

Appendix 1

Draft conditions for the Codrilla Coal Mine Project

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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.

Department Interest: General

Financial assurance

- A1** Provide 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 DERM Guideline – Calculating financial assurance for mining projects, 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.

Prevent and /or minimise likelihood of environmental harm

- A3** In carrying out the environmentally relevant activities, you must take all reasonable and practicable measures to prevent and / or to minimise the likelihood of environmental harm being caused. Any environmentally relevant activity, that, if carried out incompetently, or negligently, may cause environmental harm, in a manner that could have been prevented, shall be carried out in a proper manner in accordance with the conditions of this authority.

Maintenance of measures, plant and equipment

- A4** 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.

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Monitoring and records

- A5** Record, compile and keep for a minimum of 5 years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.
- A6** Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

Storage and Handling of flammable and combustible liquids

- A7** 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*.

Notification of emergencies, incidents and exceptions

- A8** All reasonable actions are to be taken to minimise environmental harm, or potential environmental harm, resulting from any emergency, incident or circumstances not in accordance with the conditions of this environmental authority.
- 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.
- A10** Not more than 14 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 6 weeks following the initial notification of an emergency, incident or information about circumstances which result or may result in environmental harm, 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.

Risk Management

A12 The environmental authority holder must maintain and implement a risk management system for mining activities which conforms to the Australian Standard for Risk Management (AS/NZ 4360:2004).

A13 The environmental authority holder must not implement a risk management system that contravenes or prevents the implementation of any condition of this environmental authority.

A14 An emergency response/contingency plan must be developed and implemented within the current plan of operations to manage the high risk categories identified in the risk management system.

Activity

A15 All land subject to mining activities must be rehabilitated to a non polluting, safe, stable and self sustaining landform.

A16 Contaminants must not be released to the receiving environment unless they are in accordance with the contaminant limits authorised by this environmental authority.

A17 This environmental authority does not authorise environmental harm unless a condition contained within the authority explicitly authorises that harm. Where there is no condition or the authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.

Definitions

- A18** Words and phrases used throughout this environmental authority are defined in the Definitions section of this authority. Where a definition for a term used in this environmental authority is sought and the term is not defined within this environmental authority, the definitions in the *Environmental Protection Act 1994*, its regulations and policies must be used.

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Department Interest: Air

Dust Nuisance

- B1** The release of dust and/or particulate matter resulting from the mining activity must not cause an environmental nuisance at any nuisance sensitive or commercial place.
- B2** Dust and particulate matter must not exceed any of the following levels when measured at any nuisance sensitive or commercial place:
- a level of deposited dust of 120 milligrams per square metre per day based on a monthly average;
 - a concentration of total particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1 year averaging time;
 - a concentration of particulate matter with aerodynamic diameter of less than 10 micrometres (PM₁₀) of 50 micrograms per cubic metres over a 24-hour averaging time with not more than 5 exceedances recorded over 12 months at any sensitive place (5 days exceedances per year are for the natural events such as bushfires and dust storm);
 - a concentration of particulate matter with aerodynamic diameter of less than 2.5 micrometres (PM_{2.5}) of 25 micrograms per cubic metres over a 24-hour averaging time; and
 - a concentration of particulate matter with aerodynamic diameter of less than 2.5 micrometres (PM_{2.5}) of 8 micrograms per cubic metres over a 1 year averaging time.

Ambient Dust Monitoring Program

- B3** Prior to the commencement of operation of the project, the holder must develop and submit for the approval to administering authority, an Ambient Dust Monitoring Program (as outlined in Table 1), to specify how the ambient dust impacts of the project will be monitored. The Program shall include, but not necessarily be limited to:
- Procedures for monitoring dust emissions from the project, in accordance with the requirements of this approval;
 - Locations, frequencies and methods for monitoring PM₁₀, PM_{2.5} and deposited particulate matter;
 - Provision for the use of at least two Tapered Element Oscillating Microbalance Samplers (TEOMS), five dust depositional gauges and a meteorological station capable of monitoring wind direction and speed;
 - Investigation of the use of TEOMS as part of the integrated air quality monitoring network. Should an alternative sampling method is required; the holder may seek approval from administering authority to exclude this requirement. In seeking such exclusion, the reasons for the exclusion shall be provided and be fully justified;

- e) The holder shall utilise real-time monitoring data to inform environmental management decisions associated with the project;
- f) A framework for identifying actual and potential dust impacts, and for applying pro-active and reactive mitigation and management measures to address those impacts;
- g) Provision for independent review and auditing of the Program; and
- h) Mechanisms for updating.

B4 Ongoing monitoring must be conducted in accordance with the standards, and at the locations, specified in Table 1A. Figure 1 shows the locations of the monitoring points (to be provided by the applicant).

**Table 1A
Air Quality Monitoring Details**

Air Quality Determination	Monitoring Standard	Monitoring Point Description	Approximate Monitoring Point Location	
			Easting	Northing
PM ₁₀ and PM _{2.5}	AS 3580.9.8:2008: Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM10 continuous direct mass method using a tapered element oscillating microbalance (TEOM) analyser	AQM1: Relocated Valkyrie School and residence site	(to be provided by applicant)	(to be provided by applicant)
		AQM2: Regalo Homestead	(to be provided by applicant)	(to be provided by applicant)
Dust deposition	AS 3580.10.1:2003: Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method	DG1: Regalo Homestead	(to be provided by applicant)	(to be provided by applicant)
		DG2: Lillianvale property	(to be provided by applicant)	(to be provided by applicant)
		DG3: Western boundary of the Codrilla AML	(to be provided by applicant)	(to be provided by applicant)
		DG4: Northern boundary of the Codrilla AML	(to be provided by applicant)	(to be provided by applicant)
		DG5: Adjacent to the Codrilla to Moorvale Haul Road	(to be provided by applicant)	(to be provided by applicant)
Meteorological data ⁽¹⁾	AS 2923:1987: Ambient air - Guide for measurement of horizontal wind for air quality applications	MS1: Regalo Homestead	(to be provided by applicant)	(to be provided by applicant)

(1) Wind speed and direction, humidity, temperature and precipitation.

B5 Where monitoring at locations identified in Table 1 indicates that the air quality objectives detailed in condition B2 have been exceeded, the holder of this environmental authority (the holder) must investigate the matter and report to the administering authority within fourteen (14) days:

- a) the concentration of PM₁₀ particulates or dust deposition rate recorded;
- b) a description of meteorological conditions occurring at the time; and
- c) the measures taken to reduce dust generated by the mining activities.

B6 When requested by the administering authority or as a result of a complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer), an additional dust and particulate monitoring (including dust deposition, total suspended particles (TSP), PM10 and PM2.5) must be undertaken, and the results thereof notified to the administering authority within fourteen (14) days following completion of monitoring. This includes providing interim reports if the monitoring lasts for more than one month.

Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place. Monitoring must be conducted in accordance with the appropriate standards.

B7 If monitoring conducted as a result of a complaint indicates an exceedance of the guidelines detailed in condition B2, the holder must:

- a) address the complaint through the use of appropriate dispute resolution if required; and
- b) immediately implement dust abatement measures.

B8 The results of PM₁₀, dust deposition and meteorological monitoring must be reported to the administering authority on request.

If requested, the results of PM₁₀, dust deposition and meteorological monitoring will be made available for use in any air quality monitoring network in the region operated independently of mining operations.

Odour Nuisance

B9 The release of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not cause an environmental nuisance at any nuisance sensitive or commercial place.

B10 When requested by the administering authority, odour monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any

complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.

- B11** If the administering authority determines the odour released to constitute an environmental nuisance, then the environmental authority holder must:
- a) address the complaint including the use of appropriate dispute resolution if required; and
 - b) immediately implement odour abatement measures so that emissions of odour from the activity do not result in further environmental nuisance.

General Dust Control

- B12** The holder must design, construct, commission, operate and maintain the project in a manner that minimises or prevents the emission of dust from the site including wind blown and traffic generated dust.
- B13** The holder must design, construct, operate and maintain the project in a manner that minimises the potential generation of fugitive dust emission from plant and equipment, including where relevant and practicable, design of the project to minimise the number of coal transfer points, minimise the drop height from stackers to stockpiles, full or partial enclosure of conveyors and installation of wind shields and belt cleaning systems to conveyors.
- B14** For the purpose of avoiding any release of dust or particulate matter from the approved place which could cause an environmental nuisance, the following measures must be taken:
- a) stockpiles must be maintained using all reasonable and practicable measures to minimise the release of wind blown dust or particulate matter to the atmosphere. Reasonable and practicable measures may include, but are not limited to, anemometer switching systems which trigger operation of effective water spray systems during winds likely to generate such releases; use of approved dust suppressants; shielding and storage in bunkers;
 - b) trafficable areas must be maintained using all reasonable and practicable measures to minimise the release of windblown dust or traffic generated dust to the atmosphere. Reasonable and practicable measures may include, but are not limited to, sealing with bitumen or other suitable material; keeping surfaces clean; use of water sprays; adoption and adherence to speed limits (e.g. less than 50 kph for unsealed road); use of approved dust suppressants; and wind breaks;

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- c) raw material preparation plants and external transfer conveyors must be operated and maintained using all reasonable and practicable measures to minimise the release of wind blown dust or particulate matter to the atmosphere. Reasonable and practicable measures may include, but are not limited to, transfer of materials in a moist state; enclosure or sealing of conveyors; use of water sprays at transfer points; shielding; and wind breaks; and
 - d) Water sprays must be installed at all major dust emission sources.

Dust Management Plan

B15 As part of the Environmental Management Plan required for the project approval, the holder shall prepare and implement a Dust Management Plan to outline measures to minimise and manage any impacts from the operation of the project on local air quality. The Plan shall include, but not necessarily be limited to:

- a) Identification of all major sources of dust emissions that may occur as result of the operation of the project;
- b) Description of the procedures to manage the dust emissions from the sources identified;
- c) Collection of air quality and meteorological data at location and using the methods described in Table 1;
- d) Identifying adverse meteorological conditions likely to produce elevated levels of PM10 at a sensitive or commercial place due to the mining activities;
- e) Developing a weather forecasting system for the site;
- f) Integration of dust control strategy with the weather forecasting system that would activate the timely management of dust control in addition to the best practice dust control measures during the adverse meteorological conditions;
- g) Protocols for regular maintenance of plant and equipment, to minimise the potential for fugitive dust emissions; and
- h) Description of procedures to be undertaken if any non-compliance is detected.

Final Model Water Conditions for Coal Mines in the Fitzroy Basin

Note:

Explanatory notes are in green. DELETE prior to issue of EA.

