partial or full)
Truck loading coal	Additional watering, Relocation (partial or full)
Bulldozing - overburden	Reschedule operations or relocate
Truck dumping overburden	Additional watering, rescheduling, reposition
Tailings disposal area	Additional watering, rescheduling, reposition
ROM - erosion active stockpile	Regular water sprays
Truck dumping coal	Regular water sprays
Loading trains	Operating of the Veneering System
Conveyor	Application of additional water
Blasting - overburden	Redesign of blasting plan or rescheduling of blast
Drilling - overburden	Redesign of blasting plan, additional watering, rescheduling, relocation
Haul roads	Additional watering, treatment with suppression or modify operation.
Grader	Additional watering or rescheduling

Department Interest: Water

Contaminant release

- W1** Contaminants that will or have the potential to cause environmental harm must not be released directly or indirectly to any waters except as permitted under the conditions of this environmental authority.
- W2** The release of contaminants to waters must only occur from the release points specified in Table W1 (Contaminant Release Points, Sources and Receiving Waters) and depicted in Figure 1 attached to this environmental authority.

Table W1 (Contaminant Release Points, Sources and Receiving Waters)

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
Discharge Point 1	611,857*	7550167	12N Dam	Discharge Point	Cherwell Creek

Note (*) location to be confirmed after detailed design of the dam outlet

- W3** The release of contaminants to waters must not exceed the release limits stated in Table W2 (Contaminant Release Limits) when measured at the monitoring points specified in Table W1 (Contaminant Release Points, Sources and Receiving Waters) for each quality characteristic.

Table W2 (Contaminant Release Limits)

Quality Characteristic	Release Limits	Monitoring frequency
Electrical Conductivity ($\mu\text{S}/\text{cm}$)	1000	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	NA*	Daily during release* (first sample within 2 hours of commencement of release)
Suspended Solids (mg/L)	200	Daily during release* (first sample within 2 hours of commencement of release)
Sulfate (SO_4^{2-}) (mg/L)	1000	Daily during release* (first sample within 2 hours of commencement of release)

Note NA – not available, * local trigger values need to be developed

Additional Information: The Coordinator General Evaluation Report dated August 2010 issued under the *State Development and Public Works Organisation Act 1971* states that the administering authority may 'consider raising the limit to 1500 $\mu\text{S}/\text{cm}$, subject to BMA assessing how the increase would impact on the environment and committing to satisfactory environmental protection measures'. The administering authority may further 'consider BMA's proposal of an 1800 $\mu\text{S}/\text{cm}$ discharge limit, subject to BMA providing a sufficiently detailed technical business case' (page 4).

- W4** The release of contaminants to waters from the release points must be monitored at the locations specified in Table W1 (Contaminant Release Points, Sources and Receiving Waters) for each quality characteristics and at the frequency specified in Table W2 (Contaminant Release Limits) and Table W3 (Release Contaminant Trigger Investigation Levels).

Table W3 (Release Contaminant Trigger Investigation Levels)

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

Note:

1. All metal and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.
2. The list of quality characteristics required to be monitored as per table W3 will be reviewed once the results of the monitoring data is gathered for the interim period until 31 December 2011 or an earlier date if the data is, or becomes, available and if it is determined that there is no need to monitor for certain individual characteristics these can be removed from Table W3.
3. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC and ARMCANZ (2000)
4. LOR – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.

- W5** If quality characteristics of the release exceed any of the trigger levels specified in Table W3 (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 W3 (Release Contaminant Trigger Investigation Levels) and:
1. where the trigger values are not exceeded then no action is to be taken, or
 2. where the downstream results exceed the trigger values specified in Table W3 (Release Contaminant Trigger Investigation Levels) for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites, and
 - a) if the result is less than the background monitoring site data, then no action is to be taken; or
 - b) if the result is greater than the background monitoring site data, complete an investigation in accordance with the ANZECC & ARMCAZ (2000) methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
 - (i) details of the investigations carried out, and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with W5(2)(b)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

- W6** If an exceedance in accordance with condition W5(2)(b) is identified, the environmental authority holder must notify the administering authority within fourteen (14) days of receiving the result.

Contaminant Release Events

- W7** The environmental authority holder must install, operate and maintain a stream flow gauging station to determine and record stream flows at the locations upstream of each Release Point as specified in Table W4 (Contaminant Release During Flow Events) for any receiving water into which a release occurs.
- W8** Notwithstanding any other condition of this environmental authority, the release of contaminants to waters must only take place during periods of natural flow events specified as minimum flow in Table W4 (Contaminant Release During Flow Events) for the contaminant release point(s) specified in Table W1 (Contaminant Release Points, Sources and Receiving Waters).

Table W4 (Contaminant Release During Flow Events)

Receiving water description	Release Point	Gauging station description	Easting (GDA94)	Northing (GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
Upstream Cherwell Creek	12N Dam	Upper Cherwell Creek	609986	7547730	$\geq 0.5 \text{ m}^3/\text{s}$	Daily during discharge

sch4-Signature

- W9** Contaminant release flow rate must not exceed 20% of receiving water flow rate.
- W10** The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in Table W1 (Contaminant Release Points, Sources and Receiving Waters).
- W11** 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.

Notification of Release Event

- W12** The environmental authority holder must notify the administering authority as soon as practicable (no later than six (6) hours) of having commenced releasing mine affected water to the receiving environment. Notification must include the submission of written verification to the administering authority of the following information:
- 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).

Note: Notification to the administering authority must be addressed to the Manager and Project Manager of the local administering authority via email or facsimile.

RTI DL RELEASE - EHP

- W13** The environmental authority holder must notify the administering authority as soon as practicable, (nominally within twenty-four (24) hours after of cessation of a release) of the cessation of a release notified under condition W12 and within twenty-eight (28) days provide the following information in writing:
- 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 Department 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.

Notification of Release Event Exceedance

- W14** If the release limits defined in Table W2 (Contaminant Release Limits) are exceeded, the environmental authority holder must notify the administering authority within twenty-four (24) hours of receiving the results.
- W15** The environmental 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:
- 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.

Monitoring of Water Storage Quality

- W16** Water storages stated in Table W5 (Water Storage Monitoring), which are associated with the release points, must be monitored for the water quality characteristics specified in Table W6 (Onsite Water Storage Contaminant Limits) at the monitoring locations and at the monitoring frequency specified in Table W5 (Water Storage Monitoring).

Table W5 (Water Storage Monitoring)

Water Storage Description	Easting (GDA94)	Northing (GDA94)	Monitoring Location	Frequency of Monitoring
12N Dam	612073.953	7550194.088	Discharge Point 1	Monthly
Sed Dam N3	608025.999	7559341.929	Storage mid depth	Monthly
Sed Dam N2	607466.751	7556738.953	Storage mid depth	Monthly
Sed Dam N1	609476.752	7551214.041	Storage mid depth	Monthly
Sed Dam S3	614631.698	7545513.187	Storage mid depth	Monthly
Sed Dam S2	613601.728	7546405.147	Storage mid depth	Monthly
Sed Dam S1	611797.899	7548403.205	Storage mid depth	Monthly
Catchment Dam North	609872.023	609872.023	Storage mid depth	Monthly
Catchment Dam South	611592.955	7552648.159	Storage mid depth	Monthly
Mine Water Dam N3	608143.849	7558806.043	Storage mid depth	Monthly
Mine Water Dam N2	607402.009	7556072.087	Storage mid depth	Monthly
Mine Water Dam N1	608959.882	7551661.454	Storage mid depth	Monthly
Mine Water Dam S1	613028.758	7549358.146	Storage mid depth	Monthly
Mine Water Dam 5	609491.923	7550720.059	Storage mid depth	Monthly
Mine Water Dam 4	609855.959	7550463.192	Storage mid depth	Monthly
Mine Water Dam 4a	609788.829	7550327.124	Storage mid depth	Monthly
Mine Water Dam 3	610795.934	7549577.987	Storage mid depth	Monthly
Mine Water Dam 2	610799.785	7549191.098	Storage mid depth	Monthly
Mine Water Dam 1	610454.801	7549137.258	Storage mid depth	Monthly

- W17** In the event that water storages defined in Table W5 (Water Storage Monitoring) exceed the contaminant limits defined in Table W6 (Onsite Water Storage Contaminant Limits), the environmental authority holder must implement measures to prevent access to waters by all livestock.

Table W6 (Onsite Water Storage Contaminant Limits)

Quality Characteristic	Test Value	Contaminant Limit
pH (pH unit)	Range	Greater than 4, less than 9 ²
EC (µS/cm)	Maximum	5970 ¹
Sulfate (mg/L)	Maximum	1000 ¹
Fluoride (mg/L)	Maximum	2 ¹
Aluminium (mg/L)	Maximum	5 ¹
Arsenic (mg/L)	Maximum	0.5 ¹
Cadmium (mg/L)	Maximum	0.01 ¹
Cobalt (mg/L)	Maximum	1 ¹
Copper (mg/L)	Maximum	1 ¹
Lead (mg/L)	Maximum	0.1 ¹
Nickel (mg/L)	Maximum	1 ¹
Zinc (mg/L)	Maximum	20 ¹

Notes: ¹Contaminant limit based on ANZECC and ARMCANZ (2000) stock water quality guidelines;

² Page 4.2-15 of ANZECC and ARMCANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4-9"

³Total measurements (unfiltered) must be taken and analysed

Receiving Environment Monitoring and Contaminant Trigger Levels

- W18** The quality of the receiving waters must be monitored at the locations specified in Table W8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points) for each quality characteristic and at the monitoring frequency stated in Table W7 (Receiving Waters Contaminant Trigger Levels).

Table W7 (Receiving Waters Contaminant Trigger Levels)

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 – 8.0	Daily during the release
Electrical Conductivity ($\mu\text{S}/\text{cm}$)	1000	
Suspended solids (mg/L)	N/A	
Sulfate (SO_4^{2-}) (mg/L)	1000 (Protection of irrigation value)	

Note N/A denotes local trigger value to be determined by the proponent based on 80 percentile of upstream reference site.

Table W8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points)

Monitoring Points	Receiving Waters Location Description	Easting (GDA94)	Northing (GDA94)	Monitoring Frequency
Upstream Background Monitoring Points				
Upstream Cherwell Creek	Cherwell Creek at upstream gauging station	609986	7547730	Daily during controlled releases from 12N Dam and Daily during natural flow event in Cherwell Creek
Upstream of Horse Creek Diversion	Upstream of Horse Creek Diversion	607000	7554200	Daily during natural flow event in Horse Creek Diversion
Upstream Harrow Creek	Harrow Creek upstream of Peak Downs Mine 10 North Dam	614412	7543440	Daily during natural flow event in Harrow Creek
Downstream Monitoring Points				
Downstream Cherwell Creek	Cherwell Creek at downstream gauging station	612309	7550588	Daily during controlled releases from 12N Dam and Daily during natural flow event in Cherwell Creek
Downstream Horse Creek	Downstream Horse Creek	609846	7560358	Daily during natural flow event in Horse Creek Diversion
Downstream Harrow Creek	Downstream Harrow Creek	616815	7547919	Daily during natural flow event in Harrow Creek

W19 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table W7 (Receiving Waters Contaminant Trigger Levels) during a release event, the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and:

1. where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken, or
2. where the downstream results exceed the upstream results, complete an investigation in accordance with the ANZECC & ARMCANZ (2000) methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
 - (i) details of the investigations carried out, and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with W19(2)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

Receiving Environment Monitoring Program (REMP)

W20 A REMP must be implemented by 17 February 2011 to monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being discharged from the site, with the aims of identifying and describing the extent of any adverse impacts to local environmental values, and monitoring any changes in the receiving water.

For the purposes of the REMP, the receiving environment is the waters of the Cherwell Creek and connected waterways within ten kilometres downstream of the release.

W21 The REMP report must address (but not necessarily be limited to) the following:

- a) description of potentially affected receiving waters including key communities and background water quality characteristics based on accurate and reliable monitoring data that takes into consideration any temporal variation (e.g. seasonality),
- b) description of applicable environmental values and water quality objectives to be achieved (i.e. as scheduled pursuant to the Environmental Protection (Water) Policy 2009),
- c) any relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment within which the REMP is proposed,
- d) water quality targets within the receiving environment to be achieved, and clarification of contaminant concentrations or levels indicating adverse environmental impacts during the REMP
- e) monitoring for any potential adverse environmental impacts caused by the release,
- f) monitoring of stream flow and hydrology,
- g) monitoring of toxicants should consider the indicators specified in Table W3 (Release Contaminant Trigger Investigation Levels) to assess the extent of the compliance of concentrations with water quality objectives and/or the ANZECC & ARMCANZ (2000) guidelines for slightly to moderately disturbed ecosystems,
- h) monitoring of physical chemical parameters specified in Table W2 (Contaminant Release Limits) and dissolved oxygen saturation and temperature,
- i) monitoring biological indicators (for macroinvertebrates in accordance with the AusRivas methodology) and metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ (2000), BATLEY and/or the most recent version of AS5667.1 *Guidance on Sampling of Bottom Sediments*) for permanent, semi-permanent water holes and water storages,
- j) the locations of monitoring points (including the locations specified in Table W8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points) which are background and downstream impacted sites for each release point),
- k) the frequency or scheduling of sampling and analysis sufficient to determine water quality objectives and to derive site specific reference values within two (2) years (depending on wet season flows) in accordance with the Queensland Water Quality Guidelines 2009. For ephemeral streams, this should include periods of flow irrespective of mine or other discharges,
- l) specify sampling and analysis methods and quality assurance and control,
- m) any historical datasets to be relied upon,
- n) description of the statistical basis on which conclusions are drawn, and
- o) any spatial and temporal controls to exclude potential confounding factors.

W22 The REMP report must be prepared and submitted in writing to the administering authority by 17 September 2011.

Water Reuse

- W23** Water contaminated by mining activity may be piped or trucked or transferred by some other means that does not contravene the conditions of this authority during periods of dry weather for the purpose of supplying stock water to properties directly adjoining properties owned by the environmental authority holder or a third party and subject to compliance with the quality release limits specified in Table W9 (Stock Water Release Limits).

Table W9 (Stock Water Release Limits)

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

Note: Any additional parameter by third party agreement

- W24** Water contaminated by mining activity may be piped or trucked or transferred by some other means that does not contravene the conditions of this authority during periods of dry weather for the purpose of supplying irrigation water to properties directly adjoining properties owned by the environmental authority holder or a third party and subject to compliance with quality release limits in Table W10 (Irrigation Water Release Limits).

Table W10 (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 and provided through an amendment process

Note: Any additional parameter by third party agreement

- W25** Water contaminated by mining activity may be piped or trucked off the mining lease for the purpose of supplying water to a third party for purpose of construction and/or road maintenance in accordance with the conditions of this environmental authority.
- W26** Water contaminated by mining activity may be piped or trucked for the purpose of supplying water to Peak Downs Mine in accordance with the conditions of this environmental authority. The volume, pH and electrical conductivity of water transferred to Peak Downs Mine must be monitored and recorded.

- W27** If the responsibility of water contaminated by mining activities (the water) is given or transferred to another person in accordance with conditions W23, W24, W25 or W26:
- the responsibility of the water must only be given or transferred in accordance with a written agreement (the third party agreement), and
 - include in the third party agreement a commitment from the person utilising the water to use water in such a way as to prevent environmental harm or public health incidences and specifically make the persons aware of the General Environmental Duty (GED) under section 319 of the *Environmental Protection Act 1994*, environmental sustainability of the water disposal and protection of environmental values of waters.

Water General

- W28** All determinations of water quality must be:
- 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 authority's Water Quality 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
 - laboratory testing must be undertaken using a laboratory accredited (e.g. NATA) for the method of analysis being used.

Note: Condition W28 requires the Water Quality Manual to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.

- W29** The release of contaminants directly or indirectly to waters:
- 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.

Annual Water Monitoring Reporting

- W30** The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format with each annual return:
- a) the date on which the sample was taken,
 - b) the time at which the sample was taken,
 - c) the monitoring point at which the sample was taken,
 - d) the measured or estimated daily quantity of the contaminants released from all release points,
 - e) the release flow rate at the time of sampling for each release point,
 - f) the results of all monitoring and details of any exceedances with the conditions of this environmental authority, and
 - g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

Temporary Interference with waterways

- W31** Temporarily destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with the administering authority's Guideline - Activities in a Watercourse, Lake or Spring associated with Mining Activities.

Water Management Plan

- W32** A Water Management Plan must be developed and implemented by 17 September 2010 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.
- W33** The Water Management Plan must be developed in accordance with the administering authority's Guideline for Preparation of Water Management Plans for Mining Activities 2009 or any updates that become available from time to time and must include at least the following components:
- a) Contaminant Source Study,
 - b) Site Water Balance and Model,
 - c) Water Management System,
 - d) Saline Drainage Prevention and Management Measures,
 - e) Acid Rock Drainage Prevention and Management Measures (if applicable),
 - f) Emergency and Contingency Planning, and
 - g) Monitoring and Review.

W34 Each year the environmental authority holder must undertake a review of the Water Management Plan prior to the wet season (i.e. by 1 November) and a further review following the wet season (i.e. by 1 May the following year) to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with the conditions of this environmental authority and that environmental harm is prevented or minimised.

