access
environmental licences & permits

Permit[1]

Environmental Protection Act 1994
Environmental Authority (Mining Activities) Non Code Compliant Level 1 Mining Project

Permit[1] Number: MIN100550607

This permit is issued by the administering authority to authorise the activity specified in the permit in accordance with the conditions specified in the permit. This decision was made pursuant to Section 225 of the Environmental Protection Act 1994.

Takes Effect From: the grant of tenure

Details

Permit Holder(s)	Name	Address
Principal Holder	Xstrata Coal Queensland Pty Ltd ACN 69 098 156 702	Level 10, Riverside Centre 123 Eagle Street, Brisbane, Q 4001
	ICRA Wandoan Pty Ltd ACN 48 106 260 619	Level 24, Comalco Place 12 Creek Street, Brisbane, Q 4000
	Sumisho Coal Australia Pty Limited ACN 30 061 524 249	Level 6, 44 Martin Place Sydney, NSW 2000

Activity	Location(s)
Mining activity – *Environmental Protection Regulation (2009)* schedule 6, item 5 - mining black coal	ML 50229 ML 50230 ML 50231

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

Additional comment:

With reference to Order 2(c) of the Land Court of Queensland decision *Xstrata Coal Queensland Pty Ltd & Ors v. Friends of the Earth - Brisbane Co-Op Ltd & Ors, and Department of Environment and Resource Management [2012] QLC 013* and the recommendation "that, as a pre-requisite to the grant of the environmental authority, the applicants are to reach mutually suitable make-good agreements with landowners potentially affected by adverse impacts on the availability and quality of groundwater as a result of the mining operations":

On 1 September 2011 the Applicants' closing submissions to the Land Court at paragraph 279 acknowledged as follows.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Department of Environment and Heritage Protection

"The Applicants cannot disturb the groundwater without a water licence obtained under the Water Act. Section 235(3) of the MRA makes this clear. The question of make good arrangements can therefore properly be resolved in the course of the processes under the Water Act. There is no risk of harm to the landowners prior to that ... There can be no impact, and therefore no adverse impact, without a water licence."

In relation to this submission by the Applicants, the Coordinator-General has recommended conditions pursuant to section 52 of the State Development and Public Works Organisation Act 1971 as follows:

Schedule 8 Recommended conditions for other approvals

Condition 4 Potential groundwater impacts

I recommend to the Minister responsible for administration of the Water Act 2000 that the following conditions be attached to any licence, permit or approvals required by the proponent associated with groundwater impacts of the project:

(a) Mechanisms should be implemented to ensure that the project does not result in an undue adverse impact on the availability and quality of groundwater supplies to neighbouring landholders. Dewatering will take place and impacts on groundwater levels within the coal seam aquifers and limited alluvium aquifers are predicted. Monitoring and water replacement has been envisaged to manage this impact.

(b) The proponent should reach mutually agreeable arrangements with landholders potentially affected by groundwater drawdown for the provision of alternative supplies throughout the mine life, and after mine closure. Alternative supplies should be put in place before supplies from relevant existing landholder bores are adversely affected and the costs associated with changes to landholder extraction of groundwater from bores on affected land should be covered by the proponent.

(c) Prior to the surrender of mining leases, post mining, pursuant to the Mineral Resources Act 1989 and the EP Act, the conditions under which an alternative supply of groundwater would be provided to any landholders potentially adversely affected by impacts to groundwater directly attributable to the mine dewatering program must be agreed to between the proponent and the relevant regulators."

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[redacted]

Sarah Horton
Delegate
Administering authority
Environmental Protection Act 1994
3 August 2012

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CONDITIONS OF ENVIRONMENTAL AUTHORITY

General Environment

A1 Financial assurance

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

Note: The calculation of financial assurance for condition (A1) must be in accordance with Guideline 17 and may include a performance discount. The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas, which may vary on an annual basis due to progressive rehabilitation. The amount required for the financial assurance must be the highest Total Rehabilitation Cost calculated for any year of the Plan of Operations and calculated using the formula: (Financial Assurance = Highest Total Annual Rehabilitation Cost x Percentage Required)

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

Note: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.

A3 Maintenance of measures, plant and equipment

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.

A4 Monitoring

Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.

A5 Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

A6 Spillages

Spillage of all chemicals and fuels must be contained within an on-site containment system and controlled in a manner that prevents environmental harm.
Note: All petroleum product storage's must be designed, constructed and maintained in accordance with *AS 1940 - The storage and handling of flammable and combustible liquids* of 2004 or later versions.

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RTIPS 12-145

A7 Notification of Emergencies, Incidents and Exceptions

All reasonable and practicable actions are to be taken to minimise environmental harm, or the risk thereof, resulting from any emergency, incident or circumstances not in accordance with the conditions of this environmental authority.

A8 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.

A9 Not more than ten (10) business days following the initial notification of an emergency, incident or information about circumstances which result or may result in environmental harm, written advice must be provided to the administering authority in relation to:

a) proposed actions to prevent a recurrence of the emergency or incident;
b) the outcomes of actions taken at the time to prevent or minimise environmental harm; and
c) proposed actions to respond to the information about circumstances which result or may result in environmental harm

A10 As soon as practicable, but not more than six (6) weeks following the conduct of any environmental monitoring performed in relation to the emergency or incident, which results in the release of contaminants not in accordance, with the conditions of this environmental authority, written advice (which may be electronically) must be provided of the results of any such monitoring performed to the administering authority.

Air

B1 The release of noxious or offensive odours, or any other noxious or offensive airborne contaminants resulting from the activities to which this environmental authority relates, must not cause a nuisance at any sensitive place.

B2 The holder must implement and maintain best practice dust control procedures that incorporate a program for continuous improvement for the management of dust resulting from the mining activities.

B3 Dust generated by the mining activities must not cause any of the following air quality objectives to be exceeded at a sensitive place:

(a) A level of deposited dust of 120 milligrams per square metre per day based on a monthly average; and
(b) A concentration of total particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1 year averaging time.

B4 The holder must take all reasonable and practicable measures to limit the concentration of particulate matter generated by the mining activities with an aerodynamic diameter of less than 10 micrometres, to 50 micrograms per cubic metre suspended in the atmosphere over a 24 hour averaging time with not more than 5 exceedences recorded over 12 months at any sensitive place.

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RTIPS 12-140

Dust and particulate matter monitoring, control and reporting

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

B6 The program must include:

(a) the collection of air quality and meteorological data at locations and using the monitoring methods described in Table B1a, Table B1b and Figure B1 (or suitable alternative location as agreed with the administering authority);
(b) a forecasting system to identify adverse meteorological conditions likely to produce elevated levels of PM_{10} at a sensitive place due to the mining activities; and
(c) a dust control strategy that would activate the timely implementation of high management dust control actions (listed in Table B2 Dust and particulate control actions) in addition to the best practice dust control measures during periods identified in (b).

B7 The dust and particulate matter monitoring and control program must be submitted to the administering authority with the plan of operations.

B8 Where monitoring identifies instances where the concentration specified in Condition B4 is exceeded, the holder must report to the administering authority within fourteen (14) days.

(a) the concentration of PM_{10} particulates at the sensitive place;
(b) a description of meteorological conditions occurring at the time;
(c) the concentration of PM_{10} particulates upwind of the mining activities (if known); and
(d) measures taken to reduce dust generated by the mining activities.

B9 Notwithstanding condition B6, if requested by the administering authority, dust and particulate monitoring must be undertaken for a stated period at a specified sensitive place, and the results provided to the administering authority within fourteen (14) days following completion of monitoring.

B10 If the monitoring required by condition B9 is undertaken for over one month, then monthly interim reports should be provided to the administering authority.

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

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

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Table B1a (Dust and particulate matter monitoring)

Air Quality Determination	Monitoring method to be used
Concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM_{10}) suspended in the atmosphere over a 24 hour averaging time	Real-time monitoring of the 24 hour average. Australian Standard AS3580.9.8 : *Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM10 continuous direct mass method using a tapered element oscillating microbalance analyser* (or the most recent version), or any alternative method of monitoring PM_{10} that may be permitted by the Air Quality Sampling Manual as published from time to time by the administering authority.
Concentration of particulate matter suspended in the atmosphere in micrograms per cubic metre over a 24 hr averaging time	AS/NZS 3580.9.3:2003 *Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - Total suspended particulate matter (TSP) - High volume sampler gravimetric method* (or the most recent version)
Deposited Dust	Australian Standard AS 3580.10.1:2003 *Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method* (or the most recent version);
Meteorological data (including but not limited to wind speed and direction, humidity, temperature and precipitation)	AS 2923-1987: *Ambient air - Guide for measurement of horizontal wind for air quality applications* or as approved by the administering authority.
Siting of monitoring equipment	AS/NZS 3580.1.1:2007 *Methods for sampling and analysis of ambient air - Guide to siting air monitoring equipment*

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RTI PS 18-148

Table B1b (Dust and particulate matter monitoring description)

Monitoring location	Receiving area on the receiving areas plan	Relevant upwind location	Monitoring Point Description
MLA-106	Wandoan township	Turkey Hill AWS	house
MLA-207	Wandoan township	Turkey Hill AWS	house
MLA-450	Wandoan township	Turkey Hill AWS	house
MLA-402	Leichhardt	Turkey Hill AWS/Wandoan AWS	house

Monitoring location	Receiving area on the receiving areas plan	Relevant upwind location	Monitoring Point Description
MLA-520	North Wandoan township	Turkey Hill AWS	house
MLA-548	Woleebee South	Turkey Hill AWS/Wandoan AWS	feedlot
MLA-505	Woleebee South	Turkey Hill AWS/Wandoan AWS	homestead
MLA-300	Woleebee West	Turkey Hill AWS/Wandoan AWS	house
MLA-50	Mud Creek\Woleebee West	Turkey Hill AWS/Wandoan AWS	house
MLA-355	Woleebee West\Mud Creek	Turkey Hill AWS/Wandoan AWS	house
MLA-595	Turkey Hill	Wandoan AWS	homestead
MLA-693	Mud Creek	Turkey Hill AWS/Wandoan AWS	house
Accommodation facilities	Leichhardt	Turkey Hill AWS/Wandoan AWS	accommodation facilities

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RTIPS 12-449

Table B2 (Dust and particulate control actions)

Activity	High management control[1]
Dragline - overburden	Relocation/Cease activity/limit hours of operation
Truck and Shovel	Relocation/Cease activity/limit hours of operation
Truck loading coal	Relocation/Cease activity/limit hours of operation
Bulldozing - overburden	Relocation/Cease activity/limit hours of operation
Truck dumping overburden	Relocation/Cease activity/limit hours of operation
Tailings disposal area	Water spray
ROM - erosion active stockpile	Regular water sprays
Truck dumping coal	Regular water sprays
Batch drop conveyor	Partial cover of chute
CPP (washplant)	Partial cover
Loading trains	Partial cover of chute and profile coal surface to flat 'garden bed' shape
Conveyor	Partial cover
Blasting - coal and overburden	Relocation/Cease activity/limit hours of operation
Drilling - overburden	Relocation/Cease activity/limit hours of operation
Haul roads	Application of chemical dust suppressants/Use alternative haul routes/Cease activity/limit hours of operation
Grader	Relocation/Cease activity/limit hours of operation

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[1] Condition B11(d) should be used to periodically update this table.

