



# **Taroborah Coal Project**

## **Environmental Impact Statement**

### **Section 6 – Environmental Commitments**

Prepared for:  
**Shenhua International Group Pty Ltd**





# Chapter 6

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## 6.0 ENVIRONMENTAL COMMITMENTS

The Terms of Reference for the Taraborah Project prescribed that an Environmental Management Plan be provided as part of the Environmental Impact Statement. However, due to legislative amendments that took place after the issue of the Terms of Reference, an Environmental Management Plan is no longer required for the Project.

This section will instead propose environmental commitments appropriate for inclusion as conditions for the Project Environmental Authority. These conditions are based on the Model Mining Conditions (from DEHP Guideline EM944, 2013). The extent to which the proposed environmental commitments comply with the Model Mining Conditions, and any amendments to these conditions, are detailed in Table 6.1.

**Table 6.1 Proposed Environmental Conditions compared with Model Mining Conditions**

Schedule	Comparison with Model Mining Conditions
A - General	All commitments in accordance with Model Mining Conditions. Additional monitoring and storage of chemicals and flammable or combustible liquids conditions have been included, as per the Model Mining Conditions advice
B - Air	Conditions B1 – B3 not included, as no point source releases are applicable to the Project. Conditions B1b and B1c (B4b and B4c in Model mining Conditions) have been amended to incorporate PM <sub>10</sub> and PM <sub>2.5</sub> modelled ground level rates during year 5 of the Project
C - Waste Management	Condition C4 – amended to relate to spoil and fine rejects, the waste products applicable to the Project. Condition C5 not included, as acid sulphate soils are not applicable to the Project
D – Noise	All commitments in accordance with Model Mining Conditions Condition D2 – commitment for no blasting during evening/night time hours. A nominated frequency of 4 out of 5 consecutive blasts was used to calculate a percentage of blasting noise limits in Table 6.3.
E – Groundwater	All commitments in accordance with Model Mining Conditions Condition E4 has applied site specific drawdown thresholds, as per the Project modelled drawdown values
F - Water	All commitments in accordance with Model Mining Conditions Based on the Model Water conditions for coal mines in the Fitzroy River Basin, Stream flow and EC data was derived from the Queensland Government's Water Monitoring Data Portal. Gauging stations utilised include Station 130209A (Nogoa River at Craigmere)
G – Sewage Treatment	All commitments in accordance with Model Mining Conditions, as no other contaminants are proposed to be released to land
H – Land and Rehabilitation	All commitments in accordance with Model Mining Conditions. Guideline <i>Rehabilitation Requirements for Mining Projects (EM1122)</i> was referred to when creating Table 6.14. A Biodiversity Offset Strategy has been drafted and will be submitted to the administering authority within 30 days of impacting any SSBV
I – Regulated Structures	All commitments in accordance with Model Mining Conditions in Appendix B of the Guideline <i>Structures which are dams or levees constructed as part of environmentally relevant activities (EM364)</i> are adhered to, excluding those relating to existing structures, as there are none.

The proposed environmental conditions for the Project are provided in the schedules below.

## **6.1 Schedule A – General**

- A1** This environmental authority authorises environmental harm referred to in the conditions. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence does not authorise environmental harm.
- A2** In carrying out the mining activity authorised by this environmental authority; disturbance of land:
- a) May occur in the areas marked 'A';
  - b) Must not occur in the areas marked 'B'; and
  - c) May occur in the areas marked 'C' on the map that is annexure 1 to this environmental authority, but only in accordance with condition A3.
- A3** Only sub-surface disturbance is authorised within the areas marked 'C' on the map that is Schedule K – Figure 1 to this environmental authority.
- A4** The holder of this environmental authority must:
- a) Install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;
  - b) Maintain such measures, plant and equipment in a proper and efficient condition;
  - c) Operate such measures, plant and equipment in a proper and efficient manner; and
  - d) Ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.

### **Monitoring**

- A5** Except where specified otherwise in another condition of this environmental authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than 5 years.

### **Financial Assurance**

- A6** The activity must not be carried out until the environmental authority holder has given financial assurance to the administering authority as security for compliance with this environmental authority and any costs or expenses, or likely costs or expenses, mentioned in section 298 of the Act.
- A7** The amount of financial assurance must be reviewed by the holder of this environmental authority when a plan of operations is amended or replaced or the authority is amended.

## **Risk Management**

- A8** The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (ISO31000:2009), or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management, by *<<Insert date 3 months from date of issue>>*

## **Chemicals and Flammable or Combustible Liquids**

- A9** All explosives, hazardous chemicals, corrosive substances, toxic substances, gases and dangerous goods should be stored and handled in accordance with the current Australian standard where such is applicable.
- A10** Flammable and combustible liquids, including petroleum products, should be stored and handled in accordance with the latest edition of AS1940—The storage and handling of flammable and combustible liquids.
- A11** Where no relevant Australian standard exists store such materials within an effective on-site containment system.
- A12** Minimise the potential for contamination of land and waters by diverting stormwater around contaminated areas and facilities used for the storage of chemicals and flammable or combustible liquids.