W35 A copy of the Water Management Plan and/or a review of the Water Management Plan must be provided to the administering authority on request.

Saline Drainage

W36 The environmental authority holder must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline drainage.

Acid Rock Drainage

W37 The environmental authority holder must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of acid rock drainage.

Stormwater and Water sediment controls

W38 An Erosion and Sediment Control Plan must be developed by a suitably qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to water and contamination of storm water.

W39 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 waters without appropriate treatment.

W40 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 waters.

Fitzroy River Basin Study

- W41** The administering authority and the environmental authority holder both acknowledge that the conditions for release of contaminants to the Isaac River in this environmental authority have been calculated without the benefit of the findings of projects proposed to be undertaken as per recommendations 2 and 3 of the Study of cumulative impacts on water quality of mining activities in the Fitzroy River Basin (April 2009). The administering authority may, based on the information provided in the study report when it becomes available, all relevant information available at the time and the regulatory framework applicable at that time, consult with the environmental authority holder about the conditions in the environmental authority concerning the treatment and disposal of waste water.

The aim of the consultation shall be the meaningful review of the contaminant release limits imposed in this authority having regard to:

- a) the study results,
- b) near field monitoring results,
- c) Queensland Water Quality Guidelines, and
- d) best practice environmental management.

If this review leads to a change in the requirements on this environmental authority holder, this shall be advanced by way of an authority amendment or a Transitional Environmental Program and as is necessary or desirable.

Stream sediment contaminant levels

- W42** All reasonable and practicable erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the movement of sediment, including:
- a) all clean waters, from undisturbed areas, kept separate from dirty waters from disturbed areas,
 - b) water from disturbed catchments diverted into the mine water management system and sedimentation dams,
 - c) new sedimentation dams designed to capture the sediment volume calculated for the catchment area for a 24 hour 10 year annual recurrence interval (ARI) storm event, and
 - d) sediment shall be excavated from sediment dams as required to maintain design capacity.

Interfering with waterways

- W43** The environmental authority holder is permitted to destroy vegetation, excavate and fill watercourses to establish temporary crossings when there is no flow. Works shall remain in place for no longer than four (4) weeks.

Mine Water Management System

- W44** The environmental authority holder must prepare to the satisfaction of the administering authority, an integrated mine water management system (MWMS) which shall as a minimum address:
- a) runoff from all mine areas and catchments draining into the MWMS, including runoff into mine pits,
 - b) transfer of mine water between storages,
 - c) mine water demands, including the reuse of mine water in plant operations and dust suppression,
 - d) all mine water process inputs and losses, including evaporation losses and losses or recycling of extracted water from belt filter press,
 - e) water quality,
 - f) ~~adequate design capacity~~ for the adequate containment of contaminated runoff and pump-out of pits during wet seasons,
 - g) controlled discharges to remain compliant with all environmental authority conditions,
 - h) uncontrolled discharges from the MWMS to the receiving environment, and
 - i) annual updating of the water balance model with mine monitoring data including:
 - i. rainfall,
 - ii. actual dam volumes,
 - iii. raw water demand,
 - iv. water quality,
 - v. actual storage capacity of dams,
 - vi. mine water transfer operations,
 - vii. controlled releases, and
 - viii. quality and quantity of uncontrolled releases.
- W45** The Mine Waste Water Management System must be submitted to the administering authority prior to the commencement of mining operations
- W46** The holder of the environmental authority must ensure that the probability of an uncontrolled discharge from any dam listed in Table W5 (Water Storage Monitoring) is limited to the AEP probabilities specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams). The probability of uncontrolled discharges must be managed by ensuring adequate design storage capacity, transfer capacity, and operations, and contingency measures of the integrated mine water management system (MWMS).
- W47** The environmental authority holder must develop, calibrate, and maintain a complete mine water balance model (with coupled contaminant balance model) that adequately represents all sources of mine water contributing to all dams that comprise the integrated mine water system, mine pits, and operations of the MWMS including controlled releases (where applicable). All key assumptions and input parameters of the mine water balance model must be documented and be available for auditing.

- W48** The environmental authority holder must undertake system risk failure assessments on the MWMS and submit to the administering authority system failure contingency plans which ensure that:
- there is no increase in the frequency of uncontrolled discharges from the storage components of the MWMS, and
 - controlled discharges remain compliant with all environmental authority conditions.
- W49** All key assumptions for mine water operations in the mine water balance model must be documented in Standard Operating Procedures and the MWMS must be operated in accordance with the procedures.
- W50** Assessments utilising the mine water balance model to evaluate water management system capacity and operations in response to rainfall must be undertaken by competent personnel.
- W51** The environmental authority holder must implement and maintain monitoring of actual mine water quantity and quality within the mine water management system to demonstrate, and continually improve the mine water balance model calibration.
- W52** On 1 November each year, the environmental authority holder shall review the mine catchments, storage capacity, current storage volumes, system transfer capacity, and Standard Operating Procedures of all key infrastructure elements of the mine water management system and update the mine water balance model. An assessment of the mine water balance model must be undertaken to ensure that the mine water management system has sufficient storage capacity, transfer capacity, and transfer operations to ensure that the frequency of uncontrolled discharges of mine water is less than or equal to the specified AEP in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams).

The assessment must be undertaken with an appropriate period of climate data that includes representation of wet season rainfall events up to the AEP specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams). The assessment results must be documented and be available for auditing.

- W53** The environmental authority holder must notify the administering authority within fourteen (14) days, if the assessment of the mine water management system shows that probability of uncontrolled discharge from any dam within the integrated mine water system is greater than the specified AEP in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams).
- W54** In the event of failure of any component, or series of components, of the mine water management system, the holder of the environmental authority must utilise the mine water balance model to reassess the performance of the mine water management system in its failed state, and notify the administering authority if the assessment of the mine water management system shows that the probability of uncontrolled discharge would be greater than the AEP specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams).
- W55** Notwithstanding the provisions for *Mandatory Report Levels in Department Interest: Dams*, the environmental authority holder must not allow any uncontrolled discharge to be caused by either failure to:
- stop transferring water to a dam where the transfer into that dam contributes in part, or full, to the overflow (uncontrolled discharge) of that dam, or
 - start and continue transferring water from a mine water dam, where the Standard Operation Procedures require the water transfer from the dam to prevent overflow (uncontrolled discharges).

RTI DL RELEASE - EHP

Monitoring and Reporting in the event of uncontrolled release

W56 In the event of an uncontrolled release from any component of the integrated mine water system to the receiving environment, the environmental authority holder shall:

- a) Sample and monitor the uncontrolled release waters during or as immediately practical after the event (recognising that uncontrolled discharges should only occur during extreme rainfall and site may not be accessible) to determine quality characteristics of the uncontrolled release for parameters specified in Table W2, (Contaminant Release Limits) and Table W3 (Release Contaminant Trigger Investigation Levels),
- b) Sample and monitor the receiving environment monitoring sites listed in Table W8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points) for sites relevant to the uncontrolled release location,
- c) Estimate the quantity of uncontrolled release waters, by a suitably qualified and experienced person,
- d) Provide a written report to the administering authority within fourteen (14) days of the uncontrolled release event, which shall include as a minimum:
 - i. the time and dates of the uncontrolled release event,
 - ii. the location of the uncontrolled release,
 - iii. the monitoring quality of the uncontrolled release waters; or if not available due to site access constraints in wet weather during the event, the quality of waters in the dam that contributed to the uncontrolled release before the event (from monitoring undertaken as part of condition W16) and quality in that dam after the release events,
 - iv. the estimated quantity of uncontrolled release,
 - v. downstream receiving water monitoring results,
 - vi. rainfall during, or that contributed to, the uncontrolled release event and dam levels prior to the rainfall event that caused uncontrolled release,
 - vii. a determination of whether uncontrolled release was solely caused by rainfall exceeding the design AEP events specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams),
 - viii. a determination of whether the uncontrolled release was caused in part or fully by failure to operate the integrated mine water system in accordance with Standard Operating Procedures for the integrated mine water system, or physical failure of one or more components of the integrated mine water system,
 - ix. a determination of whether the uncontrolled release caused environmental harm, and
 - x. if determined that the uncontrolled release could have been reasonably prevented, actions that will be taken to ensure uncontrolled releases comply in all respects with this environmental authority.

Sewage Treatment

- W57** When required, the treated wastewater from the sewage treatment plant may be used to irrigate defined areas described as gardens and lawns within the confines of the Plant Site or for dust suppression, industrial reuse, evaporated or any other use consistent with Class A+ under the Administering Authority's guideline titled "Queensland Water Recycling Guidelines", dated December 2005. Sewage effluent from sewage treatment facilities must not be directly or indirectly released from the sewage treatment plant to any waters, stormwater drain or drainage line.

Quantity of Contaminated Water Released to Land

- W58** The rate of application of water from the sewage treatment plant to gardens, lawns or other irrigation areas must not exceed the sustainable capacity of the land to assimilate the effluent.

Quality of Contaminated Water Released to Land

- W59** Sewage must be treated to comply with each of the release limits specified in Table W11 (Treated Sewage Release Quality Characteristic Limits) for each quality characteristic before any release of the effluent to land or other reuse.
- W60** The quality of treated sewage must be monitored in accordance with the requirements of Table W11 (Treated Sewage Release Quality Characteristic Limits) and records kept of the results.

Table W11 (Treated Sewage Release Quality Characteristic Limits)

Quality Characteristics	Unit	Release Limit	Limit Type	Minimum Monitoring Frequency
5-day Biochemical Oxygen Demand	mg/L	20	Maximum	Weekly
Suspended Solids	mg/L	30	Maximum	Weekly
pH	pH units	6 – 8.5	Range	Weekly
Turbidity (measured before disinfection)	NTU	2	Median	Continuous
		5	Maximum	
Total dissolved solids	mg/L	1000	Maximum	Weekly
E-coli	cfu/100 mL	1	Median	Weekly (with three replicates) for at least first year. Then if verified as complying with these limits, monthly (with three replicates)
		10	95 th percentile	
Clostridium perfringens	cfu/100 mL	1	Median	
		10	95 th percentile	
F-RNA Bacteriophage	pfu/100 mL	1	Median	
		10	95 th percentile	
Somatic coliphage	pfu/100 mL	1	Median	
		10	95 th percentile	

- W61** When weather or land conditions, prevent the irrigation of treated effluent, alternative measures must be taken to store or use the treated effluent.
- W62** The irrigation and reuse on land of treated wastewater to land, taken as from the edge of the wetted area, must not be carried out
- within twenty (20) metres of any boundary of the mining lease, public road or stormwater drain, except in the case of advanced disinfected effluent applied by either small drip irrigation, subsurface irrigation or small surface sprays with a spray plume not exceeding a diameter of 1.0 metres or 0.3 metres in height in which case the separation distance is reduced to 2 metres,
 - in a manner likely to cause effluent runoff or surface ponding,
 - within one-hundred (100) metres of any water supply bore,
 - in any manner or quantity that causes spray to drift beyond the boundaries of the mining lease or any runoff of contaminants to any waters or stormwater drain,
 - in any manner or quantity that adversely affects soil, vegetation or groundwater quality;
 - in any manner likely to adversely affect public health, and
 - such as to cause any exceedance of the Environmental Investigation Thresholds listed in Appendix 9 of the Guidelines for Assessment and Management of Contaminated Land in Queensland.

Groundwater

- W63** The holder of the environmental authority must develop and implement a groundwater monitoring program. The program must be able to detect a significant change to ground water quality values (consistent with the current suitability of the groundwater for domestic and agricultural use and any discharge to surface waters) due to activities that are part of this mining project.

Background groundwater monitoring program

- W64** A background groundwater monitoring program must be developed to include bore(s) that are located an appropriate distance from potential sources of impact from mining activities to provide the following:
- representative groundwater samples from the aquifers potentially affected by mining activities,
 - at least twelve (12) sampling events, no more than two (2) months apart over a 2 year period, to determine background groundwater quality as far as practicable,
 - background groundwater quality in hydraulically isolated background bore(s) that have not been affected by any mining activities, and
 - final groundwater contaminant trigger levels and limits required in condition W65.
- W65** Groundwater contaminant trigger levels as per Table W13 (Groundwater Contaminant Trigger Levels) must be finalised based on a background groundwater monitoring program defined in condition W64 and submitted to the administering authority no more than 17 February 2012 of this environmental authority.

- W66** The groundwater monitoring data must be reviewed on an annual basis by a suitably qualified and experienced hydrogeologist. The review must include the assessment of groundwater levels and quality data, and the suitability of the monitoring network. The assessment must be submitted to the administering authority within twenty-eight (28) days of receiving the report.
- W67** Groundwater must be monitored in conjunction with condition W63 and at least at the locations and frequency defined in Table W12 (Groundwater Monitoring Locations and Frequency).

Table W12 (Groundwater Monitoring Locations and Frequency)

Monitoring point	Description	Easting (GDA 94)	Northing (GDA94)	Monitoring Frequency
Monitoring Point 1	Pz 01	609840.529	7560144.575	To be determined in the groundwater monitoring program
Monitoring Point 2	Pz 02	608439.9	7558242.277	
Monitoring Point 3a	PZ 03 D	608916.481	7556711.899	
Monitoring Point 3b	PZ 03 S	608914.851	7556715.848	
Monitoring Point 4	Pz-04	610730.988	7555325.567	
Monitoring Point 5	Pz05	608917.108	7554117.698	
Monitoring Point 6a	PZ06-D	611127.779	7551677.618	
Monitoring Point 6b	PZ06-S	611123.879	7551676.163	
Monitoring Point 7a	PZ 07 D	612465.327	7550703.505	
Monitoring Point 7b	PZ 07 S	612470.583	7550702.893	
Monitoring Point 8a	PZ 08 D	611413.113	7549712.569	
Monitoring Point 8b	PZ 08 S	611410.691	7549709.458	
Monitoring Point 9	Pz-09	614326.005	7548821.529	
Monitoring Point 10a	Pz-11-s	616791.293	7547599.751	
Monitoring Point 10b	Pz-11-d	616791.284	7547599.648	

- W68** The holder of the environmental authority must report the results and analysis of groundwater monitoring to the administering authority on request.
- W69** Subject to condition W63 groundwater levels must be monitored and recorded and groundwater draw down fluctuations in excess of two (2) metres per year, not resulting from the pumping of licensed bores, must be notified within fourteen (14) days to the administering authority following completion of monitoring.

W70 The method of water sampling required by the environmental authority must comply with that set out in the current edition of the Department of Environment and Resource Management's Water Quality Sampling Manual, or subsequent updated versions. The following information must also be recorded in relation to all groundwater water sampling:

- 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, and
- the results of all monitoring.

W71 If the groundwater contaminant trigger levels defined in Table W13 (Groundwater Contaminant Trigger Levels) are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within twenty-eight (28) days of receiving the analysis results.

Table W13 (Groundwater Contaminant Trigger Levels)

Parameter	Unit	Trigger Levels	Limit Type
pH	pH Units	6.5 - 8.5	Minimum/Maximum
Electrical Conductivity	µS/cm	(To be provided by the proponent after 2 years of background quality monitoring in accordance with condition W66)	Maximum
Total Dissolved Solids	mg/L		
Calcium	µg/L		
Magnesium	µg/L		
Sodium	µg/L		
Potassium	µg/L		
Chlorine	µg/L		
SO ₄	µg/L		
CO ₃	µg/L		
HCO ₃	µg/L		
Iron	µg/L		
Aluminium	µg/L		
Silver	µg/L		
Arsenic	µg/L		
Mercury	µg/L		
Antimony	µg/L		
Molybdenum	µg/L		
Selenium	µg/L		
Total Petroleum Hydrocarbons	µg/L		

sch4-Signature

Departmental Interest: Noise and vibration**Noise nuisance**

- D1** Noise from the mining activity must not cause a noise nuisance at any sensitive place.
- D2** All noise from the mining activity must not exceed the levels specified in Table D1 (Noise Limits (Sensitive Place)) at any sensitive place.
- D3** Noise is not considered to be a nuisance under condition D1 if monitoring shows that noise from the mining activity does not exceed the following levels in the time periods specified in Table D1 (Noise Limits (Sensitive Place)).

Table D1 (Noise Limits (Sensitive Place))

Noise Level [dB(A)] at a 'Sensitive Place' expressed as	Monday to Sunday		
	7am – 6pm	6pm – 10pm	10pm – 7am
$L_{Aeq,adj,15\text{ mins}_1}$	$RBL_3 + 5$	$RBL_3 + 5$	$RBL_3 + 5$
$LA_{1,15\text{ mins}_2}$	45	45	45

Note ¹ External noise limitNote ² Internal noise limitNote ³ Rated Background Level (RBL) as defined in the DERM's *Ecoaccess Planning for Noise Control* Guideline**Noise monitoring**

- D4** When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of noise nuisance at any sensitive place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring. Monitoring must include:
- $L_{Aeq,adj,15\text{ mins}}$ (external),
 - $L_{A1,15\text{ mins}}$ (internal – or a measured external noise level and calculation of corresponding internal noise level),
 - the level and frequency of occurrence of impulsive or tonal noise,
 - atmospheric conditions including wind speed and direction,
 - effects due to extraneous factors such as traffic noise, and
 - location date and time of recording.
- D5** The method of measurement and reporting of noise levels must comply with the current edition of the Department of Environment and Resource Management's *Noise Measurement Manual* and any subsequent versions.