Water

W1 **Contaminant release**
Contaminants that will or have the potential to cause environmental harm must not be released directly or indirectly to any waters except as permitted under the conditions of this environmental authority.

W2 The release of contaminants (that will or have the potential to cause environmental harm) to waters must only occur from the release points specified in Table W1.

Table W1 (Contaminant release points, sources and receiving waters)

Name	Release Point (RP) Easting (GDA94)*	Release Point (RP) Northing (GDA94)*	Contaminant Source and Location	Monitoring Point	Receiving waters description
AU-E1	789410	7108590	Environmental Dam	Spillway or outlet works	Woleebee Ck
AU-E2	787560	7111460	Environmental Dam	Spillway or outlet works	Woleebee Ck
AU-E4	788300	7112430	Environmental Dam	Spillway or outlet works	Woleebee Ck
FC-E1	792470	7104540	Environmental Dam	Spillway or outlet works	Frank Ck/ Juandah Ck
MC-E2	781460	7118470	Environmental Dam	Spillway or outlet works	Mud Creek
SH-E3	773640	7121650	Environmental Dam	Spillway or outlet works	Spring Ck
W-E2	787990	7108360	Environmental Dam	Spillway or outlet works	Woleebee Ck
AU-R1	788240	7111990	Raw Water Storage Dam	Downstream Monitoring Point	Woleebee Ck

** Approximate locations*

W3 The release of contaminants to waters must not exceed the release limits stated in Table W2 when measured at the monitoring points specified in Table W1 for each quality characteristic.

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Table W2 (Contaminant Release Limits)

Quality Characteristics	Release Limits for all Release Points	Sampling Frequency
Electrical conductivity (uS/cm)	1000	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	1000	Daily during release (first sample within 2 hours of commencement of release)
Suspended Solids (mg/L)	1200	Daily during release (first sample within 2 hours of commencement of release)
Sulfate (SO_4^{2-}) (mg/L)	1000	Daily during release (first sample within 2 hours of commencement of release)

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W4 The release of contaminants to waters from the release points must be monitored at the locations specified in Table W1 for each quality characteristics and at the frequency specified in Table W2 and Table W3.

Table W3 (Release Contaminant Trigger Investigation Levels)

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level [1]	Sampling Frequency
Aluminium	100	For aquatic ecosystem protection, based on LOR for ICPMS	Commencement of release and thereafter weekly during release (for all Quality Characteristics)
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	

[1] ICPMS = inductively coupled plasma mass spectrometry; CV = cold vapour; FIMS = flow injection mercury system

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level [1]	Sampling Frequency
Lead	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Mercury	0.2	For aquatic ecosystem protection, based on LOR for CV FIMS	
Nickel	11	For aquatic ecosystem protection, based on SMD guideline	
Zinc	8	For aquatic ecosystem protection, based on SMD guideline	
Boron	370	For aquatic ecosystem protection, based on SMD guideline	
Cobalt	90	For aquatic ecosystem protection, based on low reliability guideline	
Manganese	1900	For aquatic ecosystem protection, based on SMD guideline	
Molybdenum	34	For aquatic ecosystem protection, based on low reliability guideline	
Selenium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Silver	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Uranium	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Vanadium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Ammonia	900	For aquatic ecosystem protection, based on SMD guideline	
Nitrate	1100	For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN	
Fluoride (total)	2000	Protection of livestock and short term irrigation guideline	

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Note:
1. All metal and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.
2. The list of quality characteristics required to be monitored as per table W3 will be reviewed once the results of the monitoring data is gathered for the interim period until 31 December 2011 or an earlier date if the data is, or becomes, available and if it is determined that there is no need to monitor for certain individual characteristics these can be removed from Table W3.
3. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC and ARMCANZ (2000)
4. LOR – typical reporting for method stated. ICPMS/CV FIMS1 – analytical method required to achieve LOR.

[1] ICPMS = inductively coupled plasma mass spectrometry; CV = cold vapour; FIMS = flow injection mercury system

W5 If water quality characteristics of the release exceed any of the trigger levels specified in Table W3 during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in Table W3 and:

(1) where the trigger values are not exceeded then no action is to be taken; or

(2) where the downstream results exceed the trigger values specified in Table W3 for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and;

i. if the result is less than the background monitoring site data, then no action is to be taken; or

ii. if the result is greater than the background monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining the details of the investigations carried out and actions taken to prevent environmental harm

Note: Where an investigation is being undertaken in accordance with W5(2)(ii) no further reporting is required for subsequent trigger events for that quality characteristic

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

W7 **Contaminant Release Events**

The holder must install, operate and maintain a stream flow gauging station to determine and record stream flows at the locations upstream of each Release Point for any receiving water into which a release occurs.

W8 The release of contaminants to waters must only take place during periods of natural flow events specified as minimum flow in Table W4 for the release point(s) specified in Table W1.

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RTS 148

Table W4 (Contaminant Release during Flow Events)

Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
≥1m^3/s	Daily during discharge

W9 Contaminant release flow rate must not exceed **20%** of receiving water flow rate.

W10 The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in Table W1.

W11 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in such waters.

W12 The release of contaminants directly or indirectly to waters:

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.

W13 **Notification of Release Event**

The authority holder must notify the administering authority as soon as practicable (e.g. no later than **six (6) hours** of having commenced releasing water to the receiving environment) and for every 24 hours while releases occurring and at the cessation of releases. Notification must be in writing (which may be electronically) and include:

a) release commencement date/time;
b) expected release cessation date/time;
c) release point/s;
d) if the release limits defined in Table W2 are exceeded;
e) release volume (estimated);
f) receiving water/s including the natural flow rate;
g) any details (including available data) regarding likely impacts on the receiving water(s);
h) any actions undertaken by the holder that may have contributed to the release:
i) measures that have been taken to prevent or mitigate any potential or actual environmental harm.

W14 **Notification of Release Event Exceedance**

If the release limits defined in Table W2 are exceeded, or are likely to have been exceeded, the holder of the environmental authority must notify the administering authority within six (6) hours of the event.

W15 The authority holder must notify the administering authority as soon as practicable, (nominally within twenty-four (24) hours) of the cessation of a release notified under condition W13 and within twenty eight (28) days provide the following information in writing:

a) release cessation date/time;
b) natural flow volume in receiving water;
c) volume of water released;
d) details regarding the compliance of the release with the conditions of this authority (i.e. contamination limits, natural flow, discharge volume);
e) all in-situ water quality monitoring results; and
f) any other matters pertinent to the water release event.

W16 **Monitoring of Water Storage Quality**

Water storages stated in Table W5, which are associated with the release points identified in Table W1, must be monitored for the water quality characteristics specified in Table W6 at the monitoring locations and at the sampling frequency specified in Table W5.

If water quality characteristics in the water storages listed in Table W5 exceed any of the trigger levels specified in Table W6, the holder of the environmental authority must investigate and undertake appropriate management actions to reduce the levels to or below those in

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Table W6, and provide a written report to the administering authority in the next annual return, outlining the details of the investigations carried out and actions taken.

Table W5 (Water Storage Monitoring)

Name	Water Storage Description	Monitoring Location	Frequency of sampling
AU-E1	Environmental Dam	within 10 m of spillway or outlet works intake point	Quarterly
AU-E2	Environmental Dam	within 10 m of spillway or outlet works intake point	Quarterly
AU-E4	Environmental Dam	within 10 m of spillway or outlet works intake point	Quarterly
FC-E1	Environmental Dam	within 10 m of spillway or outlet works intake point	Quarterly
MC-E2	Environmental Dam	within 10 m of spillway or outlet works intake point	Quarterly
SH-E3	Environmental Dam	within 10 m of spillway or outlet works intake point	Quarterly
W-E2	Environmental Dam	within 10 m of spillway or outlet works intake point	Quarterly
AU-R1	Raw Water Storage Dam	within 10 m of spillway or outlet works intake point	Quarterly

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Table W6 (Onsite Water Storage Quality)

Quality Characteristic	Value	Trigger levels
pH (pH unit)	Range	Greater than 4, less than 9 [2]
EC (µS/cm)	Maximum	5970[1]
Sulfate (mg/L)	Maximum	1000[1]
Fluoride (mg/L)	Maximum	2[1]
Aluminium (mg/L)	Maximum	5[1]
Arsenic (mg/L)	Maximum	0.5[1]
Cadmium (mg/L)	Maximum	0.01[1]
Cobalt (mg/L)	Maximum	1[1]
Copper (mg/L)	Maximum	1[1]

Quality Characteristic	Value	Trigger levels
Lead (mg/L)	Maximum	0.1[1]
Nickel (mg/L)	Maximum	1[1]
Zinc (mg/L)	Maximum	20[1]

Note:
1 - Contaminant limit based on ANZECC & ARMCANZ (2000) stock water quality guidelines.
2 - Page 4.2-15 of ANZECC & ARMCANZ (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

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RTIPS 12/146

W17 In water storages containing coal seam gas associated water exposed to air, the dissolved oxygen shall be greater than 2mg/L measured in the impounded water.

W18 Receiving Environment Monitoring and Contaminant Trigger Levels

The quality of the receiving waters must be monitored for each quality characteristic and at the monitoring frequency stated in Table W7 at the locations specified in Table W8.

Table W7 Receiving Waters Contaminant Trigger Levels

Quality Characteristic	Investigation Trigger Level	Sampling Frequency
pH	6.5 – 8.0	Continuous
Electrical Conductivity (µS/cm)	1000	Continuous
Suspended solids (mg/L)	1200	Daily during release
Sulfate (SO_4^{2-}) (mg/L)	1000 (Protection of irrigation value)	Daily during release

Table W8 Receiving Water Upstream Background Sites and Downstream Monitoring Points

Monitoring Points	Receiving Waters Location Description	Northing* (GDA94)	Easting* (GDA94)
Upstream Background Monitoring Points			
J-UJ	Upper Juandah Ck	7105181	799058
J-UF	Frank Ck Dam	7100536	793760
W-UW	Woleebee Ck	7104135	785187
Alt W-UW	Alternative Woleebee Ck	7102081	783585
M-UMu	Mud Ck	7109591	776940
Alt W-UWa	Alternate Wandoan Ck	7101390	781114
M-UM	Mt Organ Ck	7111479	773829
Downstream Monitoring Points			
J-DJ	Juandah Ck	7114761	790733
J-DF	Frank Ck	7115068	790589
W-DW	Woleebee Ck	7116742	788907
	To replace W-DW Woleebee Ck	7116168	788199
M-DMu	Mud Ck	7122555	783948
	Mud Ck Year 5	7120837	780685
S-DS	Spring Ck	7120213	772325
	Spring Ck Year 9	7125959	771710
D-DS	Duck Ck	7125353	767160

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RTI/S 12-13

**Approximate location.*

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

1. where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or

2. where the downstream results exceed the upstream results, complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
   a) details of the investigations carried out; and
   b) actions taken to prevent environmental harm.