## **Notification of Emergencies, Incidents and Exceptions**

- A13** The holder of this environmental authority must notify the administering authority by written notification within 24 hours, after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this environmental authority.
- A14** Within 10 business days following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following:
- a) Results and interpretation of any samples taken and analysed;
  - b) Outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and
  - c) Proposed actions to prevent a recurrence of the emergency or incident.

## **Complaints**

- A15** The holder of this environmental authority must record all environmental complaints received about the mining activities including:
- a) Name, address and contact number for of the complainant;
  - b) Time and date of complaint;

- c) Reasons for the complaint;
- d) Investigations undertaken;
- e) Conclusions formed;
- f) Actions taken to resolve the complaint;
- g) Any abatement measures implemented; and
- h) Person responsible for resolving the complaint.

**A16** The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority within 10 business days of completion of the investigation, or no later than 10 business days after the end of the timeframe nominated by the administering authority to undertake the investigation.

### **Third Party Reporting**

**A17** The holder of this environmental authority must:

- a) Within 1 year of the commencement of this environmental authority, obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority;
- b) Obtain further such reports at regular intervals, not exceeding 3 yearly intervals, from the completion of the report referred to above; and
- c) Provide each report to the administering authority within 90 days of its completion.

**A18** Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority, the holder of this environmental authority must:

- a) Comply with the amended or changed standard, policy or guideline within 2 years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures, the time specified in that condition; and
- b) Until compliance with the amended or changed standard, policy or guideline is achieved; continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.



## **6.2 Schedule B – Air**

### **Dust and Particulate Monitoring**

- B1** The Proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the mining activities do not cause exceedances of the following levels when measured at any sensitive or commercial place:
- a) Dust deposition of 120 milligrams per square metre per day, averaged over 1 month, when monitored in accordance with the most recent version of Australian Standard AS3580.10.1 Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter – Gravimetric method;
  - b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM<sub>10</sub>) suspended in the atmosphere of 115 micrograms per cubic metre over a 24-hour averaging time, for no more than 5 exceedances recorded each year, when monitored in accordance with the most recent version of either:
    - 1) Australian Standard AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM<sub>10</sub> high volume sampler with size-selective inlet – Gravimetric method; or
    - 2) Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM<sub>10</sub> low volume sampler—Gravimetric method.
  - c) A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres (PM<sub>2.5</sub>) suspended in the atmosphere of 35 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.10 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM (sub)2.5/(sub) low volume sampler—Gravimetric method; and
  - d) A concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1 year averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—Total suspended particulate matter (TSP)—High volume sampler gravimetric method.

## **6.3 Schedule C – Waste Management**

- C1** General waste must only be disposed of into dedicated waste disposal facilities constructed for the Project or collected and disposed of by licenced waste contractors.
- C2** Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, general waste must not be burnt.
- C3** The holder of this environmental authority may burn vegetation cleared in the course of carrying out extraction activities provided no other preferred method of reuse or disposal is feasible and the activity does not cause environmental harm at any sensitive place or commercial place.

## Spoil Disposal

**C4** Spoil must be managed in accordance with procedures contained within the current plan of operations. These procedures must include provisions for:

- Containment of spoil;
- The management of seepage and leachates both during operation and the foreseeable future;
- The control of fugitive emissions to air;
- A program of progressive sampling and characterisation to identify acid producing potential and metal concentrations of spoil;
- Maintaining records of the relative locations of any other waste stored within the spoil;
- Rehabilitation strategy; and
- Monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of spoil dumps, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover.

## 6.4 Schedule D – Noise

**D1** The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in Table 6.2 to be exceeded at a sensitive place or commercial place.

**Table 6.2 Noise Limits**

Noise level dB(A) measured as:	Monday to Saturday			Sunday and Public Holidays		
	7am - 6pm	6pm - 10pm	10pm - 7am	7am - 6pm	6pm - 10pm	10pm - 7am
<b>Noise measured at a 'Sensitive Receptor'</b>						
$L_{A10, \text{adj, 15 mins}}$	CV = 50 AV = 5	CV = 45 AV = 5	CV = 40 AV = 0	CV = 45 AV = 5	CV = 40 AV = 5	CV = 35 AV = 0
$L_{A1, \text{adj, 15 mins}}$	CV = 55 AV = 10	CV = 50 AV = 10	CV = 45 AV = 5	CV = 50 AV = 10	CV = 45 AV = 10	CV = 40 AV = 5
<b>Noise measured at a 'Commercial place'</b>						
$L_{Aeq, \text{adj, 15 mins}}$	CV = 55 AV = 10	CV = 50 AV = 10	CV = 45 AV = 5	CV = 50 AV = 10	CV = 45 AV = 10	CV = 40 AV = 5