- D6** If monitoring indicates exceedance of the relevant limits in Table D1 (Noise Limits (Sensitive Place)), then the environmental authority holder must:
- address the complaint including the use of appropriate dispute resolution if required, and
 - immediately implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.

Vibration nuisance

- D7** Subject to conditions D8 and D9, vibration from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.
- D8** If the environmental authority holder can provide evidence through monitoring that the limits defined in Table D2 (Airblast Overpressure and Peak Particle Velocity Levels) are not being exceeded then the holder is not in breach of condition D7.
- D9** If monitoring indicates exceedance of the relevant limits in Table D2 (Airblast Overpressure and Peak Particle Velocity Levels), then the environmental authority holder must:
- address the complaint including the use of appropriate dispute resolution if required, and
 - immediately implement vibration abatement measures so that vibration from the activity do not result in further environmental nuisance.

Table D2 (Airblast Overpressure and Peak Particle Velocity Levels)

Blast Noise and Vibration Parameter	Monday to Sunday - 8am to 5pm
Airblast overpressure level (dB linear peak)	115 dB (linear peak) for 4 out of any 5 consecutive blasts regardless of the interval between blasts. Any single blast must not exceed 120 dB (linear peak).
Peak particle velocity (mm/s)	For vibrations of more than 35 Hz – no more than 25 mm/s ground vibration For vibrations of no more than 35 Hz – no more than 10 mm/s ground vibration

- D10** 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.
- D11** The method of measurement and reporting of vibration levels must comply with Appendix J of AS 2187.2-2006.

Airblast overpressure nuisance

- D12** Subject to Conditions D13 and D14, airblast overpressure level from blasting operations must not cause an environmental nuisance, at any sensitive or commercial place.
- D13** If the environmental authority holder can provide evidence through monitoring that the limits defined in Table D2 (Airblast Overpressure and Peak Particle Velocity Levels) are not being exceeded then the holder is not in breach of condition D12.
- D14** If monitoring indicates exceedance of the relevant limits in Table D2 (Airblast Overpressure and Peak Particle Velocity Levels), then the environmental authority holder must:
- address the complaint including the use of appropriate dispute resolution if required, and
 - immediately implement airblast overpressure abatement measures so that airblast overpressure from the activity do not result in further environmental nuisance.
- D15** 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.
- D16** Airblast overpressure monitoring must include the following descriptors, characteristics and conditions:
- location of the blast(s) within the mining area (including which bench level),
 - atmospheric conditions including temperature, relative humidity and wind speed and direction, and
 - location, date and time of recording.
- D17** The method of measurement and reporting of airblast overpressure levels must comply with Appendix J of AS 2187.2-2006.

Department Interest: Waste**Storage of tyres**

- E1** Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste-to-energy options must be stored in stable stacks less than 3 metres high, and at least 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 10 metres radius of the scrap tyre storage area.



Disposal of tyres

- 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.

Waste Management

- E4** A Waste Management Plan, in accordance with the Environmental Protection (Waste Management) Policy 2000, must be implemented and must cover:
- a) how the environmental authority holder will recognise and apply the waste management hierarchy,
 - b) identify characterisations of wastes generated from the project and general volume trends over the past five (5) years,
 - d) waste commitments with auditable targets to reduce, reuse and recycle,
 - e) waste management control strategies including:
 - 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, and
 - vii. disposal, reused and recycling options,
 - f) identify the potential adverse and beneficial impacts of the wastes generated,
 - g) hazardous characteristics of the wastes generated including:
 - i. disposal procedures for hazardous wastes,
 - ii. processes to be implemented to allow for continuous improvement of the waste management systems,
 - iii. identification of responsible staff (positions) for implementing, managing and reporting the Waste Management Plan, and
 - iv. staff awareness and induction programs that encourage re-use and recycling.
- E5** 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 Environmental Protection (Waste Management) Policy 2000.

Coal Handling and Preparation Plant Waste

- E6** Waste from the Coal Handling and Preparation Plant must be disposed of in:
- regulated dams in accordance with conditions in Department Interest: Dams of this environmental authority if the residual shear strength of the waste is less than 1000 Pascals prior to disposal; or
 - the Authorised Spoil Disposal Areas in accordance with conditions in Department Interest: Waste Table E1 (Location of Spoil Disposal Facility) if the residual shear strength of the waste is equal or more than 1000 Pascals prior to disposal.

Spoil disposal facility - certification and operation

- E7** Authorised spoil disposal facilities, used for the disposal of waste are located within the control points defined in Table E1 (Location of Spoil Disposal Facility).

Table E1 (Location of Spoil Disposal Facility)

Name of Spoil Disposal Facility	Control Points	
	Easting (GDA 94)	Northing (GDA 94)
Caval Ridge Spoil Dumps	(A list of control points to be provided by the proponent)	(A list of control points to be provided by the proponent)

- E8** Spoil disposal facility(s) shall be designed to prevent environmental harm arising from contaminants being generated in the facility, leachate and runoff from the facility or other sources.
- E9** Authorised spoil disposal facility(s) must be constructed and maintained in accordance with certified design plans, submitted to the administering authority.
- E10** Design plans for the authorised spoil disposal facility(s) must include performance indicators, such that:
- during operations the spoil disposal facility(s) will be operated with minimal or no potential for adverse environmental harm resulting from collapse of any component of facility; and
 - the potential for leachate generation will be minimal or non existent; and
 - adequate drainage structures, erosion protection and storage are provided to manage seasonal and rare rainfall events with minimal or no environmental harm.

sch4-Signature

- E11** Construction of any spoil disposal facility detailed in Table E1 (Location of Spoil Disposal Facility) must not commence unless:
- a) the environmental authority holder has submitted to the administering authority two copies of a design plan, and
 - b) certification from a suitably qualified and experienced person that the design of the spoil disposal facility(s) will deliver the performance stated in that design plan and that it will be compliant in all other respects with this environmental authority, and
 - c) at least twenty (20) business days has passed since the receipt of those documents by the administering authority, or
 - d) the administering authority notifies the environmental authority holder that a design plan and certification, has been submitted for that disposal facility.

Operational plan – Spoil disposal facility

- E12** An operational plan must be developed and maintained for the spoil disposal facility. The operational plan must include but not be limited to:
- a) description of landform development stages of the spoil disposal facility,
 - b) placement technique for spoil and waste material from the coal handling and processing plant on the Caval Ridge mine site,
 - c) management of any containment structures within the spoil disposal facility designed to contain materials from the coal handling and processing plant on the Caval Ridge mine site,
 - d) demonstration of how operations of the spoil disposal facility are consistent with the accepted design plan for the facility, and
 - e) decommissioning and rehabilitation strategies for the spoil disposal facility that demonstrate consistency with conditions of this environmental authority.

Departmental Interest: Land

Preventing contaminant release to land

- F1** Contaminants must not be released to land in a manner which constitutes nuisance, material or serious environmental harm.

Topsoil

- F2** Topsoil must be strategically stripped ahead of mining in accordance with a topsoil management plan.
- F3** A topsoil inventory which identifies the topsoil requirements for the mining project and availability of suitable topsoil on site must be detailed in the Plan of Operations.

Rehabilitation landform criteria

- F4** Progressive rehabilitation must commence within two (2) years of when areas become available within the operational land.

Residual void studies

- F5**
- a) The holder of the environmental authority must prepare a revised residual void model for approval by the administering authority during the fifth year after commencement of operation;
 - b) The model in a) must be subject to review each subsequent five years while the mine continues to operate;
 - c) Any amendment to the approved residual void model that may arise from the reviews in a) or b) must be based on any significant changes to groundwater characteristics or other data considered relevant by the administering authority that becomes available from the groundwater monitoring program; and
 - d) Notwithstanding obligations under a), b) and c), the holder of the environmental authority must undertake residual void water balance modelling during mine closure planning, in consultation with the administering authority, to ensure assumptions regarding surface water runoff and groundwater ingress are suitable for the site.

Residual void outcome

- F6** Complete an investigation into residual voids and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in conditions F4 and landform design criteria for Departmental review and comment. On acceptance of the criteria proposed in the residual void management plan, the criteria must be specified in the Environmental Authority.

The investigation must at a minimum include the following:

- a) a study of options available for minimising final void area and volume,
 - b) develop design criteria for rehabilitation of final voids,
 - c) 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,
 - d) a study of the measures to protect the residual voids, uncompacted overburden and workings from the "probable maximum flood" level based on the Bureau of Meteorology's "probable maximum precipitation" forecast for the locality,
 - e) 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,
 - f) a study of void capability to support native flora and fauna, and
 - g) a proposal/s for end of mine void rehabilitation success criteria and final void areas and volumes.
- These studies will be undertaken during the life of the mine, and will include detailed research and modelling.

Rehabilitation monitoring program

- F7** Once rehabilitation has commenced, the environmental authority holder must conduct a Rehabilitation Monitoring Program on a two (2) yearly basis, which must include sufficient spatial and temporal replication to enable statistically valid conclusions as established under the rehabilitation program.

sch4-Signature

- F8** The Rehabilitation Monitoring Program must be developed and implemented by a person possessing appropriate qualifications and experience in the field of rehabilitation management, nominated by the environmental authority holder.
- F9** The Rehabilitation Monitoring Program must be included in the Plan of Operations and updated with each subsequent Plan of Operations, describing:
- how the rehabilitation objectives will be achieved; and
 - verification of rehabilitation success.

Post closure management plan

- F10** A Post Closure Management Plan for the site must be prepared at least eighteen (18) months prior to the final coal processing on site and implemented for a nominal period of:
- at least thirty (30) years following final coal processing on site, or
 - a shorter period if the site is proven to be geotechnically and geochemically stable and it can be demonstrated to the satisfaction of the administering authority that no release of contaminants from the site will result in environmental harm.
- F11** The Post Closure Management Plan must include the following elements:
- operation and maintenance of:
 - wastewater collection and reticulation systems;
 - wastewater treatment systems;
 - the groundwater monitoring network;
 - final cover systems; and
 - vegetative cover.
 - monitoring of:
 - surface water quality;
 - groundwater quality;
 - seepage rates;
 - erosion rates;
 - the integrity and effectiveness of final cover systems; and
 - the health and resilience of native vegetation cover.

Storage and handling of chemicals

- F16** 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.
- F17** Spillage of all chemicals must be controlled in a manner that prevents environmental harm.

Exploration

- F18** Disturbance due to exploration activities in areas not scheduled to be mined must be rehabilitated in accordance with provisions detailed in the administering authority's *Code of Environmental Compliance for Exploration and Mineral Development Projects*.

Department Interest: Dams**All Dams**

- G1** The hazard category of each dam must be determined by a suitably qualified and experienced person, prior to its construction and at least once every year thereafter.
- G2** Construction of any dam determined to be in the significant or high hazard category (i.e. a regulated dam) must not be commenced unless the location, basic details, and hydraulic performance of that dam are specifically referenced in this environmental authority.
- G3** On cessation of operation of any dam, that dam must be maintained so as to avoid environmental harm until that dam is decommissioned.
- G4** Prior to the cessation of the environmentally relevant activity, each dam must be decommissioned such that it either:
- becomes a stable landform, that no longer contains flowable substances, or
 - is approved or authorised under relevant legislation for a beneficial use, or
 - is a void authorised by the administering authority to remain after decommissioning, and
 - is compliant with the rehabilitation requirements of this environmental authority.

Regulated Dams - Location

- G5** The following regulated dams must be wholly located within the control points defined in Table H1.

Mining waste management

- F12** A Mining Waste Management Plan together with the certification by an appropriately qualified person must be developed and implemented during the continuation of the environmental authority. The Mining Waste Management Plan must at a minimum include:
- a) characterisation programs to ensure that all mining waste is progressively characterised during disposal for net acid producing potential, salinity and the following contaminants: pH, Electrical Conductivity (EC), Acid Neutralising Capacity (ANC), Net Acid Generation (NAG) (reporting NAG capacity and NAG pH after oxidation), Net Acid Producing Potential (NAPP), Total Sulfur (S), Chromium Reducible Sulfur (Scr), Boron (B) Cadmium (Cd), Iron (Fe), Aluminium (Al), Copper (Cu), Magnesium (Mg), Manganese (Mn), Calcium (Ca), Sodium (Na), Zinc (Zn) and Sulfate (SO₄),
 - b) characterisation programs to ensure that the physical properties of the mining waste is progressively characterised during disposal,
 - c) the availability or leachability of metals from the mining waste,
 - d) quantity of potentially acid forming (PAF) mining waste,
 - e) review potential impacts of PAF mining waste on the success of proposed rehabilitation methods;
 - f) management actions for mining waste that has been identified as having a high availability or leachability of metals in accordance with condition F13,
 - g) management actions for mining waste that has been defined as PAF,
 - h) identification of environmental impacts and potential environmental impacts,
 - i) control measures for routine operations to minimise likelihood of environmental harm,
 - j) contingency plans and emergency procedures for non-routine situations, and
 - k) periodic review of environmental performance and continual improvement.

Acid mine drainage and leachate management

- F13** Subject to the release limits defined in Departmental Interest: Water, all reasonable and practicable measures must be implemented to prevent hazardous leachate being directly or indirectly released or likely to be released as a result of the activity to the environment.

Storage and handling of flammable and combustible liquids

- F14** 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 AS 1940 – *Storage and Handling of Flammable and Combustible Liquids*.
- F15** Spillage of all flammable and combustible liquids must be controlled in a manner that prevents environmental harm.

Table H1 (Location of Regulated dams)

Name of Regulated Dam	Easting GDA 94 ^(*)	Northing GDA 94 ^(*)
12N Dam	612073.953	7550194.088
Mine Water Dam N1	608959.882	7551661.454
Mine Water Dam N2	607402.009	7556072.087
Mine Water Dam N3	607402.009	7556072.087
Mine Water Dam S1	607402.009	7556072.087

G6 The following regulated dams must be consistent with the basic details in Table G2.

Table G2 (Basic Details of Regulated Dams)

Regulated Dam	Maximum Surface Area (ha) ^(*)	Maximum Volume of Dam (ML) ^(*)	Maximum Depth of Dam (m) ^(*)	Purpose of Dam
12N Dam	42.8	2300	8	Collection, storage and management of mine water including pit waters
Mine Water Dam N1	1	30	4	Collection and transfer of pit water
Mine Water Dam N2	1	30	4	Collection and transfer of pit water
Mine Water Dam N3	1	30	4	Collection and transfer of pit water
Mine Water Dam S1	1	30	4	Collection and transfer of pit water

Note^(*) Details to be provided by Proponent

G7 The following regulated dams must meet the hydraulic performance criteria specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams).

Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams)

Regulated Dam	Hazard Category for Failure to Contain	Uncontrolled Discharge AEP	Hazard Category for Dambreak	Spillway Critical Design Storm AEP	Mandatory Reporting Level
Regulated Dams					
12N Dam	Significant	1: 100	Significant	1: 1000	1: 100 AEP 72 hour storm volume below spillway level OR 1:100 AEP wind wave height below spillway level.
Mine Water Dam N1	Significant	1: 100	Significant	1: 1000	
Mine Water Dam N2	Significant	1: 100	Significant	1: 1000	
Mine Water Dam N3	Significant	1: 100	Significant	1: 1000	
Mine Water Dam S1	Significant	1: 100	Significant	1: 1000	
Low Hazard Dams (not Regulated) that form part of the integrated mine water system					
Sed Dam N1	Low	1:10	Significant	1: 1000	Not Applicable
Sed Dam N2	Low	1:10	Significant	1: 1000	
Sed Dam N3	Low	1:10	Significant	1: 1000	
Sed Dam S1	Low	1:10	Significant	1: 1000	
Sed Dam S2	Low	1:10	Significant	1: 1000	
Sed Dam S3	Low	1:10	Significant	1: 1000	
Catchment Dam North	Low	1:10	Significant	1: 1000	
Catchment Dam South	Low	1:10	Significant	1: 1000	
Mine Water Dam 1	Low	1:10	Significant	1: 1000	
Mine Water Dam 2	Low	1:10	Significant	1: 1000	
Mine Water Dam 3	Low	1:10	Significant	1: 1000	
Mine Water Dam 4	Low	1:10	Significant	1: 1000	
Mine Water Dam 4a	Low	1:10	Significant	1: 1000	
Mine Water Dam 5	Low	1:10	Significant	1: 1000	

sch4-Signature

Regulated Dams - Certification and Operation

- G8** Every regulated dam must be constructed in accordance with a certified design plan that has been submitted to the administering authority, and such that the resulting dam will deliver the performance stated in that submitted design plan and that dam is compliant in all respects with this environmental authority.
- G9** Construction of a regulated dam must not be commenced unless:
- a) the environmental authority holder has submitted to the administering authority two copies of a design plan, together with the certification of a suitably qualified and experienced person that the design of the regulated dam will deliver the performance stated in that submitted design plan and that dam is compliant in all respects with this environmental authority, and
 - b) at least twenty (20) business days has passed since the receipt of those documents, or the administering authority notifies the environmental authority holder that a design plan and certification has been received.
- G10** When construction of any regulated dam is complete and prior to commencing operation of that dam, the environmental authority holder must submit to the administering authority two (2) copies of a set of 'as constructed' drawings, together with the certification of a suitably qualified and experienced person that the dam 'as constructed' will deliver the performance stated in that submitted design plan and that dam is compliant in all respects with this environmental authority.
- G11** An operational plan must be kept current for each regulated dam.
- G12** Where an operational plan covers decommissioning and rehabilitation, those operations are to be consistent with the design plan for the dam and the rehabilitation requirements of this environmental authority.
- G13** The environmental authority holder must notify the administering authority within twenty-four (24) hours, of the level in any regulated dam reaching the mandatory reporting level (MRL) and must immediately act to prevent or minimize any actual or potential environmental harm.