Insertions required by applicants and or the administering authority are in blue. DELETE prior to issue.

Contaminant Release

- W1** Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.
- W2** Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to waters must only occur from the release points specified in Table 2 and depicted in Figure 1 <this would be a plan or plans locating all monitoring (water quality and flow) and release points> attached to this environmental authority.
- W3** The release of mine affected water to internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with conditions W33 to W38 inclusive is permitted.

Table 2 (Mine Affected Water Release Points, Sources and Receiving Waters)

EXPLANATORY NOTES – Determining Mine Affected Water Release Points:

Mine affected water release points should be specified in Table 2 where they represent a potential source of water contaminated by the mining activity. Release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage run-off containing sediment only that is not likely to contain contaminants or have properties that would cause environmental harm, do not need to be separately identified in Table 2.

Release Point (RP)	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Mine Affected Water Source and Location	Monitoring Point	Receiving waters description
RP 1	XXXX	XXXX	e.g. Stormwater Dam Spillway Overflow	Dam Spillway	Wet Creek
RP 2	XXXX	XXXX	e.g. Dam overflow pipe	Sampling Tap on pipe where the pipe enters Sandy Creek	Sandy Creek

- W4** The release of mine affected water to waters in accordance with condition W2 must not exceed the release limits stated in Table 3 when measured at the monitoring points specified in Table 2 for each quality characteristic.

Table 3 (Mine Affected Water Release Limits)

Quality Characteristic	Release Limits	Monitoring frequency	Comment
Electrical conductivity (uS/cm)	Release limits specified in Table 5 for variable flow criteria.	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)	Current limit or limit derived from suspended solids limit and demonstrated correlation between turbidity to suspended solids historical monitoring data for dam water*	Daily during release* (first sample within 2 hours of commencement of release)	Turbidity is required to assess ecosystems impacts and can provide instantaneous results.
Suspended Solids (mg/L)	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment*	Daily during release* (first sample within 2 hours of commencement of release)	Suspended solids are required to measure the performance of sediment and erosion control measures.
Sulphate (SO ₄ ²⁻) (mg/L)	Release limits specified in Table 4 for variable flow criteria.	Daily during release* (first sample within 2 hours of commencement of release)	Drinking water environmental values from NHMRC 2006 guidelines OR ANZECC.

Note: *Limit for suspended solids can be omitted if turbidity limit is included. Limit for turbidity not required if suspended solids limit included. Both indicators should be measured in all cases.

W5 The release of mine affected water to waters from the release points must be monitored at the locations specified in Table 2 for each quality characteristics and at the frequency specified in Table 3 and Table 4..

Note: the administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition W5 is contravened due to a temporary lack of safe or practical access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.

Table 4 (Release Contaminant Trigger Investigation Levels) Potential Contaminants

EXPLANATORY NOTES – Table 4 Potential Contaminants:

The quality characteristics listed below should be assessed on a site by site basis by each mine prior to finalisation of amendment applications. Based on this assessment, the quality characteristic should be either disregarded if below trigger levels; or included as priority contaminants in Table 4 if above trigger levels. Assessment should involve comparison of representative data from dams that have historically been discharged or likely to be discharged from contaminant release points in Table 2. Data may include historical results or sampling undertaken for this specific purpose. The intent here is that not all dams on site would need to be sampled but those that would make up the majority of water in dams with release points. It could also be demonstrated based on existing water quality information that the water source and relative water quality of some dam are the same, in which case such dams may not need to be sampled individually. For metals and metalloids, trigger levels apply if dissolved results exceed trigger levels. However, total (unfiltered) results for metals and metalloids can be used to disregard a characteristic for inclusion in Table 4. Terms include SMD – slightly moderately disturbed level of protection, guideline - refers ANZECC & ARM CANZ (2000), LOR – typical

reporting for method stated. ICPMS/CV FIMS – analytical methods required to achieve LOR.

Table 4 (Release Contaminant Trigger Investigation Levels) Potential Contaminants

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	55	For aquatic ecosystem protection, based on SMD guideline	Commencement of release and thereafter weekly during release
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	4	For aquatic ecosystem protection, based on SMD guideline	
Mercury	0.2	For aquatic ecosystem protection, based on LOR for CV FIMS	
Nickel	11	For aquatic ecosystem protection, based on SMD guideline	
Zinc	8	For aquatic ecosystem protection, based on SMD guideline	
Boron	370	For aquatic ecosystem protection, based on SMD guideline	
Cobalt	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	
Sodium	TBA		
Include additional contaminants as required	Include additional contaminants as required		

Note:

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

- W6** If quality characteristics of the release exceed any of the trigger levels specified in Table 3 during a release event, the environmental authority holder must compare the down stream results in the receiving waters to the trigger values specified in Table 3 and:
1. where the trigger values are not exceeded then no action is to be taken; or
 2. where the down stream results exceed the trigger values specified Table 3 for any quality characteristic, compare the results of the down stream 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 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 W6 2(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

- W7** If an exceedance in accordance with condition W6 2(b) is identified, the holder of the authority must notify the administering authority within 14 days of receiving the result.

Mine Affected Water Release Events

- W8** The holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in Table 4.
- W9** Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with condition W2 must only take place during periods of natural flow events in accordance with the receiving water flow criteria for discharge specified in Table 4 for the release point(s) specified in Table 1.
- W10** The release of mine affected water to waters in accordance with condition W2 must not exceed the Electrical Conductivity and Sulphate release limits or the Maximum Release Rate (for all combined release point flows) for each receiving water flow criteria for discharge specified in Table 4 when measured at the monitoring points specified in Table 1.

Table 4 (Mine Affected Water Release during Flow Events)

EXPLANATORY NOTES – Table 4

Gauging station description:

The intent here is that every release point in Table 1 is associated with a gauging station that measures flow upstream of the discharge point. More than one discharge point may be associated with the same gauging station. The gauging station should be at a minimum distance from the discharge point such that water flow under trigger flow events will not significantly diminish by the time it reaches the discharge point. The location of

the gauging station should ideally be such that it is not significantly affected by other upstream point source releases or times of discharge are limited to periods of “natural” flow.

Under certain circumstances it may be appropriate to have a downstream gauging station in addition to or in replace of an upstream gauging station. The location should ideally not be affected by the discharge (e.g. be measured off the main waterway). The need for this must be demonstrated on a case by case basis to show why an upstream gauging station is insufficient. This may be the case when mines are located in the upper parts of catchments or near the downstream confluence or a major waterway. Similarly, the gauging station should be at a distance from the discharge point such that water flow during triggered flow events will not significantly diminish between the discharge point and the measuring point (or the confluence with the creek being measured). For downstream flow triggers, some changes to calculation for flow triggers and maximum release flows would typically be required based on the relative sizes of the waterways involved.

Flow Triggers and EC Quality Criteria:

The intent for flow triggers is that the times of discharge are limited to times around natural flow events only. Different flow regime methodologies are used to define mine affected water release opportunities, provide flexibility for site operators and to protect identified environmental values within receiving waters. The expectation is that where flow gauging data is available, it is used to calculate flow triggers. Where gauging data is not available or is insufficient, flow triggers should be based on runoff/stream flow estimates using appropriate hydrological calculations or models and known catchment area, rainfall estimations etc.

Separate methodologies for discharges which occur to local waterways rather than regional waterways will be applied as part of this revised approach. Due to the increased flexibility of the revised approach and consideration of a wider range of local factors the application of these model conditions to individual sites will require case-by case assessment and require sufficient background information to be provided. For example, it should be noted that discharges upstream of dams or lakes may require special considerations and generally stricter controls. Also, where multiple mines discharge to the same or closely connected waterways consideration of cumulative impacts will be necessary as part of the assessment process.

Model conditions do not preclude applicants from proposing alternative or additional conditions, nor restrict the administering authority from using alternative conditions where the case warrants. However, applications proposing alternative approaches will need to be supported by sufficient environmental risk assessment and contingency planning information to allow the administering authority to adequately consider the proposal.

There may be instances where case-by-case proposals can be considered for conditions to address management of particularly heavy rainfall and flooding that is similar to previous events, where there is sufficient information available based on: previous transitional environmental programs, monitoring and analysis, the environmental values of the receiving environment together with the experience of impacts on those environmental values, rigorous contingency and disaster response planning, and with particular regard to actual and potential cumulative impacts. For example, there may be potential to tailor a schedule of conditions to be triggered upon reaching nominated thresholds of rainfall, flow, flooding (or a combination) based on learning from an event that has occurred in the past; possibly adopting a similar framework to previous discharge permissions granted in similar circumstances, provided the framework was demonstrated to adequately address environmental risk to the satisfaction of the delegate.

No/low flow stream conditions (best quality / low EC mine affected water):

Discharge water quality will need to meet or be better than water quality objectives (or long term background reference 75th / 80th percentile) for EC and will only be permitted for temporary periods after periods of significant flow. The focus of this is to allow “good” quality water to be released when collected rather than having it stored over long durations resulting in deteriorating water quality. Any discharges made under no/low flow stream conditions must not contribute to or cause erosion and due consideration should be given to road/rail access, stock crossings etc (particularly in relation to multiple mines discharging under no/low flow stream conditions on connected waterways). General principles include:

- Release at times when flow is on tail end of flow event only i.e. following a flow above specified event flow trigger and when the flow reduces below the flow trigger again. This trigger will commence a discharge window of 4-6 weeks for good quality water only.
- End of pipe WQ \leq WQO (or long term background reference 75th/80th percentile). May require assessment of downstream environmental values where WQO is more stringent (e.g. drinking water supply).
- Duration of release is limited (dry ephemeral stream, 4 weeks after flow event ceases, use time after flow trigger for below – add additional time).
- Volume/rate will be considered on a case by case basis.