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

W20 Receiving Environment Monitoring Program (REMP)

A REMP must be implemented by (3 months from the date of issue) to monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being discharged from the site, with the aims of identifying and describing the extent of any adverse impacts to local environmental values, and monitoring any changes in the receiving water.

For the purposes of the REMP, the receiving environment is the waters of the Frank Creek, Woleebee Creek, Mud Creek, Duck Creek and Spring Creek and connected waterways within ten (10) kilometres downstream of the release.

W21 The REMP report must address (but not necessarily be limited to) the following:
a) Description of potentially affected receiving waters including key communities and background water quality characteristics based on accurate and reliable monitoring data that takes into consideration any temporal variation (e.g. seasonality);
b) Description of applicable environmental values and water quality objectives to be achieved (i.e. as scheduled pursuant to the *Environmental Protection (Water) Policy 2009)*;
c) Any relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment within which the REMP is proposed;
d) Water quality targets within the receiving environment to be achieved, and clarification of contaminant concentrations or levels indicating adverse environmental impacts during the REMP;
e) Monitoring for any potential adverse environmental impacts caused by the release;
f) Monitoring of stream flow and hydrology;
g) Monitoring of toxicants should consider the indicators specified in Table W3 to assess the extent of the compliance of concentrations with water quality objectives and/or the ANZECC & ARMCANZ (2000) guidelines for slightly to moderately disturbed ecosystems;
h) Monitoring of physical chemical parameters as a minimum those specified in Table W2 (in addition to dissolved oxygen saturation and temperature);
i) Monitoring biological indicators (for macroinvertebrates in accordance with the AusRivas methodology) and metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ (2000), BATLEY and/or the most recent version of AS/NZS 5667.12:1999 Water quality - Sampling - *Guidance on Sampling of Bottom Sediments*) for permanent, semi-permanent water holes and water storages;
j) The locations of monitoring points (including the locations specified in Table W8 which are background and downstream impacted sites for each release point);
k) The frequency or scheduling of sampling and analysis sufficient to determine water quality objectives and to derive site specific reference values within two (2) years (depending on

wet season flows) in accordance with the *Queensland Water Quality Guidelines* 2009. For ephemeral streams, this should include periods of flow irrespective of mine or other discharges;
l) Specify sampling and analysis methods and quality assurance and control;
m) Any historical datasets to be relied upon;
n) Description of the statistical basis on which conclusions are drawn; and
o) Any spatial and temporal controls to exclude potential confounding factors.

W22 The REMP report must be prepared and submitted in writing to the administering authority within 24 months from the date of issue of the environmental authority.

W23 Water General
All determinations of water quality 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 administering authority's Monitoring and Sampling Manual 2009, *Environmental Protection (Water) Policy 2009* DERM
c) collected from the monitoring locations identified within this environmental authority, within ten (10) hours of each other where possible;
d) carried out on representative samples; and
e) laboratory testing must be undertaken using a laboratory accredited (e.g. NATA) for the method of analysis being used.

W24 Annual Water Monitoring Reporting
The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format upon request:
- the date on which the sample was taken;
- the time at which the sample was taken;
- the monitoring point at which the sample was taken;
- the measured or estimated daily quantity of the contaminants released from all release points;
- the release flow rate at the time of sampling for each release point; and
- the results of all monitoring and details of any exceedances with the conditions of this environmental authority.

W25 Water Management Plan
A Water Management Plan must be developed and implemented within 3 months from the date of issue that provides for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity and to ensure compliance with the conditions of this environmental authority.

W26 The Water Management Plan must be developed in accordance with the administering authority's Guideline - *Preparation of Water Management Plans for Mining Activities or* any updates that become available from time to time and must include at least the following components:
a) Contaminant Source Study;
b) Site Water Balance and Model;
c) Water Management System

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d) Saline Drainage Prevention and Management Measures;
e) Acid Rock Drainage Prevention and Management Measures (if applicable);
f) Emergency and Contingency Planning; and
g) Monitoring and Review.

The Water Management Plan must also include, in accordance with Order 2(b) of the Land Court of Queensland decision *Xstrata Coal Queensland Pty Ltd & Ors v. Friends of the Earth - Brisbane Co-Op Ltd & Ors, and Department of Environment and Resource Management* [2012] QLC 013, a monitoring program for the Hutton and Precipice Sandstone Aquifers that is designed and implemented, in consultation with the administering authority, using existing deep bores for the following purposes:

- to establish the base line yield and water quality of the supply from those bores; and
- to regularly monitor the bores to identify any change in the yield and quality of the water supply from aquifers.

W27 Each year the holder of the environmental authority must ensure that proper and effective measures, practices and procedures are in place as outlined in the Water Management Plan prior to the wet season (i.e. by 1 November) and a further review following the wet season (i.e. by 1 May the following year) so that the mine is operated in accordance with the conditions of this environmental authority and that environmental harm is prevented or minimised.

W28 A copy of the Water Management Plan and/or revised Water Management Plan must be provided to the administering authority on request.

W29 **Saline Drainage**
The holder of this environmental authority must ensure reasonable and practicable measures are taken to avoid or otherwise minimise the generation and/or release of saline drainage.

W30 **Acid Rock Drainage**
The holder of this environmental authority must ensure reasonable and practicable measures are taken to avoid or otherwise minimise the generation and/or release of acid rock drainage.

W31 **Stormwater and Water sediment controls**
An Erosion and Sediment Control Plan must be developed by a suitably qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to water and contamination of storm water.

W32 The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas that would result in the release of wastes, contaminants or materials to any stormwater drainage system or waters.

W33 Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to minimise the release of wastes, contaminants or materials to any stormwater drainage system or waters.

Water Management System

W34 On 1 November each year, the holder of the Environmental Authority shall review:
- the spatial extent of controlled catchments,
- storage capacity,

- current storage volumes,
- transfer capacity, and
- Standard Operating Procedures

of all key infrastructure elements of the mine water management system and update the mine water balance model. An assessment of the mine water balance model must be undertaken to ensure that as at 1 November, the mine water management system has sufficient storage capacity, transfer capacity, and transfer operations to ensure that the frequency of uncontrolled discharges of mine water is less than or equal to the specified AEP in Table G3.

The assessment must be undertaken with an appropriate period of climate data that includes representation of wet season rainfall events up to the AEP specified in Table G3. The assessment results must be documented and be available for auditing.

W35 The holder of the Environmental Authority must notify the administering authority within fourteen (14) days, if any assessment of the mine water management system shows that the risk of uncontrolled discharge is greater than the specified AEP in Table G3.

W36 Notwithstanding the provisions for Mandatory Report Levels in Table G3 Dams, the holder of the Environmental Authority must not allow any uncontrolled discharge to be caused by either:

a) failure to stop transferring water to a dam where the transfer into that dam contributes in part, or full, to the overflow (uncontrolled discharge) of that dam; or
b) failure to start and continue transferring water from a mine water dam, where the Standard Operation Procedures require the water transfer from the dam to prevent overflow (uncontrolled discharges).

W37 **Monitoring and Reporting in the event of uncontrolled release**

a) In the event of an uncontrolled release from any component of the mine water system to the receiving environment, the holder of this environmental authority shall: Sample and monitor the uncontrolled release waters during or as immediately practical after the event (recognising that uncontrolled discharges should only occur during rainfall in excess of the design AEP and site may not be accessible) to determine quality characteristics of the uncontrolled release for parameters specified in Table W2, and Table W3;
b) Sample and monitor the receiving environment monitoring sites listed in Table W8 for sites relevant to the uncontrolled release location.
c) Estimate the quantity of uncontrolled release waters, by a suitably qualified and experienced person(s);
d) Provide a written report to the administering authority within fourteen (14) days of the uncontrolled release event, which shall include as a minimum:
    a) the time and dates of the uncontrolled release event;
    b) the location of the uncontrolled release;
    c) the monitoring quality of the uncontrolled release waters; or if not available due to site access constraints in wet weather during the event, the quality of waters in the dam that contributed to the uncontrolled release before the event (from monitoring undertaken as part of condition W16) and quality in that dam after the release events;
    d) the estimated quantity of uncontrolled release;
    e) downstream receiving water monitoring results;
    f) rainfall during, or that contributed to, the uncontrolled release event and dam levels prior to the rainfall event that caused uncontrolled release;
    g) a determination of whether uncontrolled release was solely caused by rainfall exceeding the design AEP events specified in Table G3;

h) a determination of whether the uncontrolled release was cause in part of full, by failure to operate the integrated mine water system in accordance with Standard Operating Procedures for the integrated mine water system, or physical failure of one or more components of the integrated mine water system;
i) a determination of whether the uncontrolled release caused environmental harm; and
j) if determined that the uncontrolled release could have been reasonably prevented, actions that will be taken to ensure uncontrolled releases compiy in all respects with this environmental authority.

Groundwater

W38 A groundwater monitoring program must be designed and implemented as described in Table W9 and the locations shown in Figure W1.

Table W9 (Groundwater monitoring program)

Monitoring Sites	Parameter	Frequency	Purpose
WMB1-D WMB1-S WMB2 WMB3-D WMB3-S G8011D G8012D G8013D G8018D	Water level	Every 12 hours – electronic loggers	Detect drawdown in shallow coal seam aquifer and any mine induced variation in groundwater quality
	pH, EC, TDS (lab), cations, anions, Sulfate, selected metals (Al, Ba, Fe, As, Cd, Cr, Co, Cu, Ni, Li, Sr, Zn, Bo, Mn)	Every 3 months	
G8010S G8011S G8012S, G8013S, G8016S, G8017S	Water level	Every 12 hours – electronic loggers	Determine baseline hydrochemistry and groundwater level variation in alluvium aquifer (minimum 12 months)
	pH, EC, TDS (lab), cations, anions, Sulfate, selected metals (Al, Ba, Fe, As, Cd, Cr, Co, Cu, Ni, Li, Sr, Zn, Bo, Mn)	3 months	

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W39 The holder of the environmental authority must, when requested by the administering authority, submit within 30 days an assessment report on the results of the groundwater monitoring program. The assessment must address whether the environmental values are being protected with reference to water quality parameters in Table W9, and any other monitoring data obtained, and state the basis on which the conclusions are drawn. If necessary, corrective and mitigation measures taken should be described.