Regulated Dams - Annual Inspection and Report

- G14** Each regulated dam must be inspected annually by a suitably qualified and experienced person.
- G15** At each annual inspection, the condition and adequacy of each regulated dam must be assessed for dam safety and against the necessary structural, geotechnical and hydraulic performance criteria.

- G16** At each annual inspection, if a mandatory reporting level is required, it must be determined and marked on each regulated dam.
- G17** A final assessment of adequacy of available storage in each regulated dam must be based on a dam level observed within the month of October and result in an estimate of the level in that dam as at 1 November.
- G18** For each annual inspection, two (2) copies of a report on the condition and adequacy of each regulated dam, certified by the suitably qualified and experienced person and including any recommended actions to be taken to ensure the integrity of each regulated dam; must be provided to the administering authority by 1 December.
- G19** The environmental authority holder must, within one week of receipt of the annual inspection report, consider the report and its recommendations; and as soon as possible, but within one month of receipt of the annual inspection report, formulate and implement actions to ensure that each regulated dam safely performs its intended functions.

Departmental Interest: Flora and Fauna

- H1** A qualified spotter catcher is to be engaged to work ahead of the site clearing works at the commencement of the vegetation clearing activity.
- H2** The environmental authority holder must develop and implement a watercourse revegetation plan for all creek diversions including but not limited to :
- a) establishing benchmarks for vegetation condition in watercourses and riparian areas;
 - b) describe how and when the revegetation objectives will be achieved;
 - c) undertake ecological monitoring of aquatic ecology to ensure that the aquatic ecological values are maintained or enhanced;
 - d) describe performance monitoring and reporting arrangements; and
 - e) contingency actions should objectives not be achieved.
- H3** The watercourse revegetation plan must be submitted to the approving authority prior to the commencement of any creek diversions.



Definitions

Words and phrases used throughout this Environmental Authority 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.

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

- a) stability of final land forms in terms of settlement, erosion, weathering, pondage and drainage;
- b) control of geochemical and contaminant transport processes;
- c) quality of runoff waters and potential impact on receiving environment;
- d) vegetation establishment, survival and succession;
- e) vegetation productivity, sustained growth and structure development;
- f) fauna colonisation and habitat development;
- g) 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;
- h) microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration;
- i) effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;
- j) resilience of vegetation to disease, insect attack, drought and fire;
- k) vegetation water use and effects on ground water levels and catchment yields.

“acid mine drainage (AMD)” means any contaminated discharge emanating from a mining operation formed through a series of chemical and biological reaction, when geological strata is disturbed and exposed to oxygen and moisture as a result of mining operations.

“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 activities.

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

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

“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.

"ANZECC & ARMCANZ" means the Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) 2000, Australian and New Zealand Guidelines for Fresh Marine Water Quality.

"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.

"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”, “certifying” 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.

“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.

“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 is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. A dam does *not* mean a fabricated or manufactured tank or container designed to an Australian Standard that deals with strength and structural integrity of that tank or container.

"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 all investigation and design reports, plans and specifications sufficient to hand to a contractor for construction, and planned decommissioning and rehabilitation outcomes; so as to address all hazard scenarios that would be identified by a properly conducted hazard assessment for the structure. Documentation must be such that a 'suitable qualified and experience person' could conduct an independent review without seeking further information from the designer.

"design storage allowance" or "DSA" means an available volume, estimated in accordance with the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995), that must be provided in a dam as at the first of November each year in order to prevent a discharge from that dam to a probability (AEP) specified in that guideline. The DSA is estimated based on 100% runoff of wet season rainfall at the relevant AEP, taking account of process inputs during that wet season, with no allowance for evaporation.

"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.

“end-of-pipe” means the location at which water is released to waters or land.

“environmental authority” means an environmental authority under Chapter 5 of 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*.

“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.

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

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

“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.

“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 hazard category in the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

“infrastructure” means water storage dams, roads and tracks, buildings and other structures built for the purpose and duration of the conduct of the environmentally relevant activities, but does not include other facilities required for the long term management of the impact of those activities or the protection of potential

resources. Such other facilities include dams other than water storage dams, waste dumps, voids, or stockpiles and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.

"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.

"LAr,1 hour" means the rating level, equal to LAeq,adj,1 hour.

"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 DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

"land suitability" as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

"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", "dyke" or "bund" means a long embankment 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 releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of water or flowable substances at any other times.

"mandatory reporting level" or "MRL" means a warning and reporting level determined in accordance with the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995). An MRL is the lowest level required in a regulated dam to allow either of the following to be retained:

- a) the runoff from a 72 hour duration storm at the AEP specified in the Table 5; or
- b) a wave allowance at that AEP as estimated using a recognised engineering method.

"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 therefrom;
- 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 water” means process water and contaminated storm water.

“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 well being.

“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.

“regulated dam” means any dam in the significant or high hazard category as assessed using the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

“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 center 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.

“stormwater” means all surface water runoff from rainfall.

“suitably qualified and experienced person” in relation to dams means a person 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 the geomechanics of dams with particular emphasis on stability, geology and geochemistry; and
- c) a total of five years of suitable experience and demonstrated expertise each, in three of the following categories:
 - i. Investigation and design of dams.
 - ii. Construction, operation and maintenance of dams.
 - iii. Hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology.

- iv. Hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes.
- v. Hydrogeology with particular reference to seepage, groundwater.
- vi. Solute transport processes and monitoring thereof.
- vii. Dam safety.

“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 constructed, open excavation in the ground.

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

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

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

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

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

“waters” includes all or any part of a river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water in natural or artificial watercourses, bed and banks of a watercourse, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater.

“µg/L” means micrograms per litre.

“µs.cm-1” means microsiemens per centimetre.

Figure 1: Caval Ridge release point and receiving water monitoring locations

END OF ENVIRONMENTAL AUTHORITY

APPLICATION FOR A LEVEL 2 NON-CODE COMPLIANT ENVIRONMENTAL AUTHORITY (MINING ACTIVITIES) SECTION 228 OF THE ENVIRONMENTAL PROTECTION ACT 1994

CLIENT: BHP Coal Pty Ltd
 Umal Consolidated Pty Ltd
 BHP Queensland Coal Investments Pty Ltd
 Mitsubishi Development Pty Ltd
 QCT Investment Pty Ltd
 QCT Mining Pty Ltd
 QCT Resources Pty Ltd

REGISTERED OFFICE ADDRESS: Level 23, Riparian Plaza,
 71 Eagle Street
 BRISBANE QLD 4000

TENEMENT: MLa70403 (part),
 ML1775 (part)

ENV AUTHORITY NO.: MIN101827410

FILE NO.: EMD2701

DECISION DUE DATE: 18 October 2010

TIME SPENT: 200 + Hours

1.0 SUMMARY

BHP Coal Pty Ltd and others applied for a Level 1 Non Code Compliant Environmental Authority (EA) over mining lease (ML) application 70403 and to include part of ML1775. The Draft EA was issued and the public notification period ended 4 November 2010 – no objections were received. The final EA is the same as the draft EA, however a notation to refer to comments made in the Coordinator General's report has been added (see below 1). The EA takes effect following the completion of a certain event (see below 2) The Assessment Report for this application remains the same.

1.

Additional Information: The Coordinator General Evaluation Report dated August 2010 issued under the *State Development and Public Works Organisation Act 1971* states that the administering authority may 'consider raising the limit to 1500 μ S/cm, subject to BMA assessing how the increase would impact on the environment and committing to satisfactory environmental protection measures'. The administering authority may further 'consider BMA's proposal of an 1800 μ S/cm discharge limit, subject to BMA providing a sufficiently detailed technical business case' (page 4).

2.

The Environmental Authority is not to take effect until written notification is provided to the Department of Environment and Resource Management by the Coordinator-General notifying that Condition 2 (Mine Water Management) and Condition 13 (Mineral Waste) in Appendix 1, Schedule 1 of the Coordinator-General Evaluation Report dated August 2010 and as amended by any subsequent Change Reports pursuant to Division 3A of the *State Development and Public Works Organisation Act 1971*, have been satisfied.

The applicant has been notified of the additional conditions :	- No additional conditions
New EA has been attached in Ecotrack / created in Ecotrack:	- Yes
Notice of Decision has been produced:	- Yes
Additional Conditions checklist has been completed	- N/A
Deciding to grant or refuse Check Sheets Attached: -	- N/A

2.0 RECOMMENDATION

N:\Mines\Tenure\Coal\Mining Lease_ML's\Caval Ridge\Amendment and Application\EA Application Post EIS\Environmental Authority\RSA final.doc

It is recommended that

- the new ML application MIN100646307 be approved.

Rebecca Blades

Principal Environmental Officer

Signed - [sch4-Signature]

Date - 17.10.2010

Reviewed & Endorsed By	
Supervisor Louise Pinn Senior Environmental Officer Signed - [sch4-Signature] Date - 17/11/10	Delegate Clancy Mackaway Manager Signed - [sch4-Signature] Date - 17.11.10

RTI DL RELEASE - EHP

Environmental Authority (Mining Activities) Non Code Compliant

Level 1 Mining Project

Permit¹ Number: MIN101827410 – *Caval Ridge Coal Mine*

Section 228 - Environmental Protection Act 1994

Takes effect from: 27 September 2011

Details

Permit holder(s)	Name	Address
Principal Holder	BHP Coal Pty Ltd	Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	Umal Consolidated Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	BHP Queensland Coal Investments Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	Mitsubishi Development Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	QCT Investment Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	QCT Mining Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000
Joint Holder	QCT Resources Pty Ltd	C/- Level 23, Riparian Plaza, 71 Eagle Street BRISBANE QLD 4000

Activity(s)	Location(s)
Mining Lease	ML70403 (part), ML1775 (part)

The anniversary date of the environmental authority is *17 November*.

The environmental authority is subject to the attached conditions of approval.

sch4-Signature

Chris Loveday
Delegate
Environmental Protection Act 1994
28 September 2011

RTI DL RELEASE - EHP

Departmental Interest: General environment**Financial assurance**

- A1** Provide a financial assurance in the amount and form required by the administering authority prior to the commencement of activities proposed under this environmental authority.

Note: The calculation of financial assurance for condition A1 must be in accordance with Guideline 17 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)

- A2** The financial assurance is to remain in force until the administering authority is satisfied that no claim on the assurance is likely.

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.

Maintenance of measures, plant and equipment

- A3** The environmental authority holder must ensure:
- a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed,
 - b) that such measures, plant and equipment are maintained in a proper condition, and
 - c) that such measures, plant and equipment are operated in a proper manner.

Monitoring

- A4** Record, compile and keep for a minimum of five 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.
- A5** Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

Storage and handling of flammable and combustible materials

- A6** Spillage of all flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and maintained in accordance with Section 5.8 of AS 1940 - *Storage and Handling of Flammable and Combustible Liquids of 2004*.

Definitions

- A7** Words and phrases used throughout the environmental authority are defined in the Definitions section at the end of the Environmental Authority. Where a definition for a term used in the environmental authority is sought and the term is not defined within the environmental authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

Notification of emergencies, incidents and exceptions

- A8** All reasonable actions are to be taken to minimise environmental harm, or the risk thereof, resulting from any emergency, incident or circumstances not in accordance with the conditions of this environmental authority.
- A9** As soon as practicable after becoming aware of any emergency, incident or information about circumstances which results or may result in environmental harm not in accordance with the conditions of this environmental authority, the administering authority must be notified in writing.
- A10** Not more than ten (10) business days following the initial notification of an emergency, incident or information about circumstances which result or may result in environmental harm, written advice must be provided to the administering authority in relation to:
- a) proposed actions to prevent a recurrence of the emergency or incident,
 - b) the outcomes of actions taken at the time to prevent or minimise environmental harm, and
 - c) proposed actions to respond to the information about circumstances which result or may result in environmental harm.
- A11** 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.

- A12** The holder of this environmental authority must not commence activities on mining lease 70403 and mining lease 1775 unless:
- a) the environmental authority holder has submitted to the administering authority a report on the water balance model used during the *Caval Ridge Mine Project - Environmental Impact Statement* in accordance with the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinator Generals evaluation report for an Environmental Impact Statement (9 August 2010)*.
The report must include:
 - i. details of all the assumptions used in the water balance model,
 - ii. an explanation of how water quality predications were derived, and
 - iii. a demonstration that contaminated run-off and pump-out of pits for an Annual Exceedence Probability (AEP) 0.05 wet season can be contained within the storages provided.
 - b) the administering authority has accepted, in writing, that the report meets the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinator Generals evaluation report for an Environmental Impact Statement (9 August 2010)*.
- A13** Should the report submitted under condition A12 indicate that the water management system will not operate to ensure that contaminated run-off and pump-out of pits for an Annual Exceedence Probability (AEP) 0.05 wet season will be contained within the storages provided, the environmental authority holder is required to adjust the operating levels of the water management system to prevent releases of mine affected water to an appropriate AEP standard not exceeding 0.05 over the operating life of the mine.
- Note: Conditions A12 and A13 shall not be interpreted so as to interfere with other conditions regarding the general performance of water management systems over the operating life of the mine estimated based on water balance modelling or otherwise.*
- A14** Any design changes to water supply, storage and transfer components of the sites water management system, identified by conditions A12 and A13 will require an amendment to this environmental authority and the submitted Environmental Management Plan.

- A15** The holder of this environmental authority must not commence activities on mining lease 70403 and mining lease 1775 unless:
- a) the environmental authority holder has submitted to the administering authority either a final design plan or a conceptual design plan, together with the certification (for final design plan) or endorsement (conceptual design plan) of a suitably qualified and experienced person that the submitted final or conceptual design plan of the flood protection levee will deliver the performance stated in that submitted design plan, meeting the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinator Generals evaluation report for an Environmental Impact Statement* (9 August 2010), and
 - b) the administering authority has accepted, in writing, that the design plan meets the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinator Generals evaluation report for an Environmental Impact Statement* (9 August 2010).
- A16** Any design changes to the flood protection levee from the commitments made in the *Caval Ridge Mine Project Environmental Impact Statement* and the Environmental Management Plan, identified by condition A15 will require an amendment to this environmental authority and the submitted Environmental Management Plan.
- A17** The holder of this environmental authority must not commence activities on mining lease 70403 and mining lease 1775 unless:
- a) the environmental authority holder has submitted to the administering authority:
 - i. sufficient evidence to justify the effectiveness and reliability of the proposed belt press filter technology (e.g. processing results from a statistical relevant sample of material that would be representative of the tailings to be produced at the site), meeting the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinators Generals evaluation report for an Environmental Impact* (9 August 2010), and
 - ii. a report on the most recent results and analysis of the testing of the belt filter press pilot plant at the Peak Downs Mine, meeting the requirements of *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinators Generals evaluation report for an Environmental Impact* (9 August 2010).
 - b) the administering authority has accepted, in writing, that the evidence provided meets the requirements of the *Bowen Basin Coal Growth Project Caval Ridge Mine Coordinators Generals evaluation report for an Environmental Impact* (9 August 2010).
- A18** Should the information supplied to the administering authority in accordance with condition A17 indicate that the proposed belt press filter technology indicate that the residual shear strength of the tailings waste is less than 1000 Pascals, then the environmental authority holder is required to adjust the sites tailings waste disposal management systems.

- A19** Any changes to the site tailings waste disposal management systems, including the production of tailings waste less than 1000 Pascals will require an amendment to this environmental authority and the submitted Environmental Management Plan.
- A20** The construction or operation of a regulated structure for the purpose of storing or disposal of tailings or reject material is not authorised under this environmental authority.

Department Interest: Air

- B1** The release of noxious or offensive odours, or any other noxious or offensive airborne contaminants resulting from the activities to which this environmental authority relates, must not cause a nuisance at any sensitive or commercial place.
- B2** The holder must implement and maintain best practice environmental management dust control procedures that incorporate a program for continuous improvement for the management of dust resulting from the mining activities with respect to, but not limited to equipment selection, mine planning, design and operation, and staff training.
- B3** Dust generated by the mining activities must not cause any of the following air quality objectives to be exceeded at a sensitive or commercial place:
- a) A level of deposited dust of 120 milligrams per square metre per day based on a monthly average, and
 - b) A concentration of total particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1 year averaging time.
- B4** The holder must take all reasonable and practical measures to limit the concentration of particulate matter generated by the mining activities with an aerodynamic diameter of less than 10 micrometres (PM₁₀), to 50 micrograms per cubic metre (50µg/m³) suspended in the atmosphere over a 24 hour averaging time with not more than 5 exceedences recorded over 12 months at any sensitive or commercial place.