Medium flow stream conditions (medium quality mine affected water):

A flow trigger for the stream is required and will be set to avoid discharge of medium quality water during periods of no or low flow. General principles include:

- Requires the use of a stream flow trigger above which release can occur. The stream flow trigger must be representative of event flow and be above base/low flow (typically determined from hydrographs, historical flow/water quality data and/or modeling).
- End-of pipe EC < 3500 uS/cm. Options for either < 1500 uS/cm and < 3500 uS/cm as maximum limits can be considered which will result in different maximum discharge rates for different quality water. The better the quality of water to be released, the greater the volume that can be permitted.
- The design dilution/maximum discharge rate should be based on a site specific risk assessment. These should be designed to achieve an in-stream EC based on the location – upper (Zone 1), mid (Zone 2) or lower (Zone 3) catchment. The EC_{WQO high flow} should be adopted as background EC for design calculations.
 - o Zone 1, upper catchment mines, approximately < 10 km from top of waterway catchment.
EC_{in stream} = 1000uS/cm (toxicity guideline).
 - o Zone 2, mid catchment mines, zones not within Zone 1 or Zone 3
EC_{in stream} = 700uS/cm
 - o Zone 3, lower catchment mines (All regional waterways are considered Zone 3 from distance > 50 km from top of waterway catchment, refer to Zone 3 map) –
EC_{in stream} = EC_{high flow WQO} + multiplier x (EC_{WQO low flow} – EC_{WQO high flow})
e.g. multiplier = 0.2 for Isaac, Nogo, Dawson
- EC_{in stream} for calculations may vary according to other locally relevant environmental values that may need to be considered.

High flow stream conditions (poorer quality water):

This option might be used in some cases for mines that need to discharge higher EC wastewater than is allowable under medium flow stream conditions. Any discharge is required to have a higher level of dilution than with medium flow cases but still achieve a maximum incremental increase in the waterway. This option is most feasible for mines situated on regional waterways as the window for discharge is likely to be limited for local waterways. Some additional considerations on management of mixing zones and acute/chronic toxicity may be required in this case. General principles include:

- Requires the use of a stream flow trigger above which release can occur. The stream flow trigger must be representative of high event flow and be above medium flow (typically determined from hydrographs, historical flow/water quality data and/or modeling).

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- End-of pipe EC must be $> 3500\text{uS/cm}$ (but $<10,000\text{uS/cm}$). The better the quality of water to be released, the greater the volume that can be permitted.
 - The design dilution/maximum discharge rate should be based on a site specific risk assessment. These should be designed to achieve an in-stream EC based on the location – upper (Zone 1), mid (Zone 2) or lower (Zone 3) catchment as described above. .
 - May need some additional indicators/requirements and requires case by case assessment.
 - This option is likely to be less feasible for Zone 1 and 2 mines.
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Receiving waters/ stream	Release Point (RP)	Gauging station	Gauging Station Latitude (decimal degree, GDA94)	Gauging Station Longitude (decimal degree, GDA94)	Receiving Water Flow Recording Frequency	Receiving Water Flow Criteria for discharge (m ³ /s)	Maximum release rate (for all combined RP flows)	Electrical Conductivity and Sulphate Release Limits
e.g. Wet Creek	Insert all release points that will release based on this gauging station flow. e.g. RP1, RP2 & RP3	e.g. Gauging station 1	XXXX	XXXX	Continuous (minimum daily)	<p>Low Flow <XX m3/s for a period of <insert number of days> after natural flow events that exceed XX m3/s (where XX is a specified event flow trigger)</p> <p>Medium Flow > XX m3/s (where XX is specified event flow trigger)</p> <p>High Flow > ZZ m3/s (where ZZ is a specified high flow event trigger)</p>	<p>Insert < xx ML/day or < xx m3/s Volume/rate to be determined on case by case basis</p> <p>< XX m3/s (where XX is the maximum release rate determined on case by case basis)</p> <p>< YY m3/s (where YY is the maximum release rate determined on case by case basis)</p> <p>< ZZ m3/s (where ZZ is the maximum release rate determined on case by case basis)</p>	<p>Electrical conductivity (uS/cm): <insert water quality objective or 75th percentile of long term background reference data> Sulphate (SO₄²⁻): 250 mg/L</p> <p>Electrical conductivity (uS/cm) <insert value determined on case specific basis but typically <1500 Sulphate (SO₄²⁻) (mg/L) <insert limit to be determined based on achieving downstream target of 250 (Maximum) ></p> <p>Electrical conductivity (uS/cm) <insert value determined on case specific basis but typically <3500 Sulphate (SO₄²⁻) (mg/L) <insert limit to be determined based on achieving downstream target of 250 (Maximum)></p> <p>Electrical conductivity (uS/cm) <insert value determined on case specific basis but typically within a range of <3500 to <10,000 Sulphate (SO₄²⁻) (mg/L) <insert limit to be determined based on achieving downstream target of 250 (Maximum)></p>

W12 The daily quantity of mine affected water released from each release point must be measured and recorded at the monitoring points in Table 2.

W13 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

- W14** The environmental authority holder must notify the administering authority as soon as practicable and no later than 24 hours after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information:
- release commencement date/time;
 - expected release cessation date/time;
 - release point/s;
 - release volume (estimated);
 - receiving water/s including the natural flow rate; and
 - 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.

- W15** The environmental authority holder must notify the administering authority as soon as practicable (nominally within twenty-four (24) hours after cessation of a release event) of the cessation of a release notified under Condition W14 and within 28 days provide the following information in writing:
- release cessation date/time;
 - natural flow volume in receiving water;
 - volume of water released;
 - details regarding the compliance of the release with the conditions of Agency Interest: Water of this environmental authority (i.e. contamination limits, natural flow, discharge volume);
 - all in-situ water quality monitoring results; and
 - any other matters pertinent to the water release event.

Note: Successive or intermittent releases occurring within twenty-four (24) hours of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with conditions W14 and W15, provided the relevant details of the release are included within the notification provided in accordance with conditions W14 and W15.

Notification of Release Event Exceedance

- W16** If the release limits defined in Table 3 are exceeded, the holder of the environmental authority must notify the administering authority within twenty-four (24) hours of receiving the results.
- W17** The authority holder must, within twenty-eight (28) days of a release that exceeds the conditions of this authority, provide a report to the administering authority detailing:
- the reason for the release;
 - the location of the release;
 - all water quality monitoring results;
 - any general observations;
 - all calculations; and
 - any other matters pertinent to the water release event.

EXPLANATORY NOTES – Water storage monitoring conditions:

Note: Conditions W18 and W19 can be removed if already conditioned in the authority or in the event that model conditions for regulated dams are finalised and they include relevant replacement conditions.

Monitoring of Water Storage Quality

W18 Water storages stated in Table 5 which are associated with the release points must be monitored for the water quality characteristics specified in Table 6 at the monitoring locations and at the monitoring frequency specified in Table 5.

Table 5 (Water Storage Monitoring)

Water Storage Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Monitoring Location	Frequency of Monitoring
XXXX	XXXX	XXXX	To be negotiated- will depend on the individual storage structure volume. This will deal with stratification – depth profiles and be appropriate to in situ quality characteristics.	Quarterly

W19 In the event that waters storages defined in Table 5 exceed the contaminant limits defined in Table 6, the holder of the environmental authority must implement measures, where practicable, to prevent access to waters by all livestock.

Table 6 (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
Sulphate (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
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Note:

¹ Contaminant limit based on ANZECC & ARMICANZ (2000) stock water quality guidelines.

² Page 4.2-15 of ANZECC & ARMICANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4–9".
Note: Total measurements (unfiltered) must be taken and analysed

Receiving Environment Monitoring and Contaminant Trigger Levels

W20 The quality of the receiving waters must be monitored at the locations specified in Table 8 for each quality characteristic and at the monitoring frequency stated in Table 7.

Table 7 (Receiving Waters Contaminant Trigger Levels)

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 – 8.5	Daily during the release
Electrical Conductivity (µS/cm)	1000 Note: for protection against toxicity this may need to be reduced in some circumstances e.g. where in close proximity upstream of a drinking water dam or regional waterway	
Suspended solids (mg/L)	To Be Determined. Turbidity may be required to assess ecosystems impacts and can provide instantaneous results.	
Sulphate (SO ₄ ²⁻) (mg/L)	250 (Protection of drinking water Environmental Value)	
Sodium (mg/L)	TBA	

Table 8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points)

EXPLANATORY NOTES – Selection of monitoring sites:

The intent here is that that each discharge point has both an upstream and downstream monitoring point associated with it. These monitoring points should be located as close as practicable to the release point and the distances should be defined in the footnotes in Table 8. The location of flow monitoring points should also be considered in selecting upstream monitoring points. Other considerations include accessibility, particularly during wet weather conditions.

Monitoring Points	Receiving Waters Location Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)
Upstream Background Monitoring Points			
Monitoring Point XX	XXXX Creek XX metres upstream of RP XX	XXXX	XXXX
Monitoring Point XX	XXXX Creek XX metres upstream of RP XX	XXXX	XXXX
Downstream Monitoring Points			
Monitoring Point XX	XXXX Creek XX metres downstream of RP XX	XXXX	XXXX

Monitoring Point XX	XXXX Creek XX metres downstream of RP XX	XXXX	XXXX
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Notes:

- The upstream monitoring point should be within Xkm the release point.
- the downstream point should not be greater than Xm from the release point.
- The data from background monitoring points must not be used where they are affected by releases from other mines.

- W21** If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table 7 during a release event the environmental authority holder must compare the down stream results to the upstream results in the receiving waters and:
- 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
 - where the down stream results exceed the upstream results complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
 - details of the investigations carried out; and
 - actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with W21(2) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

Receiving Environment Monitoring Program (REMP)

EXPLANATORY NOTES – Designing a REMP:

Generally the Receiving Environment Monitoring Program (REMP) should be used to assess the local receiving waters for the specified discharge locations. The monitoring should not be specifically designed to assess compliance of the release – this is covered by other conditions. The key purpose of the REMP is to assess the overall condition of the local receiving waters and assessment should be against water quality objectives and relevant guidelines. Note that in some cases where discharge occurs to ephemeral streams, there may be a need to include downstream sensitive receiving waters or environmental values outside of the specified REMP area. An example of this would be where there are no semi-permanent /permanent waterholes in the specific area but one is located further downstream prior to the confluence with the next major waterway. For further guidance on what to include in a REMP, please refer to the Draft DERM REMP Document for Fitzroy Coal Mines and Additional Information.

There is a potential for beneficial linkages of REMP monitoring to regional waterway monitoring programs, such as the Fitzroy Partnership monitoring program. For example DERM intends to maintain monitoring information compiled through individual REMP programs through an internal database under development. Industry has indicated its willingness to see this data shared with the Fitzroy Partnership for the purpose of a regional water monitoring program. Likewise it is possible for environmental authority holders to utilise relevant and available water monitoring information collected by other parties, such as the Fitzroy Partnership, as reference data for the purposes of the REMP required by this section.