W40 Groundwater monitoring bores must be constructed and operated in accordance with methods prescribed in the latest edition of the Land and Water Biodiversity Committee, 2003 *Minimum Construction Requirements for Water Bores in Australia.*

Noise and vibration

D1 **Noise nuisance**
Noise from the mining activity must not cause a noise nuisance at any sensitive place.

D2 All noise from the mining activity must not exceed the levels specified in Table D1 at any sensitive place.

D3 Noise is not considered to be a nuisance under condition D1 if monitoring shows that noise from the mining activity does not exceed the following levels in the time periods specified in Table D1.

Table D1: Noise Limits for Mining Activity (Sensitive Place)

Noise Level [dB(A)] (outside) at a 'Sensitive Place' expressed as	Monday to Sunday		
	7am – 6pm	6pm – 10pm	10pm – 7am
$L_{Aeq,adj,15\ mins}$	42	35	35
$L_{A1,adj,15\ mins}$	55	50	40

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Noise Monitoring

D4 Monitoring of the receiving acoustic environment shall be conducted at the locations described in Table D2 and shown on Figure D1 for the duration shown in Table D2, or alternative locations as agreed with the administering authority.

Table D2: Noise Monitoring locations and duration

No.	Location	Receiving area	Duration	Type
1.	MLA-378	Leichhardt	During the operation of the Project.	Fixed automated, continuous monitoring
2.	N3	Town (Central)	During the operation of the Project.	Fixed automated, continuous monitoring
3.	MLA-520	Town (North)	One month before commencement of mining at Wubagul Pit and at monthly intervals during the operation of the	Mobile or fixed automated continuous monitoring using an unattended noise logger for a

No.	Location*	Receiving area	Duration	Type
			Frank Creek and Wubagul Pits	defined (minimum seven day) period
4.	MLA-640	Town (South)	One month before commencement of mining at Wubagul Pit and at monthly intervals during the operation of the Frank Creek and Wubagul Pits	Mobile or fixed automated continuous monitoring using an unattended noise logger for a defined (minimum seven day) period
5.	MLA-720	Mud creek (West)	Monthly during the operation of Turkey Hill Pit	Mobile or fixed automated continuous monitoring using an unattended noise logger for a defined (minimum seven day) period
6.	MLA-595	Turkey Hill	Monthly during the operation of Turkey Hill Pit	Mobile or fixed automated continuous monitoring using an unattended noise logger for a defined (minimum seven day) period
7.	MLA-305	Woleebee West (West)	Monthly once mining of the northern 50% of Summer Hill Pit is completed	Mobile or fixed automated continuous monitoring using an unattended noise logger for a defined (minimum seven day) period
8.	MLA-693	Mud creek (Central)	Monthly during operation of Summer Hill North Pit.	Mobile or fixed automated continuous monitoring using an unattended noise logger for a defined (minimum seven day) period
9.	MLA-355	Woleebee West (Central)	Monthly once mining of the northern 50% of Mud Creek Pit is completed	Mobile or fixed automated continuous monitoring using an unattended noise logger for a defined (minimum seven day) period
10.	MLA-300	Woleebee West (East)	Monthly once mining of the northern 50% of Woleebee Creek Pit is completed	Mobile or fixed automated continuous monitoring using an unattended noise logger for a defined (minimum seven day) period

* *Shown on Figure D1*

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D5 Notwithstanding condition D3, if requested by the administering authority, noise monitoring must be undertaken for a stated period at a specified sensitive place, and the results provided to the administering authority within fourteen (14) days following completion of monitoring. Monitoring must include:

(a) $L_{Aeq,adj,15\ mins}$, $L_{A1,adj,15\ mins}$ recorded at 15 minute intervals
(b) the level and frequency of occurrence of impulsive or tonal noise;
(c) atmospheric conditions including wind speed and direction;

(d) effects due to extraneous factors such as traffic noise, insects, etc; and location date and time of recording.

D6 If the monitoring required by condition D5 is undertaken for over one month, then monthly interim reports should be provided to the administering authority

D7 The method of measurement and reporting of noise levels must comply with the current edition of the Department of Environment and Resource Management's *Noise Measurement Manual* and any subsequent versions.

D8 If monitoring indicates exceedance of the relevant limits in Table D1, then the environmental authority holder must:
a) if the monitoring is relevant to a complaint, the holder must 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.

D9 **Vibration nuisance**
Vibration from the mining activity must not cause an environmental nuisance at any sensitive place

D10 If the Environmental Authority holder can provide evidence through monitoring that the limits defined in Table D3 are not being exceeded then the holder is not in breach of condition D9.

D11 If monitoring indicates exceedance of the relevant limits in Table D3, then the environmental authority holder must:
a) address the complaint including the use of appropriate dispute resolution if required; and
b) immediately implement vibration abatement measures so that vibrations from the activity do not result in further environmental nuisance.

Table D3: Airblast Overpressure and Peak Particle Velocity Levels

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

D12 If requested by the administering authority, vibration monitoring must be undertaken for a stated period at a specified sensitive place, and the results provided to the administering authority within fourteen (14) days following completion of monitoring.

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D13 The method of measurement and reporting of vibration levels must take into consideration Appendix J of AS 2187.2-2006.

D14 If the monitoring required by condition D12 is undertaken for over one month, then monthly interim reports should be provided to the administering authority

D15 Airblast overpressure nuisance

Subject to Conditions D16 and D17, airblast overpressure level from blasting operations must not cause an environmental nuisance, at any sensitive place.

D16 If the holder can provide evidence through monitoring that the limits defined in Table D3 are not being exceeded then the holder is not in breach of condition D15.

D17 If monitoring indicates exceedance of the relevant limits in Table D3, and the monitoring was undertaken in response to a complaint, then the environmental authority holder must:
a) address the complaint including the use of appropriate dispute resolution if required; and
b) immediately implement airblast overpressure abatement measures so that airblast overpressure from the activity do not result in further environmental nuisance.

D18 If requested by the administering authority, monitoring of airblast overpressure must be undertaken for a stated period at a specified sensitive place, and the results provided to the administering authority within fourteen (14) days following completion of monitoring.

D19 Airblast overpressure monitoring must include the following descriptors, characteristics and conditions:
a) location of the blast(s) within the mining area (including which bench level);
b) atmospheric conditions including temperature, relative humidity and wind speed and direction;
c) location, date and time of recording.

D20 The method of measurement and reporting of airblast overpressure levels must take into consideration Appendix J of AS 2187.2 - 2006.

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Non-Mineral Waste

E1 Storage of tyres
Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste-to-energy options must be stored in stable stacks less than 3 m high, and at least 10 m from any other scrap tyre storage area, or combustible or flammable material, including vegetation.

E2 All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10 m radius of the scrap tyre storage area.

E3 Disposal of tyres
Disposing of scrap tyres resulting from the authorised activities must be consistent with the requirements of EHP's operational policy: *Disposal and storage of scrap tyres at mine sites* (2012) or any later versions.

E4 Waste Management

A Waste Management Program, in accordance with the *Environmental Protection (Waste Management) Policy 2000*, must be implemented and must cover:

a) how the environmental authority holder will recognise and apply the waste management hierarchy;
b) identify characterisations of wastes generated from the project and general volume trends over the past five (5) years;
d) waste commitments with auditable targets to reduce, reuse and recycle;
e) waste management control strategies including:
   - the type of wastes;
   - segregation of the wastes;
   - storage of the wastes;
   - transport of the wastes;
   - monitoring and reporting matters concerning the waste;
   - emergency response planning; and
   - disposal, reused and recycling options;
f) identify the potential adverse and beneficial impacts of the wastes generated;
g) hazardous characteristics of the wastes generated including:
   a) disposal procedures for hazardous wastes;
   b) processes to be implemented to allow for continuous improvement of the waste management systems;
   c) identification of responsible staff (positions) for implementing, managing and reporting the Waste Management Plan; and
   d) staff awareness and induction programs that encourage re-use and recycling.

Mineral Waste

E5 Prior to construction of any mineral waste storage facility, undertake a risk assessment, in accordance with generally accepted standards to determine if:

a) the mineral waste is a hazardous waste or has acid producing potential
b) the mined pit is a hazardous dam.

E6 Coal Handling and Preparation Plant Waste

Waste from the Coal Handling and Preparation Plant must be disposed of in regulated dams in accordance with the requirements of Table G2 of this environmental authority if the residual shear strength of the waste is less than 1 kilopascal prior to disposal.

E7 Spoil disposal facility - certification and operation

Authorised spoil disposal facilities, used for the disposal of waste are located within the control points defined in Table E1.

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Table E1 (Location of spoil disposal facility)

Name of spoil disposal facility	Control Points		
	Easting (GDA94)	Northing (GDA94)	Control Point I.D. (Figure E1)
Turkey Hill	772953	7119870	1
	771089	7117867	2
	767092	7119010	3
	767092	7119874	4
	767603	7121769	5
	768643	7122539	6
	769803	7122388	7
Summer Hill	776641	7121418	8
	777081	7117858	9
	776988	7114573	10
	774539	7114582	11
	772421	7116419	12
	772421	7118560	13
	774500	7119962	14
	774516	7122747	15
	775900	7122747	16
Mud Creek	780400	7117632	41
	780654	7117380	42
	783295	7117339	43
	783260	7115553	44
	784204	7115507	45
	784204	7113805	46
	782652	7113790	47
	781362	7113158	48
	777896	7113212	49
	777245	7113426	50
	777360	7115333	51
	778212	7115638	52
	778212	7117678	53
Mud Creek North (satellite pit)	780754	7117301	17
	779760	7118202	18
	777970	7117876	19
	777787	7118506	20
	780122	7119480	21
	781516	7118017	22
Mud Creek East (satellite pit)	785842	7116437	23
	785263	7115828	24
	784525	7116480	25
	783591	7116558	26
	783628	7117859	27
	784969	7117822	28
	785010	7117323	29
Woleebee Creek	786354	7108064	66
	786808	7107611	67

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Name of spoil disposal facility	Control Points		
	Easting (GDA94)	Northing (GDA94)	Control Point I.D. (Figure E1)
	787139	7106320	68
	787000	7105717	69
	785689	7104389	70
	783296	7106872	71
	785424	7108252	72
Woleebee North	786808	7107611	73
	786354	7108064	74
	785199	7109478	75
	786439	7110751	76
	787108	7110141	77
	787940	7108394	78
Woleebee North (satellite pit)	785093	7109675	91
	784111	7110532	92
	785053	7111543	93
	786022	7110715	94
Wubagul	798500	7103082	54
	796627	7101693	55
	794969	7103936	56
	796854	7105325	57
Frank Creek North	793306	7109510	100
	794567	7109675	101
	794648	7109081	102
	794257	7105260	103
	793013	7108743	104
	793894	7107991	105
	793616	7107938	106
Frank Creek South	794072	7106518	107
	794303	7106221	108
	794211	7105323	109
	793114	7105468	110
	793279	7106756	111
Frank Creek West	793132	7109681	79
	793288	7108810	80
	793016	7107640	81
	791395	7107645	82
	791397	7108818	83
	792387	7109740	84
Woleebee	790635	7104922	58
	788927	7104185	59
	787078	7104211	60
	787000	7105717	61
	787423	7107255	62
	789127	7107270	63
	789823	7108135	64
	791693	7108154	65

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Name of spoil disposal facility	Control Points		
	Easting (GDA94)	Northing (GDA94)	Control Point I.D. (Figure E1)
Austinvale North	789308	7112611	95
	788373	7113410	96
	789091	7114156	97
	790584	7113892	98
	792278	7112591	99
Austinvale	790783	7112451	30
	792045	7112206	31
	792032	7111515	32
	791340	7111499	33
	791418	7109574	34
	791036	7108981	35
	789373	7108965	36
	788834	7109339	37
	788500	7110187	38
	788507	7111152	39
	789136	7112597	40
Leichhardt	793132	7109681	85
	792387	7109740	86
	791687	7111000	87
	791653	7112207	88
	792866	7112173	89
	793475	7110164	90

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E8 Spoil disposal facility(s) shall be designed to prevent environmental harm arising from contaminants being generated in the facility, leachate and runoff from the facility.