Dust and particulate matter monitoring, control and reporting

- B5** The holder of the environmental authority must develop and implement a dust and particulate matter monitoring and control program.

- B6** The program must include:
- a) the collection of air quality and meteorological data at locations and using the monitoring methods described in Table B1a (Dust and Particulate Matter Monitoring) and Table B1b (Dust and Particulate Matter Monitoring Locations),
 - b) a system to identify adverse meteorological conditions likely to produce elevated levels of PM₁₀ at a sensitive or commercial place due to the mining activities, and
 - c) a dust control strategy that would activate the timely implementation of high management dust control actions (listed in Table B2 (Dust and Particulate Control Actions)) in addition to the best practice environmental management dust control measures during periods identified in (b).
- B7** The dust and particulate matter monitoring and control program must be submitted to the administering authority with the plan of operations.
- B8** Where monitoring identifies instances where the concentration specified in Condition B4 is exceeded, the holder should report to the administering authority within 14 days:
- a) the concentration of PM₁₀ particulates at the sensitive or commercial site,
 - b) a description of meteorological conditions recorded in accordance with Table B1a (Dust and Particulate Monitoring) occurring at the time,
 - c) the concentration of PM₁₀ particulates upwind of the mining activities (if known), and
 - d) measures taken to reduce dust generated by the mining activities.
- B9** Notwithstanding condition B6, if requested by the administering authority, dust and particulate monitoring must be undertaken for a stated period at a specified sensitive or commercial place, and the results provided to the administering authority within fourteen (14) days following completion of monitoring.
- B10** If the monitoring required by condition B9 is undertaken for over one month, then monthly interim reports should be provided to the administering authority.

B11 The holder of the environmental authority must report annually to the administering authority:

- a) the results and an analysis of dust and particulate matter monitoring, including consideration of the relevant meteorological data,
- b) details of the use of high management control measures including the dust and atmospheric conditions that triggered the action, when, where and what action was applied, and the effectiveness of the action meeting the requirements of conditions B3 and B4,
- c) identification of any trends that should be considered in management of the mining activities and dust management practices, and
- d) any changes to the dust and particulate control actions and monitoring resulting from an analysis of (a), (b) and (c).

Table B1a (Dust and Particulate Matter Monitoring)

Air Quality Determination	Monitoring method to be used
Concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM_{10}) suspended in the atmosphere over a 24 hour averaging time	Real-time monitoring of the 24 hour average. Australian Standard AS 3580.9.8:2008 <i>Determination of suspended PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser</i> (or the most recent version), or any alternative method of monitoring PM_{10} that may be permitted by the Air Quality Sampling Manual as published from time to time by the administering authority.
Concentration of particulate matter suspended in the atmosphere in micrograms per cubic metre over a 24 hr averaging time	AS/NZS 3580.9.3:2003 <i>Determination of suspended particulate matter - Total suspended particulate matter (TSP) - High volume sampler gravimetric method</i> (or the most recent version)
Deposited dust	Australian Standard AS 3580.10.1:2003 (or the most recent version);
Meteorological data (including but not limited to wind speed and direction, humidity, temperature and precipitation)	AS 2923:1987: <i>Guideline for measurement of horizontal wind for air quality applications</i> or as approved by the administering authority.
Siting of monitoring equipment	AS/NZS 3580.1.1:2007 Guide to siting air monitoring equipment

Table B1b (Dust and Particulate Matter Monitoring Locations)

Monitoring location	Receiving area on the receiving areas plan	Relevant upwind location	Monitoring Point Location (GDA94)		Monitoring Point Description
Site 2	Moranbah Township	Site 8, Site 12, Site 13, Site 16	608108	7563784	TEOM, Dust Deposition, Hi Vol and Met Station
Site 3	Long Pocket Road	Site 8, Site 9, Site 10, Site 11, Site 13	606420	7561806	Dust Deposition
Site 4	Moranbah Access Road north of site	Site 12, Site 15, Site 16	608776	7562285	Dust Deposition
Site 5	Long Pocket Road	Site 8, Site 13	603130	7560334	TEOM, Dust Deposition, Hi Vol and Met Station
Site 6	Long Pocket Road	Site 8, Site 9, Site 10, Site 11, Site 13	605758	7560933	Dust Deposition
Site 7	Moranbah Access Road north of site	Site 12, Site 15, Site 16	609639	7561176	Dust Deposition
Site 8	Moranbah Airport	Site 12, Site 5	610964	7560054	TEOM, Dust Deposition and Met Station
Site 9	Moranbah Access Road, east of site	Site 3, Site 5, Site 6, Site 12	611521	7557979	Dust Deposition
Site 10	Hornery Homestead	Site 3, Site 5, Site 6, Site 12	611916	7557486	Dust Deposition
Site 11	Peak Downs Highway near intersection with Dysart Moranbah Road	Site 12, Site 15, Site 16	612227	7555010	Dust Deposition
Site 12	Buffel Park Homestead	Site 8, Site 13	606359	7551294	TEOM, Dust Deposition, Hi Vol and Met Station
Site 13	East of mine on Dysart Moranbah Road	Site 5, Site 12, Site 16	614993	7552261	TEOM, Dust Deposition, Hi Vol and Met Station
Site 14	West of CHPP	Site 11, Site 13	608673	7549887	Dust Deposition and Met Station
Site 15	West of mine, just south of Peak Downs Highway	Site 11, Site 13	607695	7547304	Dust Deposition
Site 16	West of mine, south of Peak Downs Highway, west of Heyford Pit	Site 2, Site 13	611179	7545941	TEOM, Dust Deposition, Hi Vol and Met Station

Table B2 (Dust and Particulate Control Actions)

Activity	High management control
Dragline - overburden	Check operators are working to standards (eg. Drop height), modification of swing pattern
Truck and Shovel	Additional watering, Relocation (partial or full)
Truck loading coal	Additional watering, Relocation (partial or full)
Bulldozing - overburden	Reschedule operations or relocate
Truck dumping overburden	Additional watering, rescheduling, reposition
Tailings disposal area	Additional watering, rescheduling, reposition
ROM - erosion active stockpile	Regular water sprays
Truck dumping coal	Regular water sprays
Loading trains	Operating of the Veneering System
Conveyor	Application of additional water
Blasting - overburden	Redesign of blasting plan or rescheduling of blast
Drilling - overburden	Redesign of blasting plan, additional watering, rescheduling, relocation
Haul roads	Additional watering, treatment with suppression or modify operation.
Grader	Additional watering or rescheduling

Department Interest: Water**Contaminant release**

- W1** Contaminants that will or have the potential to cause environmental harm must not be released directly or indirectly to any waters except as permitted under the conditions of this environmental authority.
- W2** The release of contaminants to waters must only occur from the release points specified in Table W1 (Contaminant Release Points, Sources and Receiving Waters) and depicted in Figure 1 attached to this environmental authority.

Table W1 (Contaminant Release Points, Sources and Receiving Waters)

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
Discharge Point 1	611,857*	7550167	12N Dam	Discharge Point	Cherwell Creek

Note (*) location to be confirmed after detailed design of the dam outlet

- W3** The release of contaminants to waters must not exceed the release limits stated in Table W2 (Contaminant Release Limits) when measured at the monitoring points specified in Table W1 (Contaminant Release Points, Sources and Receiving Waters) for each quality characteristic.

Table W2 (Contaminant Release Limits)

Quality Characteristic	Release Limits	Monitoring frequency
Electrical Conductivity ($\mu\text{S}/\text{cm}$)	1000	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	NA*	Daily during release* (first sample within 2 hours of commencement of release)
Suspended Solids (mg/L)	200	Daily during release* (first sample within 2 hours of commencement of release)
Sulfate (SO_4^{2-}) (mg/L)	1000	Daily during release* (first sample within 2 hours of commencement of release)

Note NA – not available, *local trigger values need to be developed

Additional Information: The Coordinator General Evaluation Report dated August 2010 issued under the *State Development and Public Works Organisation Act 1971* states that the administering authority may 'consider raising the limit to 1500 $\mu\text{S}/\text{cm}$, subject to BMA assessing how the increase would impact on the environment and committing to satisfactory environmental protection measures'. The administering authority may further 'consider BMA's proposal of an 1800 $\mu\text{S}/\text{cm}$ discharge limit, subject to BMA providing a sufficiently detailed technical business case' (page 4).

- W4** The release of contaminants to waters from the release points must be monitored at the locations specified in Table W1 (Contaminant Release Points, Sources and Receiving Waters) for each quality characteristics and at the frequency specified in Table W2 (Contaminant Release Limits) and Table W3 (Release Contaminant Trigger Investigation Levels).

Table W3 (Release Contaminant Trigger Investigation Levels)

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

Note:

1. All metal and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.
2. The list of quality characteristics required to be monitored as per table W3 will be reviewed once the results of the monitoring data is gathered for the interim period until 31 December 2011 or an earlier date if the data is, or becomes, available and if it is determined that there is no need to monitor for certain individual characteristics these can be removed from Table W3.
3. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC and ARM CANZ (2000)
4. LOR – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.

W5 If quality characteristics of the release exceed any of the trigger levels specified in Table W3 (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 W3 (Release Contaminant Trigger Investigation Levels) and:

1. where the trigger values are not exceeded then no action is to be taken, or
2. where the downstream results exceed the trigger values specified in Table W3 (Release Contaminant Trigger Investigation Levels) for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites, and
 - a) if the result is less than the background monitoring site data, then no action is to be taken; or
 - b) if the result is greater than the background monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ (2000) methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
 - (i) details of the investigations carried out, and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with W5(2)(b)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

W6 If an exceedance in accordance with condition W5(2)(b) is identified, the environmental authority holder must notify the administering authority within fourteen (14) days of receiving the result.

Contaminant Release Events

W7 The environmental authority holder must install, operate and maintain a stream flow gauging station to determine and record stream flows at the locations upstream of each Release Point as specified in Table W4 (Contaminant Release During Flow Events) for any receiving water into which a release occurs.

W8 Notwithstanding any other condition of this environmental authority, the release of contaminants to waters must only take place during periods of natural flow events specified as minimum flow in Table W4 (Contaminant Release During Flow Events) for the contaminant release point(s) specified in Table W1 (Contaminant Release Points, Sources and Receiving Waters).

Table W4 (Contaminant Release During Flow Events)

Receiving water description	Release Point	Gauging station description	Easting (GDA94)	Northing (GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
Upstream Cherwell Creek	12N Dam	Upper Cherwell Creek	609986	7547730	$\geq 0.5 \text{ m}^3/\text{s}$	Daily during discharge

- W9** Contaminant release flow rate must not exceed 20% of receiving water flow rate.
- W10** The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in Table W1 (Contaminant Release Points, Sources and Receiving Waters).
- W11** 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.

Notification of Release Event

- W12** The environmental authority holder must notify the administering authority as soon as practicable (no later than six (6) hours) of having commenced releasing mine affected water to the receiving environment. Notification must include the submission of written verification to the administering authority of the following information:
- 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).

Note: Notification to the administering authority must be addressed to the Manager and Project Manager of the local administering authority via email or facsimile.

RTI DL RELEASE - EHP

- W13** The environmental authority holder must notify the administering authority as soon as practicable, (nominally within twenty-four (24) hours after of cessation of a release) of the cessation of a release notified under condition W12 and within twenty-eight (28) days provide the following information in writing:
- 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 Department 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.

Notification of Release Event Exceedance

- W14** If the release limits defined in Table W2 (Contaminant Release Limits) are exceeded, the environmental authority holder must notify the administering authority within twenty-four (24) hours of receiving the results.

- W15** The environmental 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:
- 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.

Monitoring of Water Storage Quality

- W16** Water storages stated in Table W5 (Water Storage Monitoring), which are associated with the release points, must be monitored for the water quality characteristics specified in Table W6 (Onsite Water Storage Contaminant Limits) at the monitoring locations and at the monitoring frequency specified in Table W5 (Water Storage Monitoring).

Table W5 (Water Storage Monitoring)

Water Storage Description	Easting (GDA94)	Northing (GDA94)	Monitoring Location	Frequency of Monitoring
12N Dam	612073.953	7550194.088	Discharge Point 1	Monthly
Sed Dam N3	608025.999	7559341.929	Storage mid depth	Monthly
Sed Dam N2	607466.751	7556738.953	Storage mid depth	Monthly
Sed Dam N1	609476.752	7551214.041	Storage mid depth	Monthly
Sed Dam S3	614631.698	7545513.187	Storage mid depth	Monthly
Sed Dam S2	613601.728	7546405.147	Storage mid depth	Monthly
Sed Dam S1	611797.899	7548403.205	Storage mid depth	Monthly
Catchment Dam North	609872.023	609872.023	Storage mid depth	Monthly
Catchment Dam South	611592.955	7552648.159	Storage mid depth	Monthly
Mine Water Dam N3	608143.849	7558806.043	Storage mid depth	Monthly
Mine Water Dam N2	607402.009	7556072.087	Storage mid depth	Monthly
Mine Water Dam N1	608959.882	7551661.454	Storage mid depth	Monthly
Mine Water Dam S1	613028.758	7549358.146	Storage mid depth	Monthly
Mine Water Dam 5	609491.923	7550720.059	Storage mid depth	Monthly
Mine Water Dam 4	609855.959	7550463.192	Storage mid depth	Monthly
Mine Water Dam 4a	609788.829	7550327.124	Storage mid depth	Monthly
Mine Water Dam 3	610795.934	7549577.987	Storage mid depth	Monthly
Mine Water Dam 2	610799.785	7549191.098	Storage mid depth	Monthly
Mine Water Dam 1	610454.801	7549137.258	Storage mid depth	Monthly

- W17** In the event that water storages defined in Table W5 (Water Storage Monitoring) exceed the contaminant limits defined in Table W6 (Onsite Water Storage Contaminant Limits), the environmental authority holder must implement measures to prevent access to waters by all livestock.

Table W6 (Onsite Water Storage Contaminant Limits)

Quality Characteristic	Test Value	Contaminant Limit
pH (pH unit)	Range	Greater than 4, less than 9 ²
EC (µS/cm)	Maximum	5970 ¹
Sulfate (mg/L)	Maximum	1000 ¹
Fluoride (mg/L)	Maximum	2 ¹
Aluminium (mg/L)	Maximum	5 ¹
Arsenic (mg/L)	Maximum	0.5 ¹
Cadmium (mg/L)	Maximum	0.01 ¹
Cobalt (mg/L)	Maximum	1 ¹
Copper (mg/L)	Maximum	1 ¹
Lead (mg/L)	Maximum	0.1 ¹
Nickel (mg/L)	Maximum	1 ¹
Zinc (mg/L)	Maximum	20 ¹

Notes: ¹ Contaminant limit based on ANZECC and ARMCANZ (2000) stock water quality guidelines;

² Page 4.2-15 of ANZECC and ARMCANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4-9"

³ Total measurements (unfiltered) must be taken and analysed

Receiving Environment Monitoring and Contaminant Trigger Levels

- W18** The quality of the receiving waters must be monitored at the locations specified in Table W8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points) for each quality characteristic and at the monitoring frequency stated in Table W7 (Receiving Waters Contaminant Trigger Levels).

Table W7 (Receiving Waters Contaminant Trigger Levels)

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 – 8.0	Daily during the release
Electrical Conductivity ($\mu\text{S}/\text{cm}$)	1000	
Suspended solids (mg/L)	N/A	
Sulfate (SO_4^{2-}) (mg/L)	1000 (Protection of irrigation value)	

Note N/A denotes local trigger value to be determined by the proponent based on 80 percentile of upstream reference site.

Table W8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points)

Monitoring Points	Receiving Waters Location Description	Easting (GDA94)	Northing (GDA94)	Monitoring Frequency
Upstream Background Monitoring Points				
Upstream Cherwell Creek	Cherwell Creek at upstream gauging station	609986	7547730	Daily during controlled releases from 12N Dam and Daily during natural flow event in Cherwell Creek
Upstream of Horse Creek Diversion	Upstream of Horse Creek Diversion	607000	7554200	Daily during natural flow event in Horse Creek Diversion
Upstream Harrow Creek	Harrow Creek upstream of Peak Downs Mine 10 North Dam	614412	7543440	Daily during natural flow event in Harrow Creek
Downstream Monitoring Points				
Downstream Cherwell Creek	Cherwell Creek at downstream gauging station	612309	7550588	Daily during controlled releases from 12N Dam and Daily during natural flow event in Cherwell Creek
Downstream Horse Creek	Downstream Horse Creek	609846	7560358	Daily during natural flow event in Horse Creek Diversion
Downstream Harrow Creek	Downstream Harrow Creek	616815	7547919	Daily during natural flow event in Harrow Creek

W19 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table W7 (Receiving Waters Contaminant Trigger Levels) during a release event, the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and:

1. where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken, or
2. where the downstream results exceed the upstream results, complete an investigation in accordance with the ANZECC & ARMCANZ (2000) methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
 - (i) details of the investigations carried out, and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with W19(2)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

Receiving Environment Monitoring Program (REMP)

W20 A REMP must be implemented by 17 February 2011 to monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being discharged from the site, with the aims of identifying and describing the extent of any adverse impacts to local environmental values, and monitoring any changes in the receiving water.