- W22** The environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site.
- For the purposes of the REMP, the receiving environment is the waters of the XX and connected or surrounding waterways within XX (e.g. Xkm) downstream of the release. The REMP should encompass

any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

W23 The REMP must:

- a) Assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality); and
- b) Be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected; and
- c) Include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in Table 8); and
- d) Specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the *Queensland Water Quality Guidelines* 2006. This should include monitoring during periods of natural flow irrespective of mine or other discharges; and
- e) Include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in Table 2 and 3); and
- f) Include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.1 *Guidance on Sampling of Bottom Sediments*); and
- g) Include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology, and
- h) Apply procedures and/or guidelines from ANZECC & ARMCANZ 2000 and other relevant guideline documents; and
- i) Describe sampling and analysis methods and quality assurance and control; and
- j) Incorporate stream flow and hydrological information in the interpretations of water quality and biological data.

W24 A REMP Design Document that addresses each criterion presented in Conditions W22 and W23 must be prepared and submitted to the administering authority **no later than 3 months after the date of issue of this environmental authority [include for new sites or expansion projects, remove for existing mine sites which already have REMP Design Documents]**. Due consideration must be given to any comments made by the administering authority on the REMP Design Document and subsequent implementation of the program.

W25 A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with conditions W22 and W23 must be prepared annually and made available on request to the administering authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

Water Reuse

EXPLANATORY NOTES – Water reuse conditions

Mine affected water reuse conditions acknowledge that there is beneficial potential for using mine affected water. The conditions below provide examples of how such authorisation can be conditioned. The examples are not exhaustive and there may be valid proposals received to supply water to other industry types, or using different methods of transportation. In such cases it is important to consider any environmental risk associated with a proposal by considering what environmental values may be impacted by a given proposal, using an approach that accords with current criteria for environmental management decisions made by the administering authority, prior to presenting a recommendation to the relevant delegate for the decision.

- W26** Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party for the purpose of:
- supplying stock water subject to compliance with the quality release limits specified in Table 9; or
 - supplying irrigation water subject to compliance with quality release limits in Table 10; or
 - supplying water for construction and/or road maintenance in accordance with the conditions of this environmental authority.

Table 9 (Stock Water Release Limits)

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

Table 10 (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

W27 Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as dams or tanks, for the purpose of supplying water to <name adjoining mine>. The volume, pH and electrical conductivity of water transferred to <name adjoining mine> must be monitored and recorded.

W28 If the responsibility for mine affected water is given or transferred to another person in accordance with conditions **W26** or **W27**:

- the responsibility for the mine affected water must only be given or transferred in accordance with a written agreement (the third party agreement); and
- the third party agreement must include a commitment from the person utilising the mine affected water to use it in such a way as to prevent environmental harm or public health incidents and specifically make the persons aware of the General Environmental Duty (GED) under section 319 of the *Environmental Protection Act 1994*, environmental sustainability of the water disposal and protection of environmental values of waters; and
- the third party agreement must be signed by both parties to the agreement.

Water General

W29 All determinations of water quality and biological monitoring must be:

-
- a) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements;
 - b) made in accordance with methods prescribed in the latest edition of the Department of Environment and Resource Management's Monitoring and Sampling Manual;

Note: Condition W29 requires the Monitoring and Sampling Manual to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.

- c) collected from the monitoring locations identified within this environmental authority, within XX hour of each other where possible;
- d) carried out on representative samples; and
- e) analysed at a laboratory accredited (e.g. NATA) for the method of analysis being used.

- W30** The release of any contaminants as permitted by this environmental authority, directly or indirectly to waters, other than internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with conditions W33 to W38 inclusive:
- a) must not produce any visible discolouration of receiving waters; and
 - b) 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

- W31** The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format with each annual return:
- a) the date on which the sample was taken;
 - b) the time at which the sample was taken;
 - c) the monitoring point at which the sample was taken;
 - d) the measured or estimated daily quantity of mine affected water released from all release points;
 - e) the release flow rate at the time of sampling for each release point;
 - f) the results of all monitoring and details of any exceedances of 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

- W32** 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 Department of Environment and Resource Management *Guideline - Activities in a Watercourse, Lake or Spring associated with Mining Activities*.

Water Management Plan

- W33** A Water Management Plan must be developed by an appropriately qualified person and implemented by XX/XX/XXXX (WITHIN 3 MONTHS OF THE DATE OF ISSUE).

- W34** The Water Management Plan must:
- a) provide for effective management of actual and potential environmental impacts resulting from water management associated with the mining activity carried out under this environmental authority; and
 - b) be developed in accordance with Department of Environment and Resource Management guideline *Preparation of water management plans for mining activities* and include:
 - i. a study of the source of contaminants;
 - ii. a water balance model for the site;

-
- iii. a water management system for the site;
 - iv. measures to manage and prevent saline drainage;
 - v. measures to manage and prevent acid rock drainage;
 - vi. contingency procedures for emergencies; and
 - vii. a program for monitoring and review of the effectiveness of the water management plan.

W35 The Water Management Plan must be reviewed each calendar year and a report prepared by an appropriately qualified person. The report must:

- a) assess the plan against the requirements under condition W34;
- b) include recommended actions to ensure actual and potential environmental impacts are effectively managed for the coming year; and
- c) identify any amendments made to the water management plan following the review.

W36 The holder of this environmental authority must attach to the review report required by condition W35, a written response to the report and recommended actions, detailing the actions taken or to be taken by the environmental authority holder on stated dates:

- a) to ensure compliance with this environmental authority; and
- b) to prevent a recurrence of any non-compliance issues identified.

W37 The review report required by condition W35 and the written response to the review report required by condition W36 must be submitted to the administering authority with the subsequent annual return under the signature of the appointed signatory for the annual return.

W38 A copy of the Water Management Plan must be provided to the administering authority on request.

Saline Drainage

W39 The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline drainage.

Acid Rock Drainage

W40 The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of acid rock drainage.

Stormwater and Water sediment controls

W41 An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

W42 Stormwater, other than mine affected water, is permitted to be released to waters from:

- i) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition W41; and
- ii) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with conditions W33 to W38 inclusive, for the purpose of ensuring water does not become mine affected water.

W43 The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas from which contaminants can be released into any receiving waters.

W44 Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to minimise the release of wastes, contaminants or materials to any stormwater drainage system or receiving waters.

Groundwater

W45 Groundwater must be monitored at the locations and frequencies specified in Tables 34 and 35, and the data supplied in an approved format to the administering authority within 30 business days of being collected. The monitoring activities must be carried out in accordance with the latest edition of the administering authority's Water Quality Sampling Manual.

Department Interest: Noise and vibration

Noise nuisance

- D1** Noise from activities must not cause an environmental nuisance at any noise sensitive or commercial place.
- D2** All noise from activities must not exceed the levels specified in *Table 15: Noise limits* at any noise affected place.

Noise monitoring

- D3** When requested by the administering authority, noise monitoring must be undertaken to investigate any complaint of noise nuisance, and the results notified within fourteen (14) days to the administering authority. Monitoring must include:
- a) $L_{A 10, \text{adj}, 10 \text{ mins}}$;
 - b) $L_{A 1, \text{adj}, 10 \text{ mins}}$;
 - c) the level and frequency of occurrence of impulsive or tonal noise;
 - d) atmospheric conditions including wind speed and direction;
 - e) effects due to extraneous factors such as traffic noise; and
 - f) location date and time of recording.

D4 Noise is not considered to be a nuisance under condition **D1** if monitoring shows that noise does not exceed the following levels in the time periods specified in *Table 11: Noise limits*.

Table 11: Noise limits

Noise level dB(A)	Monday to Sunday		
	7am - 6pm (Daytime)	6pm - 10pm (Evening)	10pm - 7am (Nighttime)
	Noise measured at a 'Sensitive place'		
Noise Level dB(A)	40	40	35
	Noise measured at a 'Commercial place'		
Noise Level dB(A)	45	45	40

D5 The method of measurement and reporting of noise monitoring must comply with the current edition of the administering authority's *Noise Measurement Manual*.

D6 If monitoring indicates exceedance of the relevant limits in condition D4, then the environmental authority holder must:

- a) address the complaint including the use of appropriate dispute resolution if required; and
- b) immediately implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.

Vibration nuisance

D7 Vibration from the licensed activities must not cause an environmental nuisance at any sensitive or commercial place.

- D8** When requested by the administering authority, vibration monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.
- D9** Vibration 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.
- D10** If monitoring indicates exceedance of the relevant limits in *Table 16: Vibration Limits*, 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 does not result in further environmental nuisance.

Table 12: Vibration Limits

Location	Vibration measured at a sensitive place	
	Monday to Sunday 9am – 7pm	Other times and public holidays
Peak particle velocity (mm/s)	5 mm/s peak particle velocity for nine (9) out of ten (10) consecutive blasts and not greater than 10 mm/s peak particle velocity at any time	No blasting to occur

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

Airblast overpressure nuisance

- D11** The airblast overpressure level from blasting operations on the premises must not exceed the limits defined in *Table 13: Airblast overpressure level* at any nuisance sensitive or commercial place.

Table 13: Airblast overpressure level

Location	Airblast Overpressure Measured	
	Monday to Sunday 9am – 7pm	Other times and public holidays
Sensitive or commercial place	Air blast overpressure level of 115 db (Linear peak) for nine (9) out of ten (10) consecutive blasts initiated and not greater than 120 db (Linear peak) at any time.	No blasting to occur

- D12** 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 14 days to the administering authority following completion of monitoring.
- D13** 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.
- D14** If monitoring indicates exceedance of the relevant limits in *Table 13: Airblast overpressure level*, 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 does not result in further environmental nuisance.
- D15** The method of measurement and reporting of airblast overpressure levels must comply with the current edition of the administering authority's *Noise Measurement Manual*.

Department Interest: Waste

General

- E1** For the purpose of conditions E2 to E16, effluent, waste rock, spoil, overburden, rejects and tailings generated on **Mining Lease (Codrilla A and Codrilla B)** are not defined as 'waste'.

Storage of tyres

- E2** Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste-to-energy options must be stored in stable stacks and at least 10m from any other scrap tyre storage area, or combustible or flammable material, including vegetation.
- E3** All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of the scrap tyre storage area.
- E4** 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.
- E5** Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform.