E9 Authorised spoil disposal facility(s) must be constructed and maintained in accordance with certified design plans, submitted to the administering authority.

E10 Design plans for the authorised spoil disposal facility(s) must include the following performance indicators:

a) during operations the spoil disposal facility(s) will be operated with minimal or no potential for adverse environmental harm resulting from collapse of any component of the facility;
b) the potential for leachate generation will be minimal or non existent; and
c) adequate drainage structures, erosion protection and storage are provided to manage seasonal and rare rainfall events with minimal or no environmental harm.

E11 Construction of any spoil disposal facility detailed in Table E1 must not commence unless:

a) the environmental authority holder has submitted to the administering authority two copies of a design plan; and
b) certification from a suitably qualified and experienced person that the design of the spoil disposal facility(s) will deliver the performance stated in that design plan and that it will be compliant in all other respects with this environmental authority, and

c) at least twenty (20) business days has passed since the receipt of those documents by the administering authority; or
d) the administering authority notifies the environmental authority holder that a design plan and certification has been submitted for that disposal facility.

E12 Operational plan – Spoil disposal facility

An operational plan must be developed and maintained for the spoil disposal facility. The operational plan must include but not be limited to:

a) description of landform development stages of the spoil disposal facility;
b) placement technique for spoil and waste material from the coal handling and processing plant on the mine site;
c) management of any containment structures within the spoil disposal facility designed to contain materials from the coal handling an processing plant on the mine site;
d) demonstration of how operations of the spoil disposal facility are consistent with the accepted design plan for the facility; and
e) decommissioning and rehabilitation strategies for the spoil disposal facility that demonstrate consistency with conditions of this environmental authority.

Land

Final Land Use and Rehabilitation Plan

F1 All areas significantly disturbed by mining activities must be rehabilitated to a stable landform with a self-sustaining vegetation cover in accordance with Table F1 and Table F2.

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Table F1: Final Land Use and Rehabilitation Approval Schedule

Disturbance type	Post-mining land use	Post-mining land suitability class for dry land cropping	Post-mining land suitability class for beef cattle grazing
Infrastructure including roads, MIA, etc.	Beef cattle grazing, native bushland, plantation forestry or infrastructure is retained for use.	Class 3 and Class 4	Class 2 and Class 3
Low gradient overburden disposal stockpiles including tailings disposal	Beef cattle grazing, native bushland, or plantation forestry	Class 4	Class 2
Steeper gradient overburden disposal stockpiles	Low density beef cattle grazing or native bushland	Class 5	Class 4
Final voids	Low density beef cattle grazing or native bushland	Class 5	Class 4
Water Storage Dams	Either retained for subsequent agricultural use or remediated	Class 4	Class 2

Disturbance type	Post-mining land use	Post-mining land suitability class for dry land cropping	Post-mining land suitability class for beef cattle grazing
	and rehabilitated for beef cattle grazing or native bushland		
Sediment Dams	Either retained for subsequent agricultural use or remediated and rehabilitated to beef cattle grazing or native bushland	Class 4	Class 2
Environmental dams	Either retained for subsequent agricultural use or remediated and rehabilitated to beef cattle grazing or native bushland	Class 4	Class 2
Any contaminated land	A use consistent with a contaminated site management plan for the area.	Not Applicable	Not Applicable

Table F2: Landform design criteria for Wandoan Coal Mine

Disturbance Type	Slope Range (%)
Residual Voids (high wall)	0 – 214 % or 65°
Residual Voids (low wall)	0 – 100 % or 45°
Recontoured Spoil Area	0 – 18 % or 10°
Waste Rock Dumps	0 – 18 % or 10°
Infrastructure and ROM areas	0 – 18% or 10°
Roads and Tracks	0 – 10 % or 5.7°

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F2 Progressive rehabilitation must commence when areas become available within the operational land.

F3 Complete an investigation into the planned rehabilitation of disturbed areas and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in condition F1 and Table F1 and Table F2 within twelve months of the issue of the Environmental Authority.

F4 Rehabilitation monitoring program

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

F5 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.

F6 The Rehabilitation Monitoring Program must be included in the Plan of Operations and updated with each subsequent Plan of Operations, describing:

(a) how the rehabilitation objectives will be achieved; and

(b) verification of rehabilitation success.

Residual Void Outcome

F7 Residual voids must comply with the following outcomes:

(a) residual voids must not cause any serious environmental harm to land, surface waters or any recognised ground water aquifer, other than the environmental harm constituted by the existence of the residual void itself, and subject to any other condition within this Environmental Authority; and

(b) residual voids must comply with design specifications in Table F3 and the locations shown in Figure F1.

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Table F3: Residual Void Design

Void Identification	Void wall – competent rock slope (%)	Void wall – incompetent rock slope (%)	Void maximum surface area (ha)
Turkey Hill	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	1,210
Summer Hill	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	1,680
Mud Creek	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	2,080
Mud Creek North (satellite pit)	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	200
Mud Creek East (satellite pit)	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	160

Void Identification	Void wall – competent rock slope (%)	Void wall – incompetent rock slope (%)	Void maximum surface area (ha)
Woleebee Creek	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	640
Woleebee North	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	290
Woleebee North (satellite pit)	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	140
Wubagui	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	570
Frank Creek North	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	80
Frank Creek South	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	210
Frank Creek West	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	210
Woleebee	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	1,012
Austinvale North	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	163
Austinvale	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	736
Leichhardt	0 – 214% or 0 – 65°	0 – 100% or 0 – 45°	194

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F8 Complete an investigation into residual voids and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in conditions F7 within twelve months of the issue of the Environmental Authority.

F9 **Post closure management plan**

A Post Closure Management Plan for the site must be prepared at least eighteen (18) months prior to the final coal processing on site and implemented for a nominal period of:

(a) at least thirty (30) years following final coal processing on site; or

(b) a shorter period if the site is proven to be stable and it can be demonstrated to the satisfaction of the administering authority that the site has been decommissioned and rehabilitated such that it will not cause environmental harm for the foreseeable future (i.e. within 150 years).

F10 The Post Closure Management Plan must include the following elements:

a) operation and maintenance of:
   (i) wastewater collection and reticulation systems;
   (ii) wastewater treatment systems;
   (iii) the groundwater monitoring network;
   (iv) final cover systems; and
   (v) vegetative cover.

b) monitoring of:
   (i) surface water quality;
   (ii) groundwater quality;
   (iii) seepage rates;
   (iv) erosion rates;
   (v) the integrity and effectiveness of final cover systems; and
   (vi) the health and resilience of native vegetation cover.

F11 **Mining waste management**

A Mining Waste Management Plan together with the certification by an appropriately qualified person(s) must be developed and implemented within twelve months of the issue of the Environmental Authority.

F12 The Mining Waste Management Plan must at a minimum include:

a) characterisation programs to ensure that all mining waste is progressively characterised during disposal for net acid producing potential, salinity and the following contaminants: pH, Electrical Conductivity (EC), Acid Neutralising Capacity (ANC), Net Acid Generation (NAG) (reporting NAG capacity and NAG pH after oxidation), Net Acid Producing Potential (NAPP), Total Sulfur (S), Chromium Reducible Sulfur (Scr), Boron (B) Cadmium (Cd), Iron (Fe), Aluminium (Al), Copper (Cu), Magnesium (Mg), Manganese (Mn), Calcium (Ca), Sodium (Na), Zinc (Zn) and Sulfate (SO_4). [*Note: The list of contaminants will be reviewed by an appropriately qualified person after the development of the Mining Waste Management Plan, and if it is determined that certain contaminants are a low risk to the environment, these can be removed from the Mining Waste Management Plan.*]
b) characterisation programs to ensure that the physical properties of the mining waste is progressively characterised during disposal;
c) the availability or leachability of metals from the mining waste;
d) quantity of potentially acid forming (PAF) mining waste;
e) review potential impacts of PAF mining waste on the success of proposed rehabilitation methods;
f) management actions for mining waste that has been identified as having a high availability or leachability of metals;
g) management actions for mining waste that has been defined as PAF;
h) identification of environmental impacts and potential environmental impacts;
i) control measures for routine operations to minimise likelihood of environmental harm;
j) contingency plans and emergency procedures for non-routine situations; and
k) periodic review of environmental performance and continual improvement.

Dams

G1 **All Dams**
The hazard category of each dam must be determined by a suitably qualified and experienced person, prior to its construction and at least once every two (2) years thereafter.

G2 Construction of any dam determined to be in the significant or high hazard category (a regulated dam) must not be commenced unless the location, basic details, and hydraulic performance of that dam are specifically referenced in this environmental authority.

G3 On cessation of operation of any dam, that dam must be maintained so as to avoid environmental harm until that dam is decommissioned.

G4 Prior to the cessation of the mining activity, each dam must be decommissioned such that it either:
a) becomes a stable landform, that no longer contains flowable substances, or
b) is approved or authorised under relevant legislation for a beneficial use, or
c) is a void authorised by the administering authority to remain after decommissioning; and,
d) is compliant with the rehabilitation requirements of this environmental authority.

Regulated dams – Location

G5 The following dams must be wholly located within the control points defined in Table G1.