For the purposes of the REMP, the receiving environment is the waters of the Cherwell Creek and connected waterways within ten kilometres downstream of the release.

W21 The REMP report must address (but not necessarily be limited to) the following:

- a) description of potentially affected receiving waters including key communities and background water quality characteristics based on accurate and reliable monitoring data that takes into consideration any temporal variation (e.g. seasonality),
- b) description of applicable environmental values and water quality objectives to be achieved (i.e. as scheduled pursuant to the Environmental Protection (Water) Policy 2009),
- c) any relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment within which the REMP is proposed,
- d) water quality targets within the receiving environment to be achieved, and clarification of contaminant concentrations or levels indicating adverse environmental impacts during the REMP
- e) monitoring for any potential adverse environmental impacts caused by the release,
- f) monitoring of stream flow and hydrology,
- g) monitoring of toxicants should consider the indicators specified in Table W3 (Release Contaminant Trigger Investigation Levels) to assess the extent of the compliance of concentrations with water quality objectives and/or the ANZECC & ARMCANZ (2000) guidelines for slightly to moderately disturbed ecosystems,
- h) monitoring of physical chemical parameters specified in Table W2 (Contaminant Release Limits) and dissolved oxygen saturation and temperature,
- i) monitoring biological indicators (for macroinvertebrates in accordance with the AusRivas methodology) and metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ (2000), BATLEY and/or the most recent version of AS5667.1 *Guidance on Sampling of Bottom Sediments*) for permanent, semi-permanent water holes and water storages,
- j) the locations of monitoring points (including the locations specified in Table W8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points) which are background and downstream impacted sites for each release point),
- k) the frequency or scheduling of sampling and analysis sufficient to determine water quality objectives and to derive site specific reference values within two (2) years (depending on wet season flows) in accordance with the Queensland Water Quality Guidelines 2009. For ephemeral streams, this should include periods of flow irrespective of mine or other discharges,
- l) specify sampling and analysis methods and quality assurance and control,
- m) any historical datasets to be relied upon,
- n) description of the statistical basis on which conclusions are drawn, and
- o) any spatial and temporal controls to exclude potential confounding factors.

W22 The REMP report must be prepared and submitted in writing to the administering authority by 17 September 2011.

Water Reuse

- W23** Water contaminated by mining activity may be piped or trucked or transferred by some other means that does not contravene the conditions of this authority during periods of dry weather for the purpose of supplying stock water to properties directly adjoining properties owned by the environmental authority holder or a third party and subject to compliance with the quality release limits specified in Table W9 (Stock Water Release Limits).

Table W9 (Stock Water Release Limits)

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

Note: Any additional parameter by third party agreement

- W24** Water contaminated by mining activity may be piped or trucked or transferred by some other means that does not contravene the conditions of this authority during periods of dry weather for the purpose of supplying irrigation water to properties directly adjoining properties owned by the environmental authority holder or a third party and subject to compliance with quality release limits in Table W10 (Irrigation Water Release Limits).

Table W10 (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 and provided through an amendment process

Note: Any additional parameter by third party agreement

- W25** Water contaminated by mining activity may be piped or trucked off the mining lease for the purpose of supplying water to a third party for purpose of construction and/or road maintenance in accordance with the conditions of this environmental authority.
- W26** Water contaminated by mining activity may be piped or trucked for the purpose of supplying water to Peak Downs Mine in accordance with the conditions of this environmental authority. The volume, pH and electrical conductivity of water transferred to Peak Downs Mine must be monitored and recorded.

- W27** If the responsibility of water contaminated by mining activities (the water) is given or transferred to another person in accordance with conditions W23, W24, W25 or W26:
- the responsibility of the water must only be given or transferred in accordance with a written agreement (the third party agreement), and
 - include in the third party agreement a commitment from the person utilising the water to use water in such a way as to prevent environmental harm or public health incidences and specifically make the persons aware of the General Environmental Duty (GED) under section 319 of the *Environmental Protection Act 1994*, environmental sustainability of the water disposal and protection of environmental values of waters.

Water General

- W28** All determinations of water quality must be:
- 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 authority's Water Quality 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
 - laboratory testing must be undertaken using a laboratory accredited (e.g. NATA) for the method of analysis being used.

Note: Condition W28 requires the Water Quality Manual to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.

- W29** The release of contaminants directly or indirectly to waters:
- 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.

Annual Water Monitoring Reporting

- W30** The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format with each annual return:
- a) the date on which the sample was taken,
 - b) the time at which the sample was taken,
 - c) the monitoring point at which the sample was taken,
 - d) the measured or estimated daily quantity of the contaminants released from all release points,
 - e) the release flow rate at the time of sampling for each release point,
 - f) the results of all monitoring and details of any exceedances with the conditions of this environmental authority, and
 - g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

Temporary Interference with waterways

- W31** Temporarily destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with the administering authority's Guideline - Activities in a Watercourse, Lake or Spring associated with Mining Activities.

Water Management Plan

- W32** A Water Management Plan must be developed and implemented by 17 September 2010 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.
- W33** The Water Management Plan must be developed in accordance with the administering authority's Guideline for Preparation of Water Management Plans for Mining Activities 2009 or any updates that become available from time to time and must include at least the following components:
- a) Contaminant Source Study,
 - b) Site Water Balance and Model,
 - c) Water Management System,
 - d) Saline Drainage Prevention and Management Measures,
 - e) Acid Rock Drainage Prevention and Management Measures (if applicable),
 - f) Emergency and Contingency Planning, and
 - g) Monitoring and Review.

- W34** Each year the environmental authority holder must undertake a review of the Water Management Plan prior to the wet season (i.e. by 1 November) and a further review following the wet season (i.e. by 1 May the following year) to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with the conditions of this environmental authority and that environmental harm is prevented or minimised.
- W35** A copy of the Water Management Plan and/or a review of the Water Management Plan must be provided to the administering authority on request.

Saline Drainage

- W36** The environmental authority holder must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline drainage.

Acid Rock Drainage

- W37** The environmental authority holder must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of acid rock drainage.

Stormwater and Water sediment controls

- W38** An Erosion and Sediment Control Plan must be developed by a suitably qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to water and contamination of storm water.
- W39** 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 waters without appropriate treatment.
- W40** 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 waters.

Fitzroy River Basin Study

- W41** The administering authority and the environmental authority holder both acknowledge that the conditions for release of contaminants to the Isaac River in this environmental authority have been calculated without the benefit of the findings of projects proposed to be undertaken as per recommendations 2 and 3 of the Study of cumulative impacts on water quality of mining activities in the Fitzroy River Basin (April 2009). The administering authority may, based on the information provided in the study report when it becomes available, all relevant information available at the time and the regulatory framework applicable at that time, consult with the environmental authority holder about the conditions in the environmental authority concerning the treatment and disposal of waste water.

The aim of the consultation shall be the meaningful review of the contaminant release limits imposed in this authority having regard to:

- a) the study results,
- b) near field monitoring results,
- c) Queensland Water Quality Guidelines, and
- d) best practice environmental management.

If this review leads to a change in the requirements on this environmental authority holder, this shall be advanced by way of an authority amendment or a Transitional Environmental Program and as is necessary or desirable.

Stream sediment contaminant levels

- W42** All reasonable and practicable erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the movement of sediment, including:
- a) all clean waters, from undisturbed areas, kept separate from dirty waters from disturbed areas,
 - b) water from disturbed catchments diverted into the mine water management system and sedimentation dams,
 - c) new sedimentation dams designed to capture the sediment volume calculated for the catchment area for a 24 hour 10 year annual recurrence interval (ARI) storm event, and
 - d) sediment shall be excavated from sediment dams as required to maintain design capacity.

Interfering with waterways

- W43** The environmental authority holder is permitted to destroy vegetation, excavate and fill watercourses to establish temporary crossings when there is no flow. Works shall remain in place for no longer than four (4) weeks.

Mine Water Management System

- W44** The environmental authority holder must prepare to the satisfaction of the administering authority, an integrated mine water management system (MWMS) which shall as a minimum address:
- a) runoff from all mine areas and catchments draining into the MWMS, including runoff into mine pits,
 - b) transfer of mine water between storages,
 - c) mine water demands, including the reuse of mine water in plant operations and dust suppression,
 - d) all mine water process inputs and losses, including evaporation losses and losses or recycling of extracted water from belt filter press,
 - e) water quality,
 - f) design storage allowance for the adequate containment of contaminated runoff and pump-out of pits during wet seasons,
 - g) controlled discharges to remain compliant with all environmental authority conditions,
 - h) uncontrolled discharges from the MWMS to the receiving environment, and
 - i) annual updating of the water balance model with mine monitoring data including:
 - i. rainfall,
 - ii. actual dam volumes,
 - iii. raw water demand,
 - iv. water quality,
 - v. actual storage capacity of dams,
 - vi. mine water transfer operations,
 - vii. controlled releases, and
 - viii. quality and quantity of uncontrolled releases.
- W45** The Mine Waste Water Management System must be submitted to the administering authority prior to the commencement of mining operations
- W46** The holder of the environmental authority must ensure that the probability of an uncontrolled discharge from any dam listed in Table W5 (Water Storage Monitoring) is limited to the AEP probabilities specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams). The probability of uncontrolled discharges must be managed by ensuring adequate design storage capacity, transfer capacity, and operations, and contingency measures of the integrated mine water management system (MWMS).
- W47** The environmental authority holder must develop, calibrate, and maintain a complete mine water balance model (with coupled contaminant balance model) that adequately represents all sources of mine water contributing to all dams that comprise the integrated mine water system, mine pits, and operations of the MWMS including controlled releases (where applicable). All key assumptions and input parameters of the mine water balance model must be documented and be available for auditing.

- W48** The environmental authority holder must undertake system risk failure assessments on the MWMS and submit to the administering authority system failure contingency plans which ensure that:
- a) there is no increase in the frequency of uncontrolled discharges from the storage components of the MWMS, and
 - b) controlled discharges remain compliant with all environmental authority conditions.
- W49** All key assumptions for mine water operations in the mine water balance model must be documented in Standard Operating Procedures and the MWMS must be operated in accordance with the procedures.
- W50** Assessments utilising the mine water balance model to evaluate water management system capacity and operations in response to rainfall must be undertaken by competent personnel.
- W51** The environmental authority holder must implement and maintain monitoring of actual mine water quantity and quality within the mine water management system to demonstrate, and continually improve the mine water balance model calibration.
- W52** On 1 November each year, the environmental authority holder shall review the mine catchments, storage capacity, current storage volumes, system transfer capacity, and Standard Operating Procedures of all key infrastructure elements of the mine water management system and update the mine water balance model. An assessment of the mine water balance model must be undertaken to ensure that the mine water management system has sufficient storage capacity, transfer capacity, and transfer operations to ensure that the frequency of uncontrolled discharges of mine water is less than or equal to the specified AEP in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams).

The assessment must be undertaken with an appropriate period of climate data that includes representation of wet season rainfall events up to the AEP specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams). The assessment results must be documented and be available for auditing.

- W53** The environmental authority holder must notify the administering authority within fourteen (14) days, if the assessment of the mine water management system shows that probability of uncontrolled discharge from any dam within the integrated mine water system is greater than the specified AEP in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams).
- W54** In the event of failure of any component, or series of components, of the mine water management system, the holder of the environmental authority must utilise the mine water balance model to reassess the performance of the mine water management system in its failed state, and notify the administering authority if the assessment of the mine water management system shows that the probability of uncontrolled discharge would be greater than the AEP specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams).
- W55** Notwithstanding the provisions for *Mandatory Report Levels in Department Interest: Dams*, the environmental authority holder must not allow any uncontrolled discharge to be caused by either failure to:
- stop transferring water to a dam where the transfer into that dam contributes in part, or full, to the overflow (uncontrolled discharge) of that dam, or
 - start and continue transferring water from a mine water dam, where the Standard Operation Procedures require the water transfer from the dam to prevent overflow (uncontrolled discharges).

Monitoring and Reporting in the event of uncontrolled release

- W56** In the event of an uncontrolled release from any component of the integrated mine water system to the receiving environment, the environmental authority holder shall:
- a) Sample and monitor the uncontrolled release waters during or as immediately practical after the event (recognising that uncontrolled discharges should only occur during extreme rainfall and site may not be accessible) to determine quality characteristics of the uncontrolled release for parameters specified in Table W2, (Contaminant Release Limits) and Table W3 (Release Contaminant Trigger Investigation Levels),
 - b) Sample and monitor the receiving environment monitoring sites listed in Table W8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points) for sites relevant to the uncontrolled release location,
 - c) Estimate the quantity of uncontrolled release waters, by a suitably qualified and experienced person,
 - d) Provide a written report to the administering authority within fourteen (14) days of the uncontrolled release event, which shall include as a minimum:
 - i. the time and dates of the uncontrolled release event,
 - ii. the location of the uncontrolled release,
 - iii. the monitoring quality of the uncontrolled release waters; or if not available due to site access constraints in wet weather during the event, the quality of waters in the dam that contributed to the uncontrolled release before the event (from monitoring undertaken as part of condition W16) and quality in that dam after the release events,
 - iv. the estimated quantity of uncontrolled release,
 - v. downstream receiving water monitoring results,
 - vi. rainfall during, or that contributed to, the uncontrolled release event and dam levels prior to the rainfall event that caused uncontrolled release,
 - vii. a determination of whether uncontrolled release was solely caused by rainfall exceeding the design AEP events specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams),
 - viii. a determination of whether the uncontrolled release was caused in part or fully by failure to operate the integrated mine water system in accordance with Standard Operating Procedures for the integrated mine water system, or physical failure of one or more components of the integrated mine water system,
 - ix. a determination of whether the uncontrolled release caused environmental harm, and
 - x. if determined that the uncontrolled release could have been reasonably prevented, actions that will be taken to ensure uncontrolled releases comply in all respects with this environmental authority.

Sewage Treatment

- W57** When required, the treated wastewater from the sewage treatment plant may be used to irrigate defined areas described as gardens and lawns within the confines of the Plant Site or for dust suppression, industrial reuse, evaporated or any other use consistent with Class A+ under the Administering Authority's guideline titled "Queensland Water Recycling Guidelines", dated December 2005. Sewage effluent from sewage treatment facilities must not be directly or indirectly released from the sewage treatment plant to any waters, stormwater drain or drainage line.

Quantity of Contaminated Water Released to Land

- W58** The rate of application of water from the sewage treatment plant to gardens, lawns or other irrigation areas must not exceed the sustainable capacity of the land to assimilate the effluent.

Quality of Contaminated Water Released to Land

- W59** Sewage must be treated to comply with each of the release limits specified in Table W11 (Treated Sewage Release Quality Characteristic Limits) for each quality characteristic before any release of the effluent to land or other reuse.
- W60** The quality of treated sewage must be monitored in accordance the requirements of Table W11 (Treated Sewage Release Quality Characteristic Limits) and records kept of the results.

Table W11 (Treated Sewage Release Quality Characteristic Limits)

Quality Characteristics	Unit	Release Limit	Limit Type	Minimum Monitoring Frequency
5-day Biochemical Oxygen Demand	mg/L	20	Maximum	Weekly
Suspended Solids	mg/L	30	Maximum	Weekly
pH	pH units	6 – 8.5	Range	Weekly
Turbidity (measured before disinfection)	NTU	2	Median	Continuous
		5	Maximum	
Total dissolved solids	mg/L	1000	Maximum	Weekly
E-coli	cfu/100 mL	1	Median	Weekly (with three replicates) for at least first year.
		10	95 th percentile	
Clostridium perfringens	cfu/100 mL	1	Median	Then if verified as complying with these limits, monthly (with three replicates)
		10	95 th percentile	
F-RNA Bacteriophage	pfu/100 mL	1	Median	
		10	95 th percentile	
Somatic coliphage	pfu/100 mL	1	Median	
		10	95 th percentile	

- W61** When weather or land conditions, prevent the irrigation of treated effluent, alternative measures must be taken to store or use the treated effluent.
- W62** The irrigation and reuse on land of treated wastewater to land, taken as from the edge of the wetted area, must not be carried out
- a) within twenty (20) metres of any boundary of the mining lease, public road or stormwater drain, except in the case of advanced disinfected effluent applied by either small drip irrigation, subsurface irrigation or small surface sprays with a spray plume not exceeding a diameter of 1.0 metres or 0.3 metres in height in which case the separation distance is reduced to 2 metres,
 - b) in a manner likely to cause effluent runoff or surface ponding,
 - c) within one-hundred (100) metres of any water supply bore,
 - d) in any manner or quantity that causes spray to drift beyond the boundaries of the mining lease or any runoff of contaminants to any waters or stormwater drain,
 - e) in any manner or quantity that adversely affects soil, vegetation or groundwater quality;
 - f) in any manner likely to adversely affect public health, and
 - g) such as to cause any exceedance of the Environmental Investigation Thresholds listed in Appendix 9 of the Guidelines for Assessment and Management of Contaminated Land in Queensland.