Waste Management

- E6** A Waste Management Plan, in accordance with the *Environmental Protection (Waste Management) Policy 2000*, must be implemented and must include:
- a) describe how the environmental authority holder recognises and applies the waste management hierarchy;
 - b) identify characterisations of wastes generated from the project and general volume trends over the past 5 years;
 - c) a program for safe recycling or disposal of all wastes - reusing and recycling where possible;
 - d) waste commitments with auditable targets to reduce, reuse and recycle;
 - e) the waste management control strategies must consider:
 - o the type of wastes;
 - o segregation of the wastes;
 - o storage of the wastes;
 - o transport of the wastes;
 - o monitoring and reporting matters concerning the waste;
 - o emergency response planning;
 - o disposal, reused and recycling options; and
 - f) identify the potential adverse and beneficial impacts of the wastes generated;
 - g) detail the hazardous characteristics of the waste generated (if any);
 - i) outline the process to be implemented to allow for continuous improvement of the waste management systems;
 - j) identify responsible staff (positions) for implementing, managing and reporting the Waste Management Plan; and
 - k) cover a staff awareness and induction program that encourages re-use and recycling.
- E7** Waste is not permitted to be disposed of within Mining Lease (Codrilla A and B).
- E8** General waste may be temporarily stored on Mining Lease (Codrilla A and B) before being directed to a facility that can lawfully accept such waste.

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- E9** Subject to conditions E1 to E5, the following regulated waste may be temporarily stored on Mining Lease (Codrilla A and B) before being directed to a facility that can lawfully accept such waste:
- a) tyres;
 - b) batteries;
 - c) hydrocarbons
 - d) oils;
 - e) oil interceptor sludges;
 - f) oil water emulsions and mixtures; and
 - g) chemicals listed under the *Environmental Protection Act 1994* and subordinate legislation.
- E10** A designated area or storage containers must be set aside for the laydown and segregation of wastes.
- E11** An effective fire break must be provided and maintained around all waste laydown areas.
- E12** All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of all waste laydown areas.
- E13** Waste must not be burned or allowed to be burned on the mining lease unless by approval of the administering authority.
- E14** Waste batteries must be stored:
- a) in a bunded and roofed area; or
 - b) palletised and plastic wrapped.

E15 A record of all wastes must be kept detailing the following information:

- a) date of pickup of waste;
- b) description of waste;
- c) quantity of waste;
- d) origin of the waste; and
- e) destination of the waste.

NOTE: Trackable wastes as listed in Schedule 1 of the *Environmental Protection (Waste Management) Regulation 2000* are not covered by this condition. Trackable wastes have similar recording requirements to this condition in accordance with a waste tracking system established under the above Regulation.

E16 All regulated waste removed from the site must be removed by a person who holds a current approval to transport such waste under the provisions of the *Environmental Protection Act 1994*.

E17 Each container of regulated waste must be marked to identify the waste contained therein.

Department Interest: Land

Topsoil

- F1** Topsoil must be strategically stripped ahead of mining in accordance with a Topsoil Management Plan.
- F2** A topsoil inventory which identifies the topsoil requirements for the **Codrilla Mine project** and availability of suitable topsoil on site must be detailed in the Plan of Operations.

Preventing contaminant release to land

- F3** Contaminants must not be released to land in a manner which constitutes nuisance, material or serious environmental harm.
- F4** The environmental authority holder must take all practicable actions necessary to secure loads prior to transporting materials off site to minimise emissions or spillage of any material from vehicles or other transport infrastructure.

Chemicals and flammable or combustible liquids

- F5** 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 edition of *AS 1940 – Storage and Handling of Flammable and Combustible Liquids*.
- F6** Spillage of all flammable and combustible liquids must be controlled in a manner that prevents environmental harm.
- F7** 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.
- F8** Spillage of all chemicals must be controlled in a manner that prevents environmental harm.
- F9** All explosives, corrosive substances, toxic substances, gases and dangerous goods must be stored and handled in accordance with the relevant Australian Standard.

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- F10** All chemicals and flammable or combustible liquids stored on site that have the potential to cause environmental harm must be stored in or serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land. Where no relevant Australian Standard is available, the following must be applied:
- a) storage tanks must be bunded so that the capacity and construction of the bund is sufficient to contain at least 110% of a single storage tank or 100% of the largest storage tank plus 10% of the second largest storage tank in multiple storage areas; and
 - b) drum storages must be bunded so that the capacity and construction of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.

Spill Kit

- F11** An appropriate spill kit, personal protective equipment and relevant operator instructions/emergency procedure guides for the management of wastes, chemicals and flammable and combustible liquids associated with the activity must be kept at the site.
- F12** Anyone operating with wastes, chemicals or flammable and combustible liquids under this approval must be trained in the use of the spill kit.

Infrastructure

- F13** All infrastructure, constructed by or for the environmental authority holder during the licensed activities including water storage structures, must be removed from the site prior to surrender, except where agreed in writing by the post mining landowner / holder.

NOTE: This is not applicable where the landowner / holder is also the environmental authority holder.

Mining Waste

- F14** For the purpose of conditions F15 to F27, waste rock, spoil and overburden generated on Mining Lease (Codrilla A and B) are defined as 'mining waste'.

Mining Waste Management

- F15** A Mining Waste Management Plan 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: Iron (Fe), Aluminium (Al), Copper (Cu), Magnesium (Mg), Manganese (Mn), Calcium (Ca), Sodium (Na) and Sulphate (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) quantification of PAF from mining waste present;
 - e) review impacts of the PAF mining waste on the rehabilitation;
 - f) management actions for mining waste that has been identified as having a high availability or leachability of metals in accordance with condition F17;
 - g) management actions for mining waste that has been defined as PAF in accordance with condition F18; and
 - 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.
- F16** The management of mining waste emplacement must be in accordance with the following:
- a) all mining waste must be progressively characterised prior to emplacement for net acid producing potential and the following contaminants: Iron (Fe), Aluminium (Al), Copper (Cu), Magnesium (Mg), Manganese (Mn), Calcium (Ca), Sodium (Na) and Sulphate (SO₄);
 - b) records must be kept of the waste rock, spoil or overburden emplacement to indicate locations and characteristics of mining waste located on Mining Lease **Codrilla A and B**; and
 - c) where the acid producing potential of mining waste material has not been conclusively determined, geochemical kinetic testing must be conducted to indicate oxidation rates, potential reaction products and effectiveness of control strategies.

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- F17** Subject to the release limits defined in Agency Interest: Water, all mining waste, identified by condition F16, as having a high availability or leachability of metals, must be disposed of in a manner that prevents contaminants being directly or indirectly released or likely to be released to any groundwater or water course.
- F18** No PAF mining waste, identified by condition F16, is authorised to be disposed within the open pit.
- F19** All PAF mining waste, identified by condition F16, must be disposed of in a manner that ensures contaminants are not released to the environment.
- F20** Areas that are, or are proposed, to contain PAF mining waste emplacement areas must be identified in the current Plan of Operations.

Tailings

- F21** The environmental authority holder will develop and maintain a Coarse and Fine Reject Waste Management Plan. The Plan will include at a minimum:
- a) chemical analysis of tailings material from each sub-cell to determine the net acid producing potential immediately prior to placement in waste rock, spoil or overburden emplacements in accordance with conditions F23, F24 and F25;
 - b) the availability or leachability of metals from the tailings;
 - c) placement strategies of tailings material within the Tailings Storage Facility;
 - d) placement strategies of tailings in mining waste emplacement areas to enable successful rehabilitation outcomes in accordance with conditions of this environmental authority;
 - e) identification of environmental issues and potential environmental impacts;
 - f) control measures for routine operations to minimise the likelihood of environmental harm;
 - g) contingency plans and emergency procedures for non-routine situations;
 - h) periodical review of environmental performance and continual improvement; and
 - i) the progressive 3D survey of all tailings disposal locations within the mining waste emplacement areas.

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- F22** The management of tailings disposal must be in accordance with the following:
- a) all tailings material must be progressively characterised prior to disposal within 'in pit' mining waste emplacement areas for net acid producing potential and the following contaminants: Iron (Fe), Aluminium (Al), Copper (Cu), Magnesium (Mg), Manganese (Mn), Calcium (Ca), Sodium (Na) and Sulphate (SO₄);
 - b) records must be kept of the tailings disposal to indicate locations and characteristics of tailings disposed of within mining waste emplacement areas;
 - c) records must be kept of the tailings disposal for identified PAF tailings to indicate locations and characteristics of tailings stored within the tailings storage facility; and
 - d) where the acid producing potential of tailings material has not been conclusively determined, geochemical kinetic testing must be conducted to indicate oxidation rates, potential reaction products and effectiveness of control strategies.
- F23** All PAF tailings, identified by condition F22, must be disposed of in a certified Tailings Storage Facility authorised under this environmental authority.
- F24** NAF tailings, identified by condition F22, may be disposed of within mining waste emplacement areas located within the open pit.
- F25** No tailings are authorised to be disposed of within mining waste emplacement areas not located within the open pit.
- F26** NAF tailings disposed of in accordance with condition F24 must be contained within a land-based structure lined to ensure that seepage will not pass through the lining during the operational life, and on decommissioning and rehabilitation, encapsulated such that material will not cause significant harm to the environment for the foreseeable future.
- F27** The waste rock emplacement areas situated within the open pit must be located on a drainage control zone and be designed to ensure all seepage from beneath the waste rock emplacement areas is directed towards the open pit prior to decommissioning and rehabilitation.
- F28** Areas that are, or are proposed, to contain tailings within waste rock, spoil or overburden emplacement areas must be identified in the current Plan of Operations.

Acid rock drainage and leachate management

- F29** Subject to the release limits defined in Agency 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 any groundwater or water course.

Other conditions will be developed regarding specific issues associated with partings and dispersive overburden material, including placement requirements and in pit dumping.

Rehabilitation landform criteria

- F30** All areas significantly disturbed by mining activities must be rehabilitated to a stable landform with a self-sustaining vegetation cover in accordance with *Table 14: Landform Design Criteria*.

Table 14: Landform Design Criteria

Disturbance Type	Maximum Projective Surface Area (ha)	Maximum Slope Range	Vertical Height Range (m)
Elevated Landforms			
Infrastructure Areas			
Ramps into Voids			
Voids			

- F31** Progressive rehabilitation must commence within 2 years when areas become available within the operational land.

- F32** Areas that are, or are becoming, available for rehabilitation must be identified in the current Plan of Operations.