Table G1 (Location of regulated dams)

Name	Regulated dam description	Easting* (GDA94)	Northing* (GDA94)
Environmental dam AU-E1	Environmental dam	[illegible]	[illegible]
Environmental dam AU-E2	Environmental dam	787560	7111460
Environmental dam AU-E4	Environmental dam	788300	7112400
Environmental dam EC-E1	Environmental dam	782470	7104540
Environmental dam MC-E2	Environmental dam	781460	7118470
Environmental dam SH-E3	Environmental dam	773640	7121660
Environmental dam W-E2	Environmental dam	787990	7108360
Raw water storage dam AU-R1	Raw water storage dam	788250	7111990

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Name	Regulated dam description	Easting* (GDA94)	Northing* (GDA94)
	Potential future tailings dams		
Tailings dam (Woleebee)	In pit tailings disposal	789160	7106110
Tailings dam (Austinvale North)	In pit tailings disposal	790110	7113270
Tailings dam (Austinvale)	In pit tailings disposal	790070	7110780
Tailings dam (Leichhardt)	In pit tailings disposal	792500	7110940
Tailings dam (Turkey Hill)	In pit tailings disposal	769650	7120110
Tailings dam (Summer Hill)	In pit tailings disposal	774930	7117880
Tailings dam (Mud Creek)	In pit tailings disposal	780550	7115270
Tailings dam (Mud Creek North satellite pit)	In pit tailings disposal	780330	7118440
Tailings dam (Mud Creek East satellite pit)	In pit tailings disposal	784550	7116990
Tailings dam (Woleebee North)	In pit tailings disposal	786600	7109130
Tailings dam (Woleebee North satellite pit)	In pit tailings disposal	785070	7110660
Tailings dam (Woleebee Creek)	In pit tailings disposal	785480	7106550
Tailings dam (Frank Creek North)	In pit tailings disposal	793930	7108970
Tailings dam (Frank Creek South)	In pit tailings disposal	793700	7105950
Tailings dam (Frank Creek West)	In pit tailings disposal	792360	7108600
Tailings dam (Wubagul)	In pit tailings disposal	796730	7103510

* Approximate centre of dam locations.

G6 Regulated dams must be consistent with the details in Table G2.

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Table G2 (Details of Regulated Dams)

Regulated dam	Maximum surface area* (ha)	Maximum volume of dam* (ML)	Maximum depth of dam* (m)	Purpose of dam
Environmental dam AU-E1	30.0	2,300	8	Environmental dam
Environmental dam AU-E2	1.5	1,400	8	Environmental dam
Environmental dam AU-E4	6.0	727	9	Environmental dam
Environmental dam FC-E1	11.0	1,100	13	Environmental dam
Environmental dam MC-E2	2.2	1,200	10	Environmental dam
Environmental dam SH-E3	57.5	2,400	13	Environmental dam
Environmental dam W-E2	9.3	917	13	Environmental dam
Raw water storage dam AU-R1	8.5	400	8	Raw water storage dam
Tailings dam (Woleebee)	1012	390,800	85	Tailings storage
Tailings dam (Austinvale North)	163	39,500	36	Tailings storage
Tailings dam (Austinvale)	736	281,000	63	Tailings storage
Tailings dam (Leichhardt)	194	63,000	46	Tailings storage
Tailings dam (Turkey Hill)	1,210	486,000	71	Tailings storage
Tailings dam (Summer Hill)	1,680	673,000	71	Tailings storage
Tailings dam (Mud Creek)	2,080	917,500	100	Tailings storage
Tailings dam (Mud Creek North satellite pit)	200	43,600	32	Tailings storage
Tailings dam (Mud Creek East satellite pit)	160	39,900	45	Tailings storage
Tailings dam (Woleebee North)	290	103,800	65	Tailings storage
Tailings dam (Woleebee North satellite pit)	140	51,900	30	Tailings storage
Tailings dam (Woleebee Creek)	640	417,800	92	Tailings storage

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Regulated dam	Maximum surface area* (ha)	Maximum volume of dam* (ML)	Maximum depth of dam* (m)	Purpose of dam
Tailings dam (Frank Creek North)	80	21,700	52	Tailings storage
Tailings dam (Frank Creek South)	210	99,300	84	Tailings storage
Tailings dam (Frank Creek West)	210	115,100	78	Tailings storage
Tailings dam (Wubagul)	570	350,600	80	Tailings storage

* Approximate area, volume and depth of dams.

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G7 All dams must meet the hydraulic performance criteria specified in Table G3.

Table G3 (Hydraulic Performance Dams)

Dam Type	Hazard Category for Failure to Contain	Design Storage Allowance	Spillway Critical Design Storm AEP	Mandatory Reporting Level
Regulated Dams				
Environmental Dams	Significant	1 in 20 year, 4 month wet season storage	0.001 (1 in 1,000)	0.01 (1 in 100) AEP 72 hour storm volume below spillway level OR 0.01 (1 in 100) AEP wind wave height below spillway level.
Raw Water Storage	Significant	1 in 20 year, 4 month wet season storage	0.001 (1 in 1,000)	(as above)
Tailings Storage Facilities	Significant	1 in 100 year, 4 month wet season storage	0.001 (1 in 1,000)	(as above)
Low Hazard Dams that form part of the mine water management system				
Sediment Dams	Low	NA	0.01 (1 in 100)	NA

G8 Certification and Operation

Every regulated dam must be constructed in accordance with a certified design plan that has been submitted to the administering authority, and such that the resulting dam will deliver the performance stated in that submitted design plan and that dam is compliant in all respects with this environmental authority.

G9 Construction of a regulated dam must not be commenced unless:

1. the licensee has submitted to the administering authority two copies of a design plan, together with the certification of a suitably qualified and experienced person that the design of the regulated dam will deliver the performance stated in that submitted design plan and that dam is compliant in all respects with this environmental authority; and

2. at least twenty (20) business days has passed since the receipt of those documents, or the administering authority notifies the licensee that a design plan and certification has been submitted for that dam.

G10 When construction of any regulated dam is complete and prior to commencing operation of that dam, the licensee must submit to the administering authority two (2) copies of a set of 'as constructed' drawings, together with the certification of a suitably qualified and experienced person that the dam 'as constructed' will deliver the performance stated in that submitted design plan and that dam is compliant in all respects with this environmental authority.

G11 An operational plan must be kept current for each regulated dam.

G12 Where an operational plan covers decommissioning and rehabilitation, those operations are to be consistent with the design plan for the dam and the rehabilitation requirements of this environmental authority.

G13 The licensee must notify the administering authority as soon as practicable, but within twenty-four (24) hours, of the level in any regulated dam reaching the mandatory reporting level (MRL) and must act to prevent or minimize any actual or potential environmental harm.

G14 **Regulated Dams – Annual Inspection and Report**

Each regulated dam must be inspected annually by a suitably qualified and experienced person.

G15 At each annual inspection, the condition and adequacy of each regulated dam must be assessed for dam safety and against the necessary structural, geotechnical and hydraulic performance criteria.

G16 At each annual inspection, if a mandatory reporting level is required, it must be determined and marked on each regulated dam.

G17 A final assessment of adequacy of available storage in each regulated dam must be based on a dam level observed within the month of October and result in an estimate of the level in that dam as at 1 November.

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G18 For each annual inspection, two (2) copies of a report on the condition and adequacy of each regulated dam, certified by the suitably qualified and experienced person and including any recommended actions to be taken to ensure the integrity of each regulated dam; must be provided to the administering authority by 1 December.

G19 The holder of this environmental authority must, within one week of receipt of the annual inspection report, consider the report and its recommendations: and as soon as possible, but within one month of receipt of the annual inspection report, formulate and implement actions to ensure that each regulated dam safely performs its intended functions.

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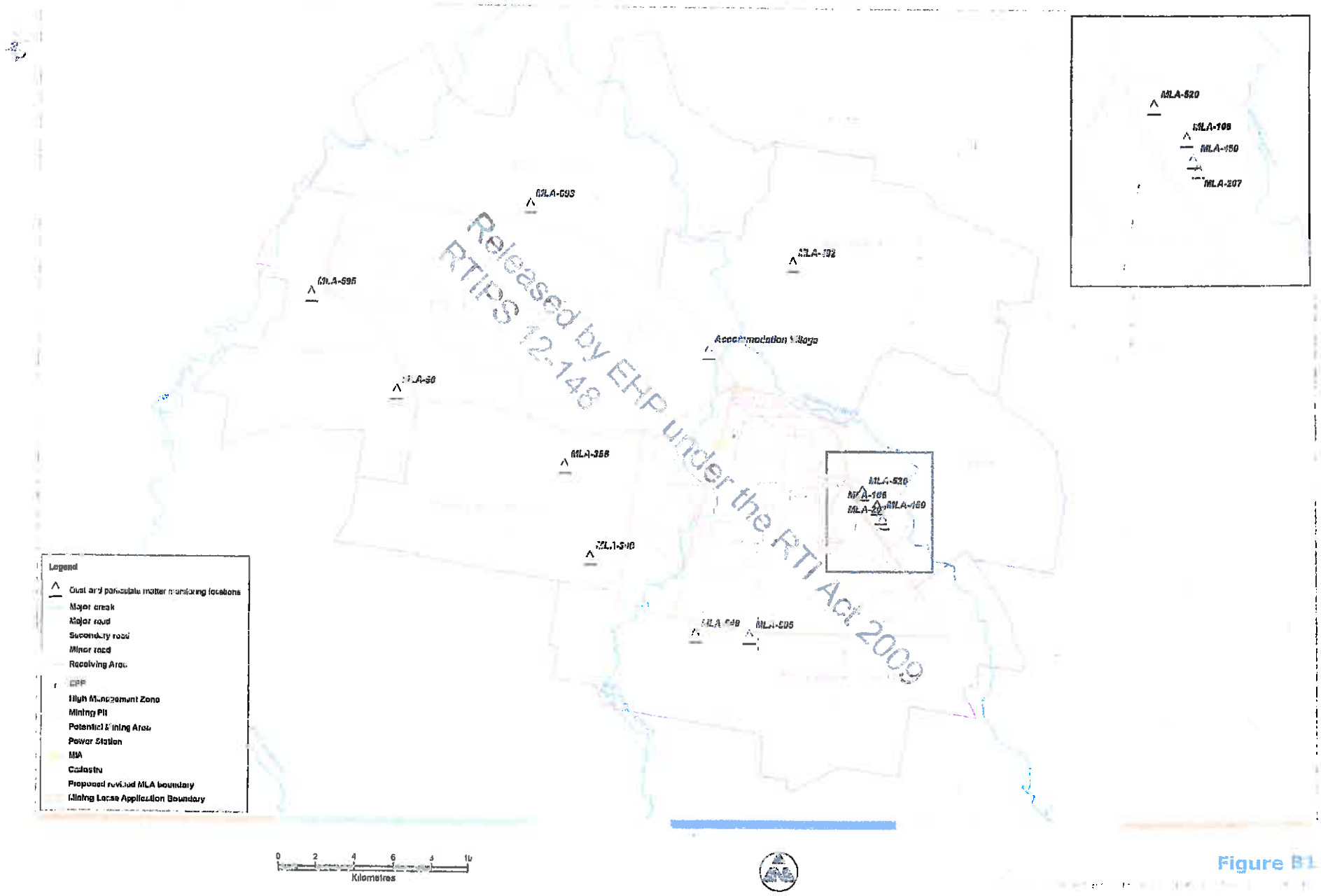