Groundwater

- W63** The holder of the environmental authority must develop and implement a groundwater monitoring program. The program must be able to detect a significant change to ground water quality values (consistent with the current suitability of the groundwater for domestic and agricultural use and any discharge to surface waters) due to activities that are part of this mining project.

Background groundwater monitoring program

- W64** A background groundwater monitoring program must be developed to include bore(s) that are located an appropriate distance from potential sources of impact from mining activities to provide the following:
- a) representative groundwater samples from the aquifers potentially affected by mining activities,
 - b) at least twelve (12) sampling events, no more than two (2) months apart over a 2 year period, to determine background groundwater quality as far as practicable,
 - c) background groundwater quality in hydraulically isolated background bore(s) that have not been affected by any mining activities, and
 - d) final groundwater contaminant trigger levels and limits required in condition W65.
- W65** Groundwater contaminant trigger levels as per Table W13 (Groundwater Contaminant Trigger Levels) must be finalised based on a background groundwater monitoring program defined in condition W64 and submitted to the administering authority no more than 17 February 2012 of this environmental authority.

W66 The groundwater monitoring data must be reviewed on an annual basis by a suitably qualified and experienced hydrogeologist. The review must include the assessment of groundwater levels and quality data, and the suitability of the monitoring network. The assessment must be submitted to the administering authority within twenty-eight (28) days of receiving the report.

W67 Groundwater must be monitored in conjunction with condition W63 and at least at the locations and frequency defined in Table W12 (Groundwater Monitoring Locations and Frequency).

Table W12 (Groundwater Monitoring Locations and Frequency)

Monitoring point	Description	Easting (GDA 94)	Northing (GDA94)	Monitoring Frequency
Monitoring Point 1	Pz 01	609840.529	7560144.575	To be determined in the groundwater monitoring program
Monitoring Point 2	Pz 02	608439.9	7558242.277	
Monitoring Point 3a	PZ 03 D	608916.481	7556711.899	
Monitoring Point 3b	PZ 03 S	608914.851	7556715.848	
Monitoring Point 4	Pz-04	610730.988	7555325.567	
Monitoring Point 5	Pz05	608917.108	7554117.698	
Monitoring Point 6a	PZ06-D	611127.779	7551677.618	
Monitoring Point 6b	PZ06-S	611123.879	7551676.163	
Monitoring Point 7a	PZ 07 D	612465.327	7550703.505	
Monitoring Point 7b	PZ 07 S	612470.583	7550702.893	
Monitoring Point 8a	PZ 08 D	611413.113	7549712.569	
Monitoring Point 8b	PZ 08 S	611410.691	7549709.458	
Monitoring Point 9	Pz-09	614326.005	7548821.529	
Monitoring Point 10a	Pz-11-s	616791.293	7547599.751	
Monitoring Point 10b	Pz-11-d	616791.284	7547599.648	

W68 The holder of the environmental authority must report the results and analysis of groundwater monitoring to the administering authority on request.

W69 Subject to condition W63 groundwater levels must be monitored and recorded and groundwater draw down fluctuations in excess of two (2) metres per year, not resulting from the pumping of licensed bores, must be notified within fourteen (14) days to the administering authority following completion of monitoring.

- W70** The method of water sampling required by the environmental authority must comply with that set out in the current edition of the Department of Environment and Resource Management's Water Quality Sampling Manual, or subsequent updated versions. The following information must also be recorded in relation to all groundwater water sampling:
- 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, and
 - the results of all monitoring.
- W71** If the groundwater contaminant trigger levels defined in Table W13 (Groundwater Contaminant Trigger Levels) are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within twenty-eight (28) days of receiving the analysis results.

Table W13 (Groundwater Contaminant Trigger Levels)

Parameter	Unit	Trigger Levels	Limit Type
pH	pH Units	6.5 - 8.5	Minimum/Maximum
Electrical Conductivity	$\mu\text{S/cm}$	(To be provided by the proponent after 2 years of background quality monitoring in accordance with condition W66)	Maximum
Total Dissolved Solids	mg/L		
Calcium	$\mu\text{g/L}$		
Magnesium	$\mu\text{g/L}$		
Sodium	$\mu\text{g/L}$		
Potassium	$\mu\text{g/L}$		
Chlorine	$\mu\text{g/L}$		
SO ₄	$\mu\text{g/L}$		
CO ₃	$\mu\text{g/L}$		
HCO ₃	$\mu\text{g/L}$		
Iron	$\mu\text{g/L}$		
Aluminium	$\mu\text{g/L}$		
Silver	$\mu\text{g/L}$		
Arsenic	$\mu\text{g/L}$		
Mercury	$\mu\text{g/L}$		
Antimony	$\mu\text{g/L}$		
Molybdenum	$\mu\text{g/L}$		
Selenium	$\mu\text{g/L}$		
Total Petroleum Hydrocarbons	$\mu\text{g/L}$		

Departmental Interest: Noise and vibration**Noise nuisance**

- D1** Noise from the mining activity must not cause a noise nuisance at any sensitive place.
- D2** All noise from the mining activity must not exceed the levels specified in Table D1 (Noise Limits (Sensitive Place)) at any sensitive place.
- D3** Noise is not considered to be a nuisance under condition D1 if monitoring shows that noise from the mining activity does not exceed the following levels in the time periods specified in Table D1 (Noise Limits (Sensitive Place)).

Table D1 (Noise Limits (Sensitive Place))

Noise Level [dB(A)] at a 'Sensitive Place' expressed as	Monday to Sunday		
	7am – 6pm	6pm – 10pm	10pm – 7am
$L_{Aeq,adj,15 mins_1}$	$RBL_3 + 5$	$RBL_3 + 5$	$RBL_3 + 5$
$LA_{1,15 mins_2}$	45	45	45

Note ¹ External noise limitNote ² Internal noise limitNote ³ Rated Background Level (RBL) as defined in the DERM's *Ecoaccess Planning for Noise Control Guideline***Noise monitoring**

- D4** When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of noise nuisance at any sensitive place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring. Monitoring must include:
- $L_{Aeq,adj,15 mins}$ (external),
 - $LA_{1,15 mins}$ (internal – or a measured external noise level and calculation of corresponding internal noise level),
 - the level and frequency of occurrence of impulsive or tonal noise,
 - atmospheric conditions including wind speed and direction,
 - effects due to extraneous factors such as traffic noise, and
 - location date and time of recording.
- D5** The method of measurement and reporting of noise levels must comply with the current edition of the Department of Environment and Resource Management's *Noise Measurement Manual* and any subsequent versions.

- D6** If monitoring indicates exceedance of the relevant limits in Table D1 (Noise Limits (Sensitive Place)), then the environmental authority holder must:
- address the complaint including the use of appropriate dispute resolution if required, and
 - immediately implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.

Vibration nuisance

- D7** Subject to conditions D8 and D9, vibration from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.
- D8** If the environmental authority holder can provide evidence through monitoring that the limits defined in Table D2 (Airblast Overpressure and Peak Particle Velocity Levels) are not being exceeded then the holder is not in breach of condition D7.
- D9** If monitoring indicates exceedance of the relevant limits in Table D2 (Airblast Overpressure and Peak Particle Velocity Levels), then the environmental authority holder must:
- address the complaint including the use of appropriate dispute resolution if required, and
 - immediately implement vibration abatement measures so that vibration from the activity do not result in further environmental nuisance.

Table D2 (Airblast Overpressure and Peak Particle Velocity Levels)

Blast Noise and Vibration Parameter	Monday to Sunday - 8am to 5pm
Airblast overpressure level (dB linear peak)	115 dB (linear peak) for 4 out of any 5 consecutive blasts regardless of the interval between blasts. Any single blast must not exceed 120 dB (linear peak).
Peak particle velocity (mm/s)	For vibrations of more than 35 Hz – no more than 25 mm/s ground vibration For vibrations of no more than 35 Hz – no more than 10 mm/s ground vibration

- D10** 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.
- D11** The method of measurement and reporting of vibration levels must comply with Appendix J of AS 2187.2-2006.

Airblast overpressure nuisance

- D12** Subject to Conditions D13 and D14, airblast overpressure level from blasting operations must not cause an environmental nuisance, at any sensitive or commercial place.
- D13** If the environmental authority holder can provide evidence through monitoring that the limits defined in Table D2 (Airblast Overpressure and Peak Particle Velocity Levels) are not being exceeded then the holder is not in breach of condition D12.
- D14** If monitoring indicates exceedance of the relevant limits in Table D2 (Airblast Overpressure and Peak Particle Velocity Levels), then the environmental authority holder must:
- address the complaint including the use of appropriate dispute resolution if required, and
 - immediately implement airblast overpressure abatement measures so that airblast overpressure from the activity do not result in further environmental nuisance.
- D15** 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.
- D16** Airblast overpressure monitoring must include the following descriptors, characteristics and conditions:
- location of the blast(s) within the mining area (including which bench level),
 - atmospheric conditions including temperature, relative humidity and wind speed and direction, and
 - location, date and time of recording.
- D17** The method of measurement and reporting of airblast overpressure levels must comply with Appendix J of AS 2187.2-2006.

Department Interest: Waste**Storage of tyres**

- E1** Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste-to-energy options must be stored in stable stacks less than 3 metres high, and at least 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 10 metres radius of the scrap tyre storage area.

Disposal of tyres

- 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.

Waste Management

- E4** A Waste Management Plan, in accordance with the Environmental Protection (Waste Management) Policy 2000, must be implemented and must cover:
- a) how the environmental authority holder will recognise and apply the waste management hierarchy,
 - b) identify characterisations of wastes generated from the project and general volume trends over the past five (5) years,
 - d) waste commitments with auditable targets to reduce, reuse and recycle,
 - e) waste management control strategies including:
 - 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, and
 - vii. disposal, reused and recycling options,
 - f) identify the potential adverse and beneficial impacts of the wastes generated,
 - g) hazardous characteristics of the wastes generated including:
 - i. disposal procedures for hazardous wastes,
 - ii. processes to be implemented to allow for continuous improvement of the waste management systems,
 - iii. identification of responsible staff (positions) for implementing, managing and reporting the Waste Management Plan, and
 - iv. staff awareness and induction programs that encourage re-use and recycling.
- E5** 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 Environmental Protection (Waste Management) Policy 2000.

Coal Handling and Preparation Plant Waste

- E6** Waste from the Coal Handling and Preparation Plant must be disposed of in:
- regulated dams in accordance with conditions in Department Interest: Dams of this environmental authority if the residual shear strength of the waste is less than 1000 Pascals prior to disposal; or
 - the Authorised Spoil Disposal Areas in accordance with conditions in Department Interest: Waste Table E1 (Location of Spoil Disposal Facility) if the residual shear strength of the waste is equal or more than 1000 Pascals prior to disposal.

Spoil disposal facility - certification and operation

- E7** Authorised spoil disposal facilities, used for the disposal of waste are located within the control points defined in Table E1 (Location of Spoil Disposal Facility).

Table E1 (Location of Spoil Disposal Facility)

Name of Spoil Disposal Facility	Control Points	
	Easting (GDA 94)	Northing (GDA 94)
Caval Ridge Spoil Dumps	(A list of control points to be provided by the proponent)	(A list of control points to be provided by the proponent)

- E8** Spoil disposal facility(s) shall be designed to prevent environmental harm arising from contaminants being generated in the facility, leachate and runoff from the facility or other sources.
- E9** Authorised spoil disposal facility(s) must be constructed and maintained in accordance with certified design plans, submitted to the administering authority.
- E10** Design plans for the authorised spoil disposal facility(s) must include performance indicators, such that:
- during operations the spoil disposal facility(s) will be operated with minimal or no potential for adverse environmental harm resulting from collapse of any component of facility; and
 - the potential for leachate generation will be minimal or non existent; and
 - adequate drainage structures, erosion protection and storage are provided to manage seasonal and rare rainfall events with minimal or no environmental harm.

- E11** Construction of any spoil disposal facility detailed in Table E1 (Location of Spoil Disposal Facility) must not commence unless:
- a) the environmental authority holder has submitted to the administering authority two copies of a design plan, and
 - b) certification from a suitably qualified and experienced person that the design of the spoil disposal facility(s) will deliver the performance stated in that design plan and that it will be compliant in all other respects with this environmental authority, and
 - c) at least twenty (20) business days has passed since the receipt of those documents by the administering authority, or
 - d) the administering authority notifies the environmental authority holder that a design plan and certification, has been submitted for that disposal facility.

Operational plan – Spoil disposal facility

- E12** An operational plan must be developed and maintained for the spoil disposal facility. The operational plan must include but not be limited to:
- a) description of landform development stages of the spoil disposal facility,
 - b) placement technique for spoil and waste material from the coal handling and processing plant on the Caval Ridge mine site,
 - c) management of any containment structures within the spoil disposal facility designed to contain materials from the coal handling and processing plant on the Caval Ridge mine site,
 - d) demonstration of how operations of the spoil disposal facility are consistent with the accepted design plan for the facility, and
 - e) decommissioning and rehabilitation strategies for the spoil disposal facility that demonstrate consistency with conditions of this environmental authority.

Departmental Interest: Land

Preventing contaminant release to land

- F1** Contaminants must not be released to land in a manner which constitutes nuisance, material or serious environmental harm.

Topsoil

- F2** Topsoil must be strategically stripped ahead of mining in accordance with a topsoil management plan.
- F3** A topsoil inventory which identifies the topsoil requirements for the mining project and availability of suitable topsoil on site must be detailed in the Plan of Operations.

Rehabilitation landform criteria

- F4** Progressive rehabilitation must commence within two (2) years of when areas become available within the operational land.

Residual void studies

- F5**
- a) The holder of the environmental authority must prepare a revised residual void model for approval by the administering authority during the fifth year after commencement of operation;
 - b) The model in a) must be subject to review each subsequent five years while the mine continues to operate;
 - c) Any amendment to the approved residual void model that may arise from the reviews in a) or b) must be based on any significant changes to groundwater characteristics or other data considered relevant by the administering authority that becomes available from the groundwater monitoring program; and
 - d) Notwithstanding obligations under a), b) and c), the holder of the environmental authority must undertake residual void water balance modelling during mine closure planning, in consultation with the administering authority, to ensure assumptions regarding surface water runoff and groundwater ingress are suitable for the site.

Residual void outcome

- F6** Complete an investigation into residual voids and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in conditions F4 and landform design criteria for Departmental review and comment. On acceptance of the criteria proposed in the residual void management plan, the criteria must be specified in the Environmental Authority.

The investigation must at a minimum include the following:

- a) a study of options available for minimising final void area and volume,
- b) develop design criteria for rehabilitation of final voids,
- c) 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,
- d) a study of the measures to protect the residual voids, uncompacted overburden and workings from the "probable maximum flood" level based on the Bureau of Meteorology's "probable maximum precipitation" forecast for the locality,
- e) 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,
- f) a study of void capability to support native flora and fauna, and
- g) a proposal/s for end of mine void rehabilitation success criteria and final void areas and volumes.

These studies will be undertaken during the life of the mine, and will include detailed research and modelling.

Rehabilitation monitoring program

- F7** Once rehabilitation has commenced, the environmental authority holder must conduct a Rehabilitation Monitoring Program on a two (2) yearly basis, which must include sufficient spatial and temporal replication to enable statistically valid conclusions as established under the rehabilitation program.

- F8** The Rehabilitation Monitoring Program must be developed and implemented by a person possessing appropriate qualifications and experience in the field of rehabilitation management, nominated by the environmental authority holder.
- F9** The Rehabilitation Monitoring Program must be included in the Plan of Operations and updated with each subsequent Plan of Operations, describing:
- a) how the rehabilitation objectives will be achieved; and
 - b) verification of rehabilitation success.

Post closure management plan

- F10** A Post Closure Management Plan for the site must be prepared at least eighteen (18) months prior to the final coal processing on site and implemented for a nominal period of:
- a) at least thirty (30) years following final coal processing on site, or
 - b) a shorter period if the site is proven to be geotechnically and geochemically stable and it can be demonstrated to the satisfaction of the administering authority that no release of contaminants from the site will result in environmental harm.
- F11** The Post Closure Management Plan must include the following elements:
- a) operation and maintenance of:
 - i. wastewater collection and reticulation systems;
 - ii. wastewater treatment systems;
 - iii. the groundwater monitoring network;
 - iv. final cover systems; and
 - v. vegetative cover.
 - b) monitoring of:
 - i. surface water quality;
 - ii. groundwater quality;
 - iii. seepage rates;
 - iv. erosion rates;
 - v. the integrity and effectiveness of final cover systems; and
 - vi. the health and resilience of native vegetation cover.