F33 Complete a rehabilitation management plan for disturbed areas and submit a report to the administering authority proposing acceptance criteria by **date to be determined**. The rehabilitation management plan must, at a minimum:

- a) map existing areas of rehabilitation;
- b) develop rehabilitation objectives;
- c) develop design criteria for rehabilitation of disturbed areas;
- d) detail rehabilitation methods applied to areas;
- e) identify success factors for areas;
- f) detail future rehabilitation actions to be completed on areas;
- g) identify 3 reference and 3 rehabilitation sites to be used to develop rehabilitation success criteria;
- h) description of monitoring of reference sites and rehabilitated areas inclusive of statistical design;
- i) contain landform design criteria including end of mine design;
- j) detail how landform design will be consistent with the surrounding topography;
- k) provide schematic representation of final landform inclusive of:
 - i. drainage design and features;
 - ii. slope designs;
 - iii. cover design;
 - iv. erosion controls proposed on reformed land;
- l) specify future planned rehabilitation methods for disturbed areas;
- m) explain planned native vegetation rehabilitation areas and corridors;
- n) describe rehabilitation monitoring and maintenance requirements to be applied to all areas of disturbance;
- o) itemise revegetation criteria;
- p) describe end of mine landform design plan and post mining land uses across the mine;
- q) specify spoil characteristics, soil analysis, soil separation for use on rehabilitation;
- r) include a cost benefit analysis / triple bottom line assessment (or an alternative assessment method) of the proposed final landform design criteria and alternatives; and
- s) identify potential problems and how they will be addressed.

Rehabilitation Monitoring Program

- F34** Once rehabilitation has commenced, the holder of the environmental authority must conduct a Rehabilitation Monitoring Program on a yearly basis, which must include sufficient spatial and temporal replication to enable statistically valid conclusions as established under the rehabilitation program.
- F35** 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.
- F36** Verification of rehabilitation success, determined by the rehabilitation success criteria developed as per condition F33 is to be carried out as follows:
- a) the minimum sampling intensity must be specified for the monitoring of progressive rehabilitation;
 - b) justification of the suitability of the minimum sampling intensity must be provided;
 - c) monitoring must include sufficient replication to enable statistical analysis of results at an acceptable power; and
 - d) undertaken at twelve monthly intervals.
- F37** 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 as per condition F33 will be achieved; and
 - b) verification of rehabilitation success as per condition F36.

Residual void outcome

- F38** Residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself and subject to any other condition within this environmental authority.
- F39** At the completion of decommissioning and rehabilitation, the residual void must be protected from Probable Maximum Floods (PMFs) from nearby watercourses such that the protection is sustainable for the foreseeable future.

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- F40** Complete an investigation into residual voids and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in conditions F38 and F39 and landform design criteria by **date to be determined**. The investigation must at a minimum include the following:
- a study of options available for minimising final void area and volume;
 - develop design criteria for rehabilitation of final voids;
 - 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;
 - 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;
 - a study of void capability to support native flora and fauna; and
 - a proposal/s for end of mine void rehabilitation success criteria and final void areas and volumes.

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

- F41** The environmental authority holder will submit a status report detailing the progression of the development of the Residual Voids Plan and content requirements as specified in condition F40 by **date to be determined**.
- F42** All reasonable and practical measures must be taken to minimise the size of the void remaining after mining activities cease.

Residual Void Water Quality

- F43** The holder of this environmental authority must complete and submit to the administering authority a Residual Void Water Quality Management Study by **date to be determined**.

F44 The Residual Void Water Quality Management Study must include:

- a) modelling and assessment of the predicted quality of void water between cessation of mining and the post mining equilibrium;
- b) the predicted catchment area for the void at the cessation of mining;
- c) the predicted storage capacity of void water during AEP 1 in 25, 1 in 50, 1 in 100, 1 in 200 and 1 in 1000 year rainfall events and potential for discharge;
- d) the predicted dilution of void water during AEP 1 in 25, 1 in 50, 1 in 100, 1 in 200 and 1 in 1000 year rainfall events;
- e) modelling of predicted evaporation, including the correlation of predicted evaporation rates with AEP 1 in 25, 1 in 50, 1 in 100, 1 in 200 and 1 in 1000 year rainfall events;
- f) the predicted quality of void water during potential release events;
- g) the predicted impact on the environment caused by the release of any void water;
- h) the predicted quality of void water correlated with predicted evaporation rates;
- i) physical, chemical and biological assessment of void water and habitat quality;
- j) modelling and assessment of practicable management measures to mitigate contaminant increases;
- k) develop a monitoring program to be undertaken both during and after mining, to assess the performance of any management measures required; and
- l) the ability of the void water to meet the rehabilitation criteria of a safe, stable and non-polluting land form.

Post Closure Management Plan

F45 A Post Closure Management Plan for the site must be developed and submitted to the administering authority at least 18 months prior to the final coal processing on site and implemented for a nominal period of:

- a) at least 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.

F46 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 of spoil dumps; and
 - v. vegetative cover; and
- b) monitoring of:
 - i. surface water quality;
 - ii. groundwater quality;
 - iii. seepage rates;
 - iv. erosion rates;
 - v. the integrity and stability all slopes, ramps and voids; and
 - vi. the health and resilience of native vegetation cover.

Exploration Drilling

- F47** The environmental authority holder is authorised to undertake no more than **number to be determined** drill holes within Endangered Regional Ecosystems.
- F48** The environmental authority holder is authorised to undertake no more **date to be determined** drill holes within the 500m buffer of Endangered Regional Ecosystems.
- F49** The environmental authority holder is authorised to undertake no more than **date to be determined** metres of Seismic Lines within Endangered Regional Ecosystems.
- F50** The environmental authority holder is authorised to undertake no more than **date to be determined** metres of Seismic Lines within the 500m buffer of Endangered Regional Ecosystems.

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- F51** In carrying out mining activities all reasonable and practicable measures must be taken to prevent or minimise the likelihood of environmental harm being caused to Endangered Regional Ecosystems.
- F52** Mining activities undertaken must be consistent with section 3 – Description of Exploration Activities, of the 'Codrilla Coal Mine Project – Draft Environmental Plan'
- F53** When carrying out mining activities within any Endangered Regional Ecosystem and the 500m buffer of Endangered Regional Ecosystem, the holder of the environmental authority must do so in accordance with conditions F54 – F71.

Exploration - Drilling or Seismic Grid

- F54** Spacing of gridlines within the Endangered Regional Ecosystems may only be undertaken at minimal intervals of 94m.
- F55** Drill site intensity is limited to 10 sites per hectare within Endangered Regional Ecosystems and/or the 500m buffer of Endangered Regional Ecosystems.
- F56** The operational area within the drill site must not exceed 1000m².
- F57** Drill holes within the Endangered Regional Ecosystems and the 500m buffer of the Endangered Regional Ecosystems are to be a maximum of 200mm diameter.
- F58** The construction of sumps within Endangered Regional Ecosystems or the 500m buffer of Endangered Regional Ecosystems must not exceed 10m².
- F59** Topsoil stripping within the Endangered Regional Ecosystems is limited to the sump area of 10m².
- F60** Topsoil stripping within the 500m buffer of the Endangered Regional Ecosystem is limited to an area no greater than 625m² (with dimensions no greater than 25m x 25m) per hole.

F61 When carrying out drilling or seismic grid activities the environmental authority holder must minimise disturbance within Endangered Regional Ecosystems and the 500m buffer of Endangered Regional Ecosystems and avoid clearing mature trees.

Exploration - Tracks

F62 Any existing access and fence line tracks must be used.

F63 Any new tracks are to be constructed by linking naturally cleared or disturbed areas.

F64 Tracks are not to be constructed greater than 5m in width.

F65 Track construction involving blade clearing of established ground cover vegetation and/or clearing of mature trees is to be prevented or minimised.

F66 Spacing of tracks must not be less than 250m.

F67 The environmental authority holder must minimise disturbance within the Endangered Regional Ecosystems and the 500m buffer of Endangered Regional Ecosystems and avoid clearing trees.

F68 When constructing or using access tracks no clearing or disturbance for access to boreholes will take place within the Endangered Regional Ecosystems and the 500m buffer of Endangered Regional Ecosystems.

Exploration - Rehabilitation

F69 Rehabilitation of drill sites and sumps will be in accordance with the *Code of Environmental Compliance for Exploration and Mineral Development Projects*.

F70 Rehabilitation of areas disturbed within Endangered Regional Ecosystems and/or the 500m buffer of Endangered Regional Ecosystems must be completed as soon as practicable but no longer than 3 months after completion of the disturbance activity.

F71 The environmental authority holder must revegetate disturbed areas of Endangered Regional Ecosystems and the 500m buffer of Endangered Regional Ecosystems with native plant species endemic to the area that will promote the same vegetation type and density of cover to that of the surrounding undisturbed areas in the Endangered Regional Ecosystems and the 500m buffer of Endangered Regional Ecosystems.

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Department Interest: Regulated Dams

General

- G1** Contaminants must not be released directly or indirectly to any waters other than in accordance with the contaminant release requirements, conditions and limits.
- G2** A water management system must be provided to contain all contaminated water on site including process waters and contaminated stormwater.
- G3** A Water Management Plan must be developed in accordance with the most recent edition of the administering authority's Guideline for Preparing a Water Management Plan and must include at least the following elements:
- (a) A description of the Water Management System and its components;
 - (b) A real time model which can:
 - a. simulate observed Site Water Balances;
 - b. report on current balances and uncontrolled discharges and
 - c. describe the transient risk portfolio for discharges from site;
 - (c) Contaminant Source Study
 - (d) Emergency and Contingency Planning, and
 - (e) Monitoring and Review
- G4** The real time model must be run:
- at least once per week during dry weather conditions;
 - more frequently during stormy weather and
 - immediately after each significant storm event;
- with outputs from each run being stored in a retrievable form for a minimum period of 1 year. Available information is to be made available to the Adminstrating Authority on request.
- G5** The real time model must incorporate provisions for:
- (a) Starting a simulation of a containment system from any day of a year using the configuration of the components within the system on that day;
 - (b) Running the simulation using:

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- a. all available historical daily rainfall,
 - b. operating rules for transfer between components of a containment system and
 - c. expected inputs
- for a period of 12 months from that day;
- (c) Determining the risk of uncontrolled discharge by ranking the minimum available storage during each period.

- G6** The Design Storage Allowance for the site water containment systems shown in Figure 4 of this environmental authority are minimum design storage requirements and any releases from any containment systems must meet the requirements set out under the water schedule of this environmental authority.
- G7** Where the Design Storage Allowance is not available in a component of a site water containment system, the available storage at the start of any storm must be capable of storing runoff without losses from the storm of notional AEP as specified in Table 3 for the site water containment system of critical duration¹ without an uncontrolled discharge and the available storage in that component returned to the pre-storm capacity within 7 days of the end of the storm.

Note: Critical duration is the storm duration which, for a given notional AEP, would cause the maximum discharge through the spillway if the dam were full at the commencement of the storm.