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Figure B1

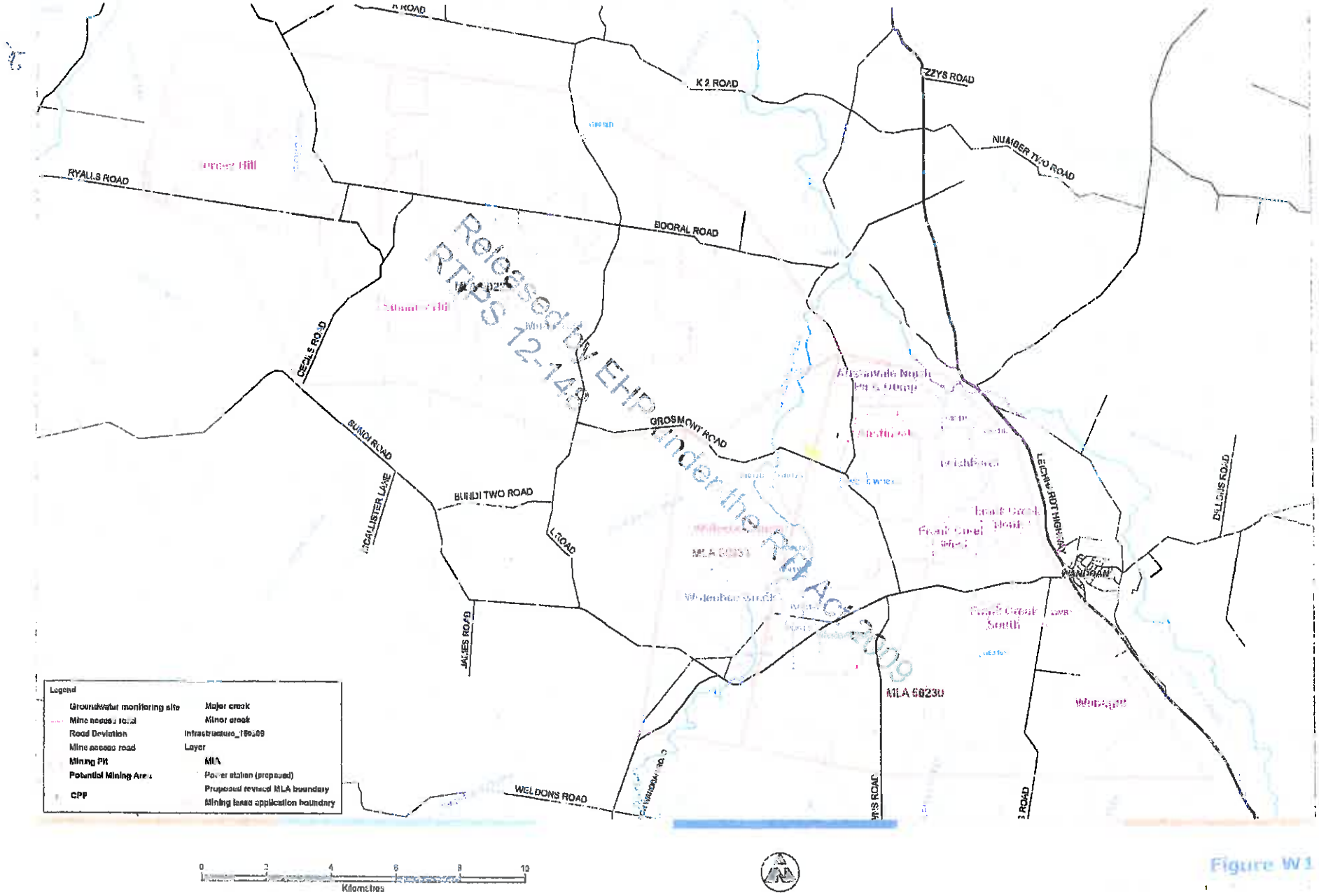

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Figure W1

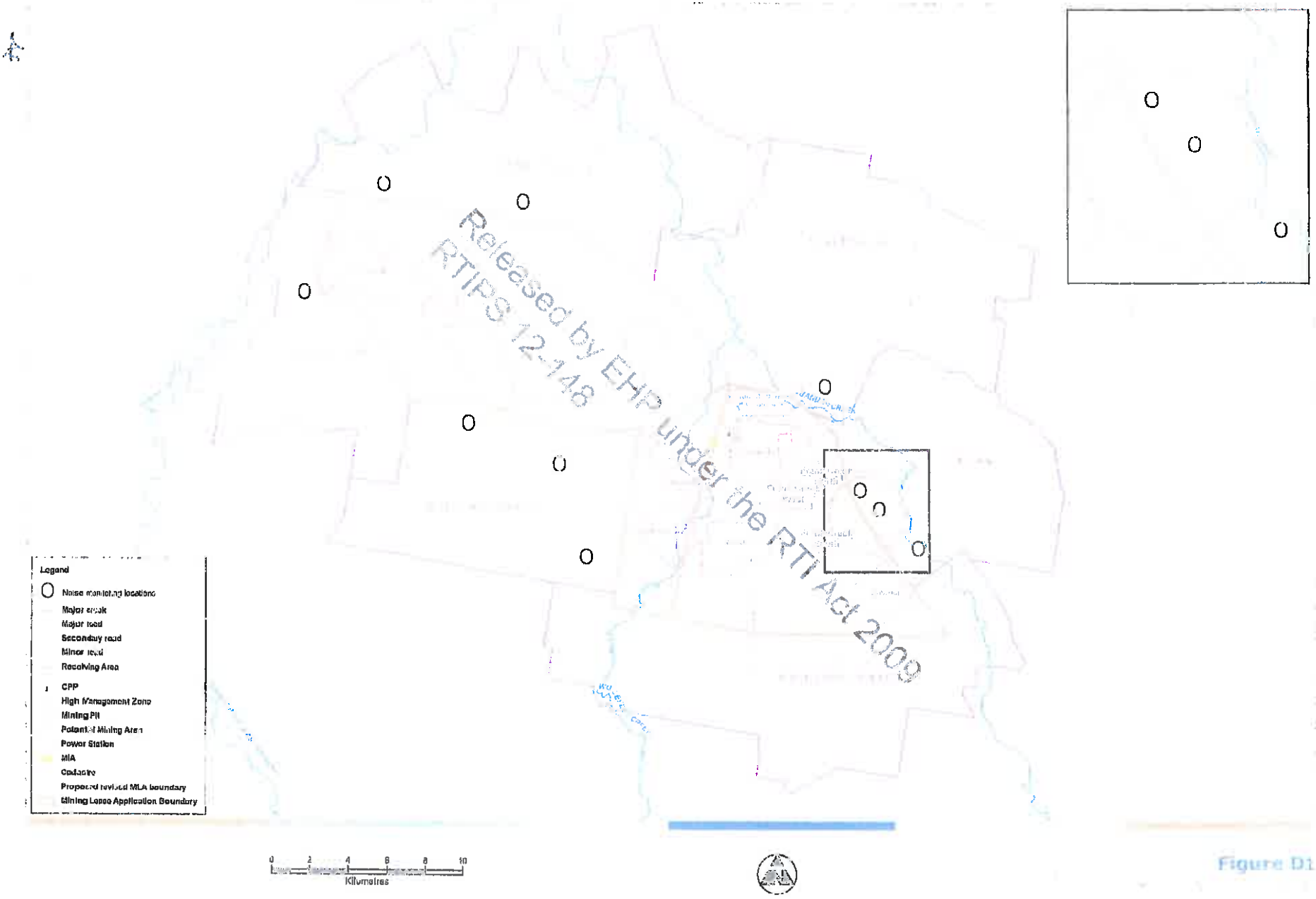

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Figure D1

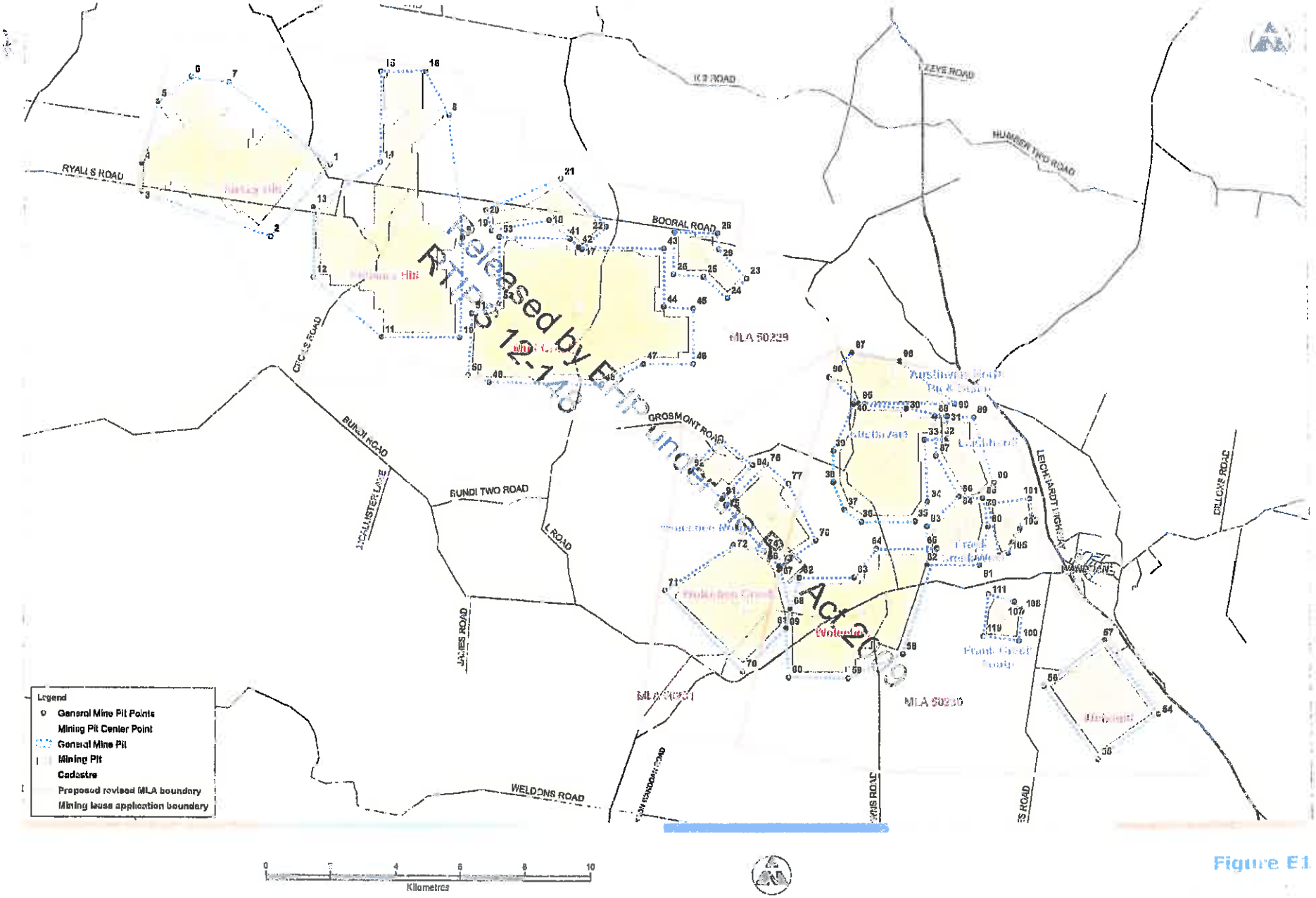

Figure E1

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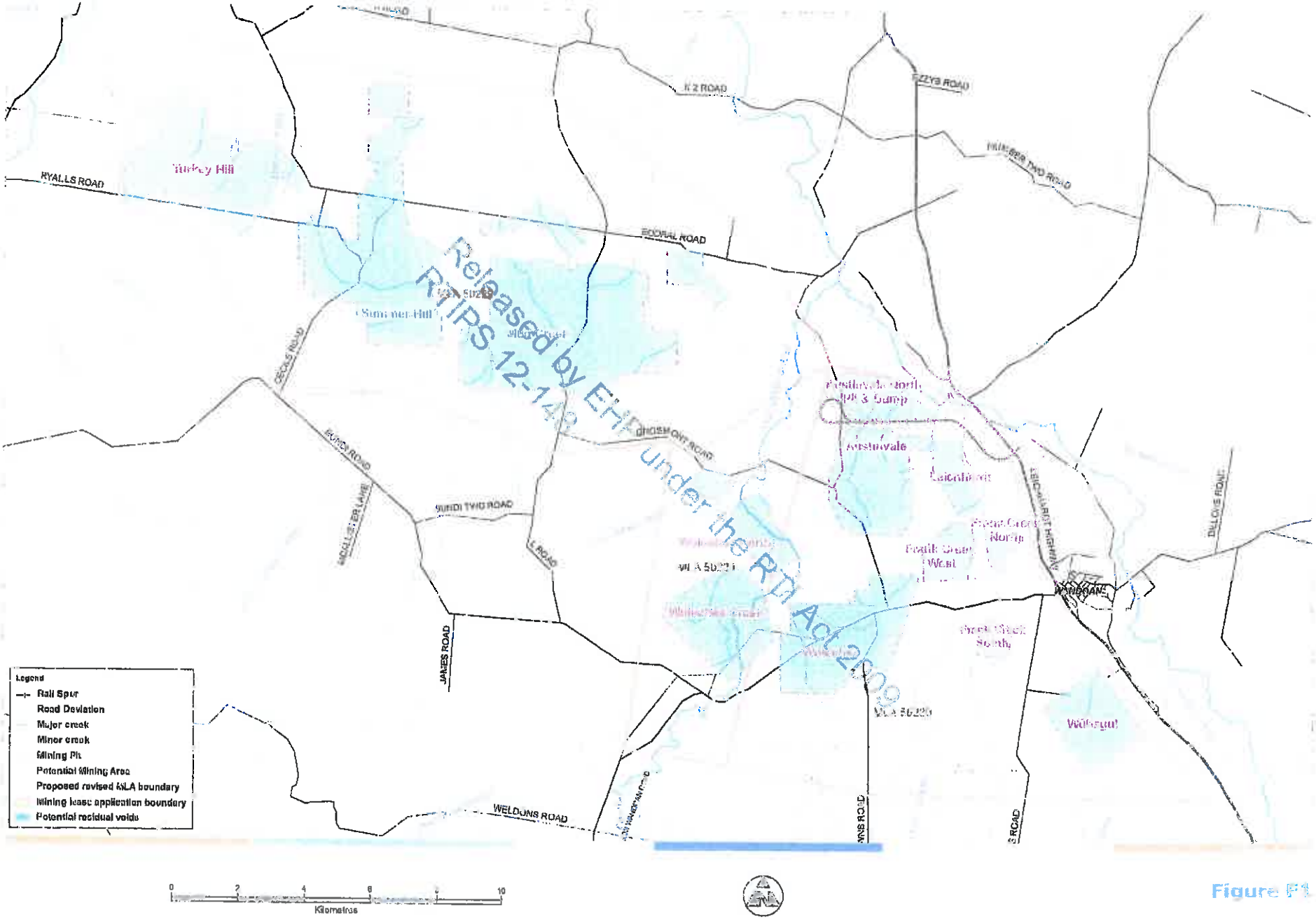

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Figure F1

Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

"associated works" in relation to a dam, means:

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

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

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

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

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

"biosolids" means the treated and stabilised solids from sewage.

"blasting" means the use of explosive materials to fracture:

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

"bunded" means within bunding consistent with Australian Standard 1940.

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

a) exactly what is being certified and the precise nature of that certification;

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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
    (v) a substance used for, or intended for use for:
    (vi) mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or
    (vii) manufacture of plastic or synthetic rubber.

"competent person(s)" means (a) persons 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" includes building a new dam and modifying or lifting an existing dam.

"contaminate" means to render impure by contact or mixture.

"contaminated" means the substance has come into contact with a contaminant within the meaning of the *Environmental Protection Act 1994*.

"contaminant" A contaminant can be:

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

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

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

"dam" means a land-based structure or a void that is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. However; a dam does *not* mean a fabricated or manufactured tank or container designed to a recognised standard, *nor* does a dam mean a land-based structure where that structure is designed to an Australian Standard. In case there is any

doubt, a levee (dyke or bund) is a dam, but (for example) a bund designed for spill containment to AS1940 is *not* a 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 design and investigation reports, specifications and certifications, together with the planned decommissioning and rehabilitation works and outcomes. A design plan may include 'as constructed' drawings.

"design storage allowance (DSA)" means the minimum storage required in a dam at the first of November each year in order to meet the hydraulic performance requirements.

"development approval" means a development approval under the *Sustainable Planning Act 2009* 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 homer or other building or part of a building; or
b) a caravan, mobile home or other vehicle or structure on land; or
c) a water craft in a marina.

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

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

"environmental authority" means an environmental authority under Chapter 5 of the *Environmental Protection Act 1994*.

"environmental authority holder" means the holder of this environmental authority.

"environmentally relevant activity" means an environmentally relevant activity as defined under Section 18 of the *Environmental Protection Act 1994* and listed under Schedule 2 of the *Environmental Protection Regulation 2008*.

"Equipment and plant" means any machinery, equipment or plant (whether movable or stationary) used for carrying out mining activities, and includes monitoring equipment.

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

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

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

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

"general waste" means waste other than regulated waste.

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

"hazard category" means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *"Manual for Assessing Hazard Categories and Hydraulic Performance of Dams"* or in accordance with generally accepted engineering standards (e.g. Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995)).

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

"hydraulic performance" means the capacity of a regulated dam to contain or safely pass flowable substances based on a probability (AEP) of performance failure specified for the relevant hazard category in the *"Manual for Assessing Hazard Categories and Hydraulic Performance of Dams"* or in accordance with generally accepted engineering standards (eg.Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995)).

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

"$L_{Aeq, adj, 15\ mins}$" means the A-weighted sound pressure level of a continuous steady sound, (adjusted for tonal character and impulsiveness of the sound) that within a 15 minute has the same mean square sound pressure of a sound that varies with time.