Mining waste management

- F12** A Mining Waste Management Plan together with the certification by an appropriately qualified person must be developed and implemented during the continuation of the environmental authority. The Mining Waste Management Plan must at a minimum include:
- a) characterisation programs to ensure that all mining waste is progressively characterised during disposal for net acid producing potential, salinity and the following contaminants: pH, Electrical Conductivity (EC), Acid Neutralising Capacity (ANC), Net Acid Generation (NAG) (reporting NAG capacity and NAG pH after oxidation), Net Acid Producing Potential (NAPP), Total Sulfur (S), Chromium Reducible Sulfur (Scr), Boron (B) Cadmium (Cd), Iron (Fe), Aluminium (Al), Copper (Cu), Magnesium (Mg), Manganese (Mn), Calcium (Ca), Sodium (Na), Zinc (Zn) and Sulfate (SO₄),
 - b) characterisation programs to ensure that the physical properties of the mining waste is progressively characterised during disposal,
 - c) the availability or leachability of metals from the mining waste,
 - d) quantity of potentially acid forming (PAF) mining waste,
 - e) review potential impacts of PAF mining waste on the success of proposed rehabilitation methods;
 - f) management actions for mining waste that has been identified as having a high availability or leachability of metals in accordance with condition F13,
 - g) management actions for mining waste that has been defined as PAF,
 - h) identification of environmental impacts and potential environmental impacts,
 - i) control measures for routine operations to minimise likelihood of environmental harm,
 - j) contingency plans and emergency procedures for non-routine situations, and
 - k) periodic review of environmental performance and continual improvement.

Acid mine drainage and leachate management

- F13** Subject to the release limits defined in Departmental Interest: Water, all reasonable and practicable measures must be implemented to prevent hazardous leachate being directly or indirectly released or likely to be released as a result of the activity to the environment.

Storage and handling of flammable and combustible liquids

- F14** 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 *AS 1940 – Storage and Handling of Flammable and Combustible Liquids*.
- F15** Spillage of all flammable and combustible liquids must be controlled in a manner that prevents environmental harm.

Storage and handling of chemicals

- F16** 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.
- F17** Spillage of all chemicals must be controlled in a manner that prevents environmental harm.

Exploration

- F18** Disturbance due to exploration activities in areas not scheduled to be mined must be rehabilitated in accordance with provisions detailed in the administering authority's *Code of Environmental Compliance for Exploration and Mineral Development Projects*.

Department Interest: Dams**All Dams**

- G1** The hazard category of each dam must be determined by a suitably qualified and experienced person, prior to its construction and at least once every year thereafter.
- G2** Construction of any dam determined to be in the significant or high hazard category (i.e. a regulated dam) must not be commenced unless the location, basic details, and hydraulic performance of that dam are specifically referenced in this environmental authority.
- G3** On cessation of operation of any dam, that dam must be maintained so as to avoid environmental harm until that dam is decommissioned.
- G4** Prior to the cessation of the environmentally relevant activity, each dam must be decommissioned such that it either:
- a) becomes a stable landform, that no longer contains flowable substances, or
 - b) is approved or authorised under relevant legislation for a beneficial use, or
 - c) is a void authorised by the administering authority to remain after decommissioning, and
 - d) is compliant with the rehabilitation requirements of this environmental authority.

Regulated Dams - Location

- G5** The following regulated dams must be wholly located within the control points defined in Table H1.

Table H1 (Location of Regulated dams)

Name of Regulated Dam	Easting GDA 94 ^(*)	Northing GDA 94 ^(*)
12N Dam	612073.953	7550194.088
Mine Water Dam N1	608959.882	7551661.454
Mine Water Dam N2	607402.009	7556072.087
Mine Water Dam N3	607402.009	7556072.087
Mine Water Dam S1	607402.009	7556072.087

G6 The following regulated dams must be consistent with the basic details in Table G2.

Table G2 (Basic Details of Regulated Dams)

Regulated Dam	Maximum Surface Area (ha) ^(*)	Maximum Volume of Dam (ML) ^(*)	Maximum Depth of Dam (m) ^(*)	Purpose of Dam
12N Dam	42.8	2300	8	Collection, storage and management of mine water including pit waters
Mine Water Dam N1	1	30	4	Collection and transfer of pit water
Mine Water Dam N2	1	30	4	Collection and transfer of pit water
Mine Water Dam N3	1	30	4	Collection and transfer of pit water
Mine Water Dam S1	1	30	4	Collection and transfer of pit water

Note^(*) Details to be provided by Proponent

G7 The following regulated dams must meet the hydraulic performance criteria specified in Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams).

Table G3 (Hydraulic Performance Criteria of Regulated Dams and Integrated Mine Water Management System Dams)

Regulated Dam	Hazard Category for Failure to Contain	Uncontrolled Discharge AEP	Hazard Category for Dambreak	Spillway Critical Design Storm AEP	Mandatory Reporting Level
Regulated Dams					
12N Dam	Significant	1: 100	Significant	1: 1000	1: 100 AEP 72 hour storm volume below spillway level OR 1:100 AEP wind wave height below spillway level.
Mine Water Dam N1	Significant	1: 100	Significant	1: 1000	
Mine Water Dam N2	Significant	1: 100	Significant	1: 1000	
Mine Water Dam N3	Significant	1: 100	Significant	1: 1000	
Mine Water Dam S1	Significant	1: 100	Significant	1: 1000	
Low Hazard Dams (not Regulated) that form part of the integrated mine water system					
Sed Dam N1	Low	1:10	Significant	1: 1000	Not Applicable
Sed Dam N2	Low	1:10	Significant	1: 1000	
Sed Dam N3	Low	1:10	Significant	1: 1000	
Sed Dam S1	Low	1:10	Significant	1: 1000	
Sed Dam S2	Low	1:10	Significant	1: 1000	
Sed Dam S3	Low	1:10	Significant	1: 1000	
Catchment Dam North	Low	1:10	Significant	1: 1000	
Catchment Dam South	Low	1:10	Significant	1: 1000	
Mine Water Dam 1	Low	1:10	Significant	1: 1000	
Mine Water Dam 2	Low	1:10	Significant	1: 1000	
Mine Water Dam 3	Low	1:10	Significant	1: 1000	
Mine Water Dam 4	Low	1:10	Significant	1: 1000	
Mine Water Dam 4a	Low	1:10	Significant	1: 1000	
Mine Water Dam 5	Low	1:10	Significant	1: 1000	

Regulated Dams - Certification and Operation

- G8** Every regulated dam must be constructed in accordance with a certified design plan that has been submitted to the administering authority, and such that the resulting dam will deliver the performance stated in that submitted design plan and that dam is compliant in all respects with this environmental authority.
- G9** Construction of a regulated dam must not be commenced unless:
- the environmental authority holder has submitted to the administering authority two copies of a design plan, together with the certification of a suitably qualified and experienced person that the design of the regulated dam will deliver the performance stated in that submitted design plan and that dam is compliant in all respects with this environmental authority, and
 - at least twenty (20) business days has passed since the receipt of those documents, or the administering authority notifies the environmental authority holder that a design plan and certification has been received.
- G10** When construction of any regulated dam is complete and prior to commencing operation of that dam, the environmental authority holder must submit to the administering authority two (2) copies of a set of 'as constructed' drawings, together with the certification of a suitably qualified and experienced person that the dam 'as constructed' will deliver the performance stated in that submitted design plan and that dam is compliant in all respects with this environmental authority.
- G11** An operational plan must be kept current for each regulated dam.
- G12** Where an operational plan covers decommissioning and rehabilitation, those operations are to be consistent with the design plan for the dam and the rehabilitation requirements of this environmental authority.
- G13** The environmental authority holder must notify the administering authority within twenty-four (24) hours, of the level in any regulated dam reaching the mandatory reporting level (MRL) and must immediately act to prevent or minimize any actual or potential environmental harm.

Regulated Dams - Annual Inspection and Report

- G14** Each regulated dam must be inspected annually by a suitably qualified and experienced person.
- G15** At each annual inspection, the condition and adequacy of each regulated dam must be assessed for dam safety and against the necessary structural, geotechnical and hydraulic performance criteria.

- G16** At each annual inspection, if a mandatory reporting level is required, it must be determined and marked on each regulated dam.
- G17** A final assessment of adequacy of available storage in each regulated dam must be based on a dam level observed within the month of October and result in an estimate of the level in that dam as at 1 November.
- G18** For each annual inspection, two (2) copies of a report on the condition and adequacy of each regulated dam, certified by the suitably qualified and experienced person and including any recommended actions to be taken to ensure the integrity of each regulated dam; must be provided to the administering authority by 1 December.
- G19** The environmental authority holder must, within one week of receipt of the annual inspection report, consider the report and its recommendations; and as soon as possible, but within one month of receipt of the annual inspection report, formulate and implement actions to ensure that each regulated dam safely performs its intended functions.

Departmental Interest: Flora and Fauna

- H1** A qualified spotter catcher is to be engaged to work ahead of the site clearing works at the commencement of the vegetation clearing activity.
- H2** The environmental authority holder must develop and implement a watercourse revegetation plan for all creek diversions including but not limited to :
- a) establishing benchmarks for vegetation condition in watercourses and riparian areas;
 - b) describe how and when the revegetation objectives will be achieved;
 - c) undertake ecological monitoring of aquatic ecology to ensure that the aquatic ecological values are maintained or enhanced;
 - d) describe performance monitoring and reporting arrangements; and
 - e) contingency actions should objectives not be achieved.
- H3** The watercourse revegetation plan must be submitted to the approving authority prior to the commencement of any creek diversions.

Definitions

Words and phrases used throughout this Environmental Authority 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.

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

- a) stability of final land forms in terms of settlement, erosion, weathering, pondage and drainage;
- b) control of geochemical and contaminant transport processes;
- c) quality of runoff waters and potential impact on receiving environment;
- d) vegetation establishment, survival and succession;
- e) vegetation productivity, sustained growth and structure development;
- f) fauna colonisation and habitat development;
- g) 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;
- h) microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration;
- i) effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;
- j) resilience of vegetation to disease, insect attack, drought and fire;
- k) vegetation water use and effects on ground water levels and catchment yields.

“acid mine drainage (AMD)” means any contaminated discharge emanating from a mining operation formed through a series of chemical and biological reaction, when geological strata is disturbed and exposed to oxygen and moisture as a result of mining operations.

“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 activities.

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

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

“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.

“ANZECC & ARMCANZ” means the Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) 2000, Australian and New Zealand Guidelines for Fresh Marine Water Quality.

“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.

“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”, “certifying” 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.

“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.

“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 is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. A dam does *not* mean a fabricated or manufactured tank or container designed to an Australian Standard that deals with strength and structural integrity of that tank or container.

“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 all investigation and design reports, plans and specifications sufficient to hand to a contractor for construction, and planned decommissioning and rehabilitation outcomes; so as to address all hazard scenarios that would be identified by a properly conducted hazard assessment for the structure. Documentation must be such that a ‘suitable qualified and experience person’ could conduct an independent review without seeking further information from the designer.

“design storage allowance” or “DSA” means an available volume, estimated in accordance with the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995), that must be provided in a dam as at the first of November each year in order to prevent a discharge from that dam to a probability (AEP) specified in that guideline. The DSA is estimated based on 100% runoff of wet season rainfall at the relevant AEP, taking account of process inputs during that wet season, with no allowance for evaporation.

“development approval” means a development approval under the *Integrated Planning Act 1997* (or subsequent legislation) 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.

“end-of-pipe” means the location at which water is released to waters or land.

“environmental authority” means an environmental authority under Chapter 5 of 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*.

“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.

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

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

“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.

“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 hazard category in the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

“infrastructure” means water storage dams, roads and tracks, buildings and other structures built for the purpose and duration of the conduct of the environmentally relevant activities, but does not include other

facilities required for the long term management of the impact of those activities or the protection of potential resources. Such other facilities include dams other than water storage dams, waste dumps, voids, or stockpiles and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.

“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.

“LAr,1 hour” means the rating level, equal to LAeq,adj,1 hour.

“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 DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

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

“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”, “dyke” or “bund” means a long embankment 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 releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of water or flowable substances at any other times.

“mandatory reporting level” or “MRL” means a warning and reporting level determined in accordance with the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995). An MRL is the lowest level required in a regulated dam to allow either of the following to be retained:

- a) the runoff from a 72 hour duration storm at the AEP specified in the Table 5; or
- b) a wave allowance at that AEP as estimated using a recognised engineering method.

“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 therefrom;
- 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 water” means process water and contaminated storm water.

“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 well being.

“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.

“regulated dam” means any dam in the significant or high hazard category as assessed using the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

“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 center 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.

“stormwater” means all surface water runoff from rainfall.

“suitably qualified and experienced person” in relation to dams means a person 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 the geomechanics of dams with particular emphasis on stability, geology and geochemistry; and
- c) a total of five years of suitable experience and demonstrated expertise each, in three of the following categories:
 - i. Investigation and design of dams.
 - ii. Construction, operation and maintenance of dams.
 - iii. Hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology.

- iv. Hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes.
- v. Hydrogeology with particular reference to seepage, groundwater.
- vi. Solute transport processes and monitoring thereof.
- vii. Dam safety.

“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 constructed, open excavation in the ground.

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

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

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

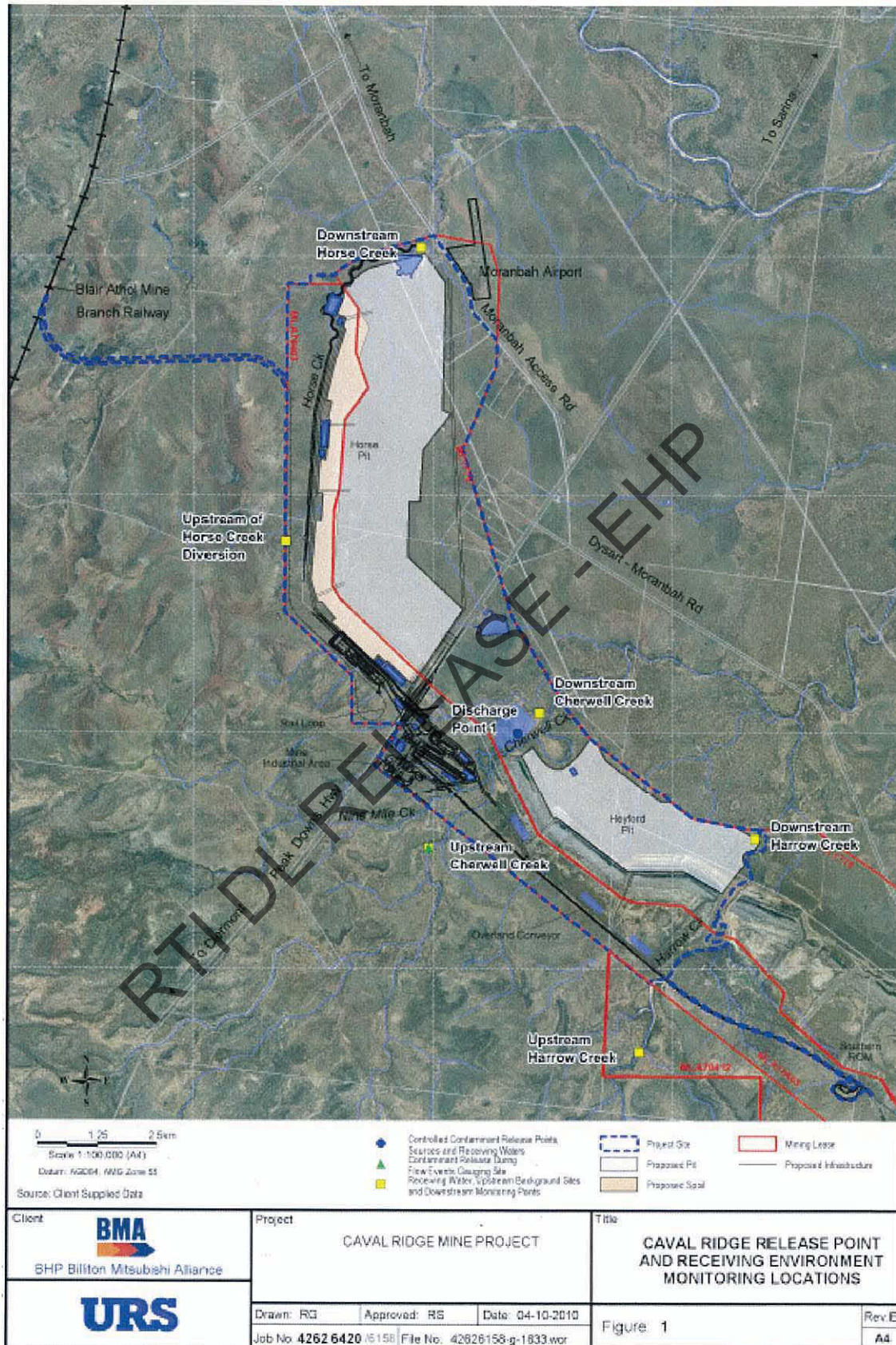
“waste water” means used water from the activity, process water or contaminated storm water.

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

“waters” includes all or any part of a river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water in natural or artificial watercourses, bed and banks of a watercourse, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater.

“µg/L” means micrograms per litre.

“µs.cm-1” means microsiemens per centimetre.

Figure 1: Caval Ridge release point and receiving water monitoring locations

END OF ENVIRONMENTAL AUTHORITY