Hydraulic Performance (Containment Systems)

- G8** The site water containment systems shown in Figure 4 must meet the hydraulic performance criteria specified in Table 3 (Hydraulic Performance of Containment Systems)
- G9** On 1 November of each year, storage must be available in each Site Water Containment System, to meet the Design Storage Allowance (the DSA) for the containment system detailed in Schedule D – Table 1 (Hydraulic Performance of Containment Systems).
- G10** For determination of the Design Storage Allowance (DSA), the holder of this environmental authority must use either:
- (a) the decile method set out in the “Technical Guidelines for Environmental Management of Exploration and Mining in Queensland – Department of Mines and Energy 1995” or

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- (b) in the case that a calibrated hydrologic model exists, a minimum of 100 years of historical rainfall data in a hydrologic model.

G11 On 1 November of each year, storage must be available in each Site Water Containment System, to meet the Design Storage Allowance (the DSA) for each containment system specified in Figure 4.

All Dams

G12 The hazard category of any dam listed in Regulated Dams – Table 1 must be assessed by a suitably qualified and experienced person at least once per year, based on documented evidence sufficient to define or confirm the current nature and extent of environmental consequences for potential failure of that dam. A report on the assessment of each dam is to be submitted to the Administering Authority by 1 December each year.

G13 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 Development Approval.

G14 The Registered Operator of this Development Approval must not abandon any dam but must decommission each dam so as to avoid any environmental harm.

Decommissioning and Rehabilitation

G15 Prior to the cessation of the mining activities, each regulated dam must be decommissioned such that ongoing environmental harm is minimised by the dam such that it either the dam:

- (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

is compliant with the rehabilitation requirements of this environmental authority.

Regulated Dams – Location

G16 The regulated dams authorised under this development approval must be located within the control points defined in Regulated Dams - Table 15. Figure 1 of this development approval indicates the location of these dams.

Regulated Dams — Table 15 (Location of Dams)

Name of Regulated Dam	Control Points	
	Latitude (GDA 94)	Longitude (GDA 94)
Co-disposal Facility	(To be provided)	(To be provided)
Sediment Dam 1 (North Western Dam)	(To be provided)	(To be provided)
Sediment Dam 2 (South Western Dam)	(To be provided)	(To be provided)
Sediment Dam 3 (North Eastern Dam)	(To be provided)	(To be provided)
Sediment Dam 4 (South Eastern Dam)	(To be provided)	(To be provided)
Environmental Dam 1 (CHPP)	(To be provided)	(To be provided)
Environmental Dam 2 (Western Pit Dam)	(To be provided)	(To be provided)
Environmental Dam 3 (Eastern Pit Dam)	(To be provided)	(To be provided)
Environmental Dam 4 (Eastern Pit Dam)	(To be provided)	(To be provided)
Raw Water Dam (North west of CHPP)	(To be provided)	(To be provided)

G17 The regulated dams authorised under this development approval, must be in accord with the specifications in Regulated Dams - Table 16.

Regulated Dams — Table 16 (Specifications of Dams)

Name of Regulated dam	Hazard Category	Maximum surface area of dam (ha)	Maximum volume of dam (ML)	Maximum depth of dam (m)	Use of dam
Co-disposal Facility	(To be provided)	(To be provided)	(To be provided)	(To be provided)	Storage of Coarse and Fine Tailings
Sediment Dam 1 (North Western Dam)	(To be provided)	(To be provided)	120	(To be provided)	Storage of stormwater and runoff from overburden dumps
Sediment Dam 2 (South Western Dam)	(To be provided)	(To be provided)	370	(To be provided)	Storage of stormwater and runoff from overburden dumps
Sediment Dam 3 (North Eastern Dam)	(To be provided)	(To be provided)	320	(To be provided)	Storage of stormwater and runoff from overburden dumps
Sediments Dam 4 (South Eastern Dam)	(To be provided)	(To be provided)	305	(To be provided)	Storage of stormwater and runoff from overburden dumps
Environmental Dam 1 (CHPP)	(To be provided)	(To be provided)	666	(To be provided)	Storage of pit water and water from sediment dams
Environmental Dam 2 (Western Pit Dam)	(To be provided)	(To be provided)	480	(To be provided)	Storage of pit water and water from sediment dams
Environmental Dam 3 (Eastern Pit Dam)	(To be provided)	(To be provided)	961	(To be provided)	Storage of pit water and water from sediment dams
Environmental Dam 4 (Eastern Pit Dam)	(To be provided)	(To be provided)	2600	(To be provided)	Storage of pit water and water from sediment dams
Raw Water Dam (North west of CHPP)	(To be provided)	(To be provided)	50	(To be provided)	Storage of raw water

G18 The regulated dams authorised under development approval, must be designed, constructed and maintained in accordance with the hydraulic performance specified in Dams - Table 17.

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Dams - Table 17 (Hydraulic Performance of Containment Systems)

Name of Site Water Containment System	Component	Spillway Capacity of Terminal Storage Component or (Internal Storage) Maximum AEP	Design Storage Allowance (Containment Systems) notional AEP of 3 month wet season	Mandatory Reporting Level (Terminal Storage Component) Maximum AEP 72 hour storm
Co-disposal Facility	Co-disposal Facility	XXX AEP	XXX AEP	XXX AEP
Stormwater storage and runoff from overburden dumps	Sediment Dam 1 (North Western Dam)	XXX AEP	XXX AEP	XXX AEP
	Sediment Dam 2 (South Western Dam)	XXX AEP	XXX AEP	XXX AEP
	Sediment Dam 3 (North Eastern Dam)	XXX AEP	XXX AEP	XXX AEP
	Sediment Dam 4 (South Eastern Dam)	XXX AEP	XXX AEP	XXX AEP
Pit water and water from sediment dams	Environmental Dam 1 (CHPP)	XXX AEP	XXX AEP	XXX AEP
	Environmental Dam 2 (Western Pit Dam)	XXX AEP	XXX AEP	XXX AEP
	Environmental Dam 3 (Eastern Pit Dam)	XXX AEP	XXX AEP	XXX AEP
	Environmental Dam 4 (Eastern Pit Dam)	XXX AEP	XXX AEP	XXX AEP
Raw water storage	Raw Water Dam (North west of CHPP)	XXX AEP	XXX AEP	XXX AEP

Note: In a site water containment system incorporating several ponds which spill one into the another in series, the Design Storage Allowance requirement can take into account the total capacity available in the system provided the capacity available in the terminal component is always available for all single storms of the notional AEP and the available storage in that component returned to the pre-storm capacity within 7 days of the end of the storm. *This provision applies only if the spillways between all dams in the system comply with the spillway AEP capacity in Dams - Table 17.*

Regulated Dams - Certification and Operation

- G19** From the commencement of this Development Approval the Registered Operator of this Development Approval must not commence construction of a regulated dam unless:
- (a) the Registered Operator 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 the design plan and that it will be compliant in all respects with this development approval, and
 - (b) at least 20 business days has passed since the receipt of those documents, or the administering authority notifies the Registered Operator that a design plan and certification, has been received.
- G20** When construction or modification of any regulated dam is complete, or when a dam becomes a regulated dam due to changes in the circumstances affecting a hazard assessment for that dam; the registered operator of this development approval must submit to the Administering Authority two 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 the certification and it is compliant in all respects with this development approval.
- G21** An operational plan must be kept current for each regulated dam, and cover all matters relevant to its operation and maintenance.
- G22** Where an operational plan covers decommissioning and rehabilitation, those operations are to be consistent with the objectives in any design plan for the dam and the rehabilitation requirements of this development approval.
- G23** The Registered Operator of this Development Approval must notify the Administering Authority immediately when the level in any regulated dam reaches the mandatory reporting level (MRL), and immediately act to prevent or minimize any actual or potential environmental harm.

Mandatory Reporting Level

- G24** The Mandatory Reporting Level (the MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.
- G25** The holder of this environmental authority must, as soon as practical and within 48 hours of becoming aware, notify the administering authority when:

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- (a) the level of the contents of a regulated dam reaches or exceeds the MRL; or
 - (b) the transient risk of an uncontrolled discharge, as determined by the real time modelling required by conditions X3 to X5, exceeds the notional AEP for the wet season.

G26 The holder of this environmental authority must, immediately on becoming aware that the MRL has been reached, or the transient risk has exceeded the notional AEP for the wet season, act to prevent or, if unable to prevent, to minimise, any actual or potential environmental harm.

Department Interest: Levees

Levees - General

H1 Levees must be constructed to protect the pit and mining infrastructure area from 1 in 2000 year Annual Exceedence Probability (AEP) flood events in the Devlin Creek.

H2 The holder of this environmental authority must ensure that each levee is designed, constructed, operated and maintained in accordance with accepted engineering standards and is fit for the purpose for which it is intended.

H3 Levees – Certification and operation

The holder of this environmental authority must not commence construction of any levee unless:

- a) the 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 levee is fit for the purpose for which that levee is intended, as stated in the hazard assessment accompanying that plan, and compliant in all respects with this environmental authority; and
- b) at least 20 business days has passed since the receipt of those documents, or the administering authority has advised the holder that those documents are compliant with this condition.

H4 When construction or modification of any levee is complete the holder of this environmental authority must submit to the administering authority two copies of a set of 'as constructed' drawings, together with the certification by a suitably qualified and experienced person that the levee 'as constructed' is fit for the purpose stated in the hazard assessment and the design plan, if the latter exists, and is compliant in all respects with this environmental authority.

H5 The holder of this environmental authority must ensure that there is always a current operational plan for each levee, which may form part of the plan of operations as required by legislation.

H6 The operational plan shall at least cover all matters relevant to the operation and maintenance of the levee such as to maintain compliance in all respects with this environmental authority.

H7 Levees – Annual inspection and report

The holder of this environmental authority must arrange for each levee to be inspected annually by a suitably qualified and experienced person.

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- H8** At each annual inspection the condition of each levee must be assessed in accordance with the certified design and current operational plan. Any recommended actions must be conveyed to the holder of this environmental authority in an annual inspection report.
- H9** The holder of this environmental authority must take immediate action in response to the recommendations arising from an annual inspection of the condition and adequacy of a levee.
- H10** For each annual inspection, two copies of a report certified by the suitably qualified and experienced person, including any recommended actions to be taken, must be provided to the administering authority by 1 December.

Infrastructure

- H11** All infrastructure, constructed by or for the environmental authority holder during the mining activities including water storage structures, must be removed from the site prior to mining lease surrender, except where agreed in writing by the post mining land owner/holder.

Note: This is not applicable where the landowner/holder is also the environmental authority holder.