"$L_{A\ 1, 15\ mins}$" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 15-minute measurement period, using Fast response.

"lake" includes:

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

"land" in the **"land schedule"** of this document means land excluding waters and the atmosphere.

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

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

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

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

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

"mandatory reporting level (MRL)" means a warning and reporting level determined in accordance with the *"Manual for Assessing Hazard Categories and Hydraulic Performance of Dams"* or in accordance with generally accepted engineering standards (e.g. Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995)).

"mg/L" means milligrams per litre.

"Mine Infrastructure Area" means the indicative area within the MLA areas shown in the Mining Activities Plan where the mine infrastructure will generally be located.

"mine water" means process water and contaminated storm water.

"mineral waste" means waste from land generated from the extraction of coal, such as overburden, inter-burden, tailings (fines) coarse rejects and spoil, but does not include non-mineral waste..

"Mineral Waste Storage Facility" means mined-out pit voids used for disposal of tailings, rejects and overburden, and includes tailings storage facilities.

"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.

"non-mineral waste" means waste generated in carrying out the mining activities, including green waste, building and construction waste, general waste and waste tyres, but not including mineral waste.

"noxious" means harmful or injurious to health or physical well being.

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

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

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

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

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

"protected area" means:

a) a protected area under the *Nature Conservation Act 1992*; or

b) a marine park under the *Marine Parks Act* 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.

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"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"* or in accordance with generally accepted engineering standards (e.g. Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995)).

"regulated waste" means non-domestic waste mentioned in schedule 7 of the *Environmental Protection Regulation 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" means the movement of waters, contaminated with salt(s), as a result of the mining activity.

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

"sensitive place" means:
a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
b) a motel, hotel or hostel; or
c) an educational institution; or
d) a medical centre or hospital; or
e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or
f) a public park or gardens: or
g) means a work place used as an office or for business or commercial purposes, which is not part of the mining activity.

"sewage" means (a) drainage and other wastes from any form of toilets, urinals, and WC scuppers; (b) drainage from medical premises (dispensary, sick bay, etc.) via wash basins, wash tubs and scuppers located in such premises; (c) drainage from spaces containing living animals; or (d) other waste waters when mixed with the drainages defined above. Source: MARPOL Annexure IV 73/78

"spillway" means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges form 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(s)" in relation to dams means one/those who is/are a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 2002 or equivalent*, OR registered as a National Professional Engineer (NPER) with the Institution of Engineers Australia, OR holds equivalent professional qualifications to the satisfaction of the administering authority for the Act; AND the administering authority for the Act is satisfied that person has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below:

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

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

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

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

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

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

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

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

"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:

river, creek, stream in which water flows permanently or intermittently either:

a) in a natural channel, whether artificially improved or not; or
b) in an artificial channel that has changed the course of the river, creek or stream; or
i. lake, lagoon, pond, swamp, wetland, dam; or
ii. unconfined surface water; or
iii. storm water channel, storm water drain, roadside gutter; or
iv. 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
v. groundwater; or
vi. non-tidal or tidal waters (including the sea); or
vii. any part-thereof.

"µg/L" means micrograms per litre.

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