Department Interest: Community

Complaint response

- I1** All complaints received must be recorded including investigations undertaken, conclusions formed and action taken. This information must be made available to the administering authority on request.
- I2** The holder of this environmental authority must record the following details for all complaints received and provide this information to the administering authority on request:
- a) name, address and contact number for complainant (if not available; record – not identified);
 - b) time and date of complaint;
 - c) investigations undertaken;
 - d) conclusions formed;
 - e) actions taken to resolve complaint;
 - f) any abatement measures implemented; and
 - g) person responsible for resolving the complaint.
- I3** When requested by the administering authority, the environmental authority holder must undertake relevant specified monitoring within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint of environmental harm at any sensitive place or commercial place. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures implemented must be provided to the administering authority within 14 days of completion of the investigation.
- I4** In consultation with the administering authority, the environmental authority holder must cooperate with and participate in any community environmental liaison committee established in respect of either the licensed place specifically or the industrial estate where the licensed place is located.

Department Interest – Nature Conservation

Weed Management Plan

- J1** A Weed Management Plan must be developed and implemented during the continuation of this EA, and prior to the commencement of construction activities. The Weed management Plan must describe how the weeds are to be managed in accordance with the *Land Protection (Pest and Stock Route Management) Act 2002* and/or local government requirements for weeds not declared under state legislation.

Offsets

J2 Consistent with Offset Strategy

The holder of this environmental authority must, within 3 months of the granting of this environmental authority and prior to carrying out works which will, or are likely to, adversely impact on an area possessing State significant biodiversity values (as listed in Appendix 1 of the Biodiversity Offset Policy¹):

1. Provide to the administering authority an offset strategy containing the following information:
 - a) Mapping at a suitable scale (e.g. 1:10 000) of the State significant biodiversity values which will, or may, be adversely impacted by the mining activity;
 - b) The extent (hectares) of each State significant biodiversity value for which an offset will be provided;
 - c) An assessment of the ecological equivalence (refer to Criteria A1. of the Biodiversity Offset Policy) of each State significant biodiversity value for which an offset will be provided, using the Ecological Equivalence Methodology Guideline²; and
 - d) An analysis of the likelihood of an offset being available which meets Criteria B1 of the Biodiversity Offset Policy;
2. Enter into a Deed of Agreement with the State of Queensland (chief executive administering the *Environmental Protection Act 1994*) that provides for the following:
 - a) Within 12 months of the granting of this environmental authority, or longer period agreed to by the chief executive administering the *Environmental Protection Act 1994*, legally securing an offset area consistent with Criteria A1, A2, A3 and B1 of the Biodiversity Offset Policy; and
 - b) Quarterly reports to be submitted to the Department of Environment and Resource Management on the progress of legally securing an offset area.

Note: The Deed of Agreement must include the following information:

- Identification of the proponent, project and company contact(s); and
- The specific State significant biodiversity values that will be impacted and for which an offset will be provided, including the location, extent and ecological equivalence score (ecological condition and special features) for each State significant biodiversity value.

Department Interest – Cultural Heritage

Cultural Heritage

- K1** A report detailing the results of the Non-Indigenous cultural heritage field survey and historical background study, including methodology, results and proposed mitigation measures for any

¹ Biodiversity Offsets Policy means the Queensland Biodiversity Offsets Policy, 3 October 2011 or later versions

² Ecological Equivalence Methodology Guideline, Queensland Biodiversity Offset Policy, Version 1, 3 October 2011, Department of Environment and Resource Management

identified cultural heritage values, is to be provided to DERM prior to the commencement of any construction works. Any identified cultural heritage values should be assessed for significance against the criteria in Queensland Heritage Act 1992. A Historic Heritage Management Plan is to be provided to DERM prior to construction.

DRAFT - FOR INFORMATION ONLY

END OF CONDITIONS

Definitions

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

"**acceptance criteria**" means the measures by which the actions implemented to rehabilitate the land are deemed to be complete (same as completion criteria). 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, ponding 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 re-colonisation 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.

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

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

"active waste disposal cell" means a cell currently being used for the disposal of wastes accepted under a condition of this approval and includes all or part of a disposal cell.

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

"aged biosolids" means biosolids (sewage sludge) that has been aged for a period of not less than three (3) years.

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

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

"ARD" means acid rock drainage and refers to the low pH, high heavy metal pollutant typical of sulphidic mine wastes, and most commonly associated with the production of ferrous iron and sulphuric acid through the oxidation of sulphide minerals.

"assessed" or **"assessment"** 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;

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- 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.

“**capping**” means the covering of a landfill with impervious material to inhibit penetration by liquids.

“**certification**”, “**certifying**”, “**certify**” 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 of:

- (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 2008*; 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.

“**clinical waste**” means waste that has the potential to cause disease including, for example, the following:

- animal waste;
- discarded sharps;
- human tissue waste;

- laboratory waste.

“**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.

“**critical duration**” is the storm duration which, for a given notional AEP, would cause the maximum discharge through the spillway of a regulated dam if the dam were full at the commencement of the storm.

“**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 and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container.

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

"dB" means decibel. The unit used to measure sound level.

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

"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 *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* published by the Department of Environment and Resource Management, 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 an annual exceedance probability (AEP) specified in that Manual.

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

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

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

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

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

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

"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 2008*.

"equivalent passenger-tyre unit (EPU)" is equivalent to one passenger tyre from a normal sedan or station wagon.

"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 period.

“**general waste**” means waste other than regulated waste.

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

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

“**hazard category**” means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

“**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 *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

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

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

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

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

“**lake**” includes –

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

"land" in the 'land schedule' of this document means land excluding waters and the atmosphere "noise sensitive place" or a "commercial place"

"land capability" as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland "noise sensitive place" or a "commercial place"

"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.

"leachate" means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of at the operational land which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

"leaching contaminant levels" means the results of the "Toxicity Characteristic Leaching Procedure (TCLP)" means the test described in "U.S. EPA: Toxicity Characteristic Leaching Procedure (TCLP)" Federal Register, 40 CFR, Vol. 51, No. 286, Appendix 2, Part 268, page 40643 or as modified to reflect non-acidic leaching procedures suitable for waste characteristic assessment where co-disposal with putrescible wastes will not occur.

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

"long term 50th percentile" means that not more than twenty-six (26) of the measured values of the quality characteristic are to exceed the stated release limit for any fifty-two (52) consecutive samples where:

- the consecutive samples are taken over a one (1) year period;
- the consecutive samples are taken at approximately equal periods; and
- the time interval between the taking of each consecutive sample is not less than three (3) days or greater than eleven (11) days.

"mandatory reporting level" or **"MRL"** means a warning and reporting level determined in accordance with the criteria in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* published by the Department of Environment and Resource Management.

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

"metalliferous mine drainage" means any waters, contaminated with metals / metalloids or other contaminants as a result of the mining activities.

"mg/L" means milligrams per litre.

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

- a) clay if mined for use for its ceramic properties, kaolin and bentonite;
- b) foundry sand;
- c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil there from;
- d) limestone if mined for use for its chemical properties;
- e) marble;
- f) mineral oil or gas extracted or produced from shale or coal by in situ processes;
- g) peat;
- h) salt including brine;
- i) shale from which mineral oil may be extracted or produced;
- j) silica, including silica sand, if mined for use for its chemical properties;
- k) rock mined in block or slab form for building or monumental purposes;

But does not include—

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

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

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

“**Mining related infrastructure**” The facilities, structures and installations needed for mining including but not limited to mining transportation networks, processing plant, communications systems and tailings storage facilities.

“**NAF**” means non acid forming waste rock.

“**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, other than trivial harm.

“**non-polluting**” means having no adverse impacts upon the receiving environment.

“**nuisance sensitive place**” includes –

- 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) a kindergarten, school, university or other educational institution; or
- d) a medical centre or hospital; or

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- e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area; or
 - f) a public thoroughfare, park or gardens; or
 - g) a place used as a workplace, an office or for business or commercial purposes and includes a place within the curtilage of such a place reasonably used by persons at that place.

“**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.

“**PAF**” means potentially acid forming waste rock.

“**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).

“**permeability**” means a measure of the rate at which a fluid will pass through a medium. The coefficient of permeability of a given fluid is an expression of the rate of flow through unit area and thickness under unit differential pressure at a given temperature. Synonymous with hydraulic conductivity when the fluid is water.

“**Probable Maximum Flood (PMF)**” is the flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in a particular drainage area.

“**protected area**” means:

- a) a protected area under the *Nature Conservation Act 1992*;
- b) a marine park under the *Marine Parks Act 2004*; 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 “*Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*” published by the Administering Authority.

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

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

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

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

“**residual 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**” the movement of waters, contaminated with salt(s), as a result of the mining activity.

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

“sensitive place” means:

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

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

"short term 50th percentile" means not more than five (5) of the measured values of the quality characteristic are to exceed the stated release limit for any ten (10) consecutive samples for a release/monitoring point at any time during operation.

“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 2002*, or at the relevant time holds a 'deemed registration' within the meaning of the *Mutual Recognition (Queensland) Act 1992*; and 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

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- (b) a total of five years of demonstrated expertise in the geomechanics of dams with particular emphasis on stability, geology and geochemistry, and
- (c) a total of five years of demonstrated expertise in at least three of the following categories:
- investigation and design of dams.
 - construction, operation and maintenance of dams.
 - hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology.
 - hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes.
 - hydrogeology with particular reference to seepage, groundwater.
 - solute transport processes and monitoring thereof.
 - dam safety.

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

“**terminal dam, pond, storage or component**” are elements of containment systems, when overfull, overflow directly to the environment.

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

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

“**void**” means any man-made, open excavation in the ground.

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

“**water**” means –

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

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

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

“**waters**” includes –

- a) river, creek, stream in which water flows permanently or intermittently either:
 - i. in a natural channel, whether artificially improved or not; or
 - ii. in an artificial channel that has changed the course of the river, creek or stream; or
- b) lake, lagoon, pond, swamp, wetland, dam; or
- c) unconfined surface water; or
- d) storm water channel, storm water drain, roadside gutter; or
- e) bed and banks and any other element of a river, creek, stream, lake, lagoon, pond, swamp, wetland, storm water channel, storm water drain, roadside gutter or dam confining or containing water; or
- f) groundwater; or
- g) non-tidal or tidal waters (including the sea); or
- h) any part-thereof.

“**water release event**” means release of any waters that are or maybe contaminated by the mining activity.

“**µg/L**” means micrograms per litre

“**µS/cm**” means microsiemens per centimetre

END OF ENVIRONMENTAL AUTHORITY