Table D1 – Noise limits notes:

- CV = Critical Value
- AV = Adjustment Value
- To calculate noise limits in Table D1:  
If  $bg \leq (CV - AV)$ :  
Noise limit =  $bg + AV$



If  $(CV - AV) < bg \leq CV$ :

Noise limit = CV

If  $bg > CV$ :

Noise limit =  $bg + 0$

4. In the event that measured  $bg$  ( $L_{A90, adj, 15 mins}$ ) is less than  $30 dB_{(A)}$ , then  $30 dB_{(A)}$  can be substituted for the measured background level
5.  $bg$  = background noise level ( $L_{A90, adj, 15 mins}$ ) measured over 3-5 days at the nearest sensitive receptor
6. If the project is unable to meet the noise limits as calculated above alternative limits may be calculated using the processes outlined in the "Planning for Noise Control" guideline.

### Airblast Overpressure Nuisance

- D2** The holder of this environmental authority must ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in Table 6.3 to be exceeded at a sensitive place or commercial place.

**Table 6.3 Blasting Noise Limits**

Blasting Noise Limits	Sensitive of Commercial Blasting Noise Limits Place Limits	
	7am - 6pm	6pm – 7am
Airblast Overpressure	115 dB (linear) peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (linear) peak at any time	No Blasting
Ground vibration peak particle velocity	5 mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm / second peak particle velocity at any one time	No Blasting

### Monitoring and Reporting

- D3** Noise monitoring and recording must include the following descriptor characteristics and matters:
- a)  $L_{AN,T}$  (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins);
  - b) Background noise  $L_{A90}$ ;
  - c) The level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;
  - d) Atmospheric conditions including temperature, relative humidity and wind speed and directions;
  - e) Effects due to any extraneous factors such as traffic noise;
  - f) Location, date and time of monitoring; and
  - g) If the complaint concerns low frequency noise, Max  $L_{pLIN,T}$  and one third octave band measurements in  $dB_{(LIN)}$  for centre frequencies in the 10 – 200 Hz range.

**D4** The holder of this environmental authority must develop and implement a blast monitoring program to monitor compliance with Table D2 – Blasting noise limits for:

- a) At least 80% of all blasts undertaken on this site in each year at the nearest sensitive place or commercial place within 5 km surrounding the ML; and
- b) All blasts conducted during any time period specified by the administering authority at the nearest sensitive place or commercial place.

## 6.5 Schedule E – Groundwater

**E1** The holder of this environmental authority must not release contaminants to groundwater.

### Monitoring and Reporting

**E2** All determinations of groundwater quality and biological monitoring must be performed by an appropriately qualified person.

**E3** Groundwater quality and levels must be monitored at the locations and frequencies defined in Table 6.4 Groundwater Monitoring Locations and Frequency and Schedule K – Figure 2 Groundwater Bore Monitoring Locations) for quality characteristics identified in Table 6.5 Groundwater Quality Triggers and Limits.

**Table 6.4 Groundwater Monitoring Locations and Frequency**

Monitoring Point <sup>1</sup>	Location		Surface RL (m AHD) <sup>2</sup>	Monitoring Frequency
	Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)		
Reference Bores <sup>3</sup>				
MB01_B	592504	7399983	213.7	Bi-annually
TAR040C	600263	7396108	230.5	Bi-annually
MB02_C	593997	7397592	236.8	Bi-annually
MB02_S	594017	7397580	236.8	Bi-annually
MB03_S	599667	7399771	230.5	Bi-annually
MB04_C	593513	7399534	234.9	Bi-annually
MB04_S	593493	7399537	235.0	Bi-annually
MB06_B	592471	7394530	221.1	Bi-annually
MB07_B	592065	7393041	233.1	Bi-annually
MB08_B	594668	7390096	242.6	Bi-annually
MB09_T	593575	7401714	201.6	Bi-annually
MB10_T	600020	7402656	193.4	Bi-annually
Compliance Bores				



TAR016C	594956	7395372	228.2	Bi-annually
TAR053	595642	7395113	213.6	Bi-annually
TAR176C	595549	7400349	204.0	Bi-annually
TAR177C	594586	7400197	221.1	Bi-annually
TAR189C	598843	7398818	236.8	Bi-annually
MB05_C	598860	7398819	237.3	Bi-annually
TAR249C	596635	7397000	236.2	Bi-annually

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

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

3. Reference sites must:

(a) have a similar flow regime;

(b) be from the same bio-geographic and climatic region;

(c) have similar geology, soil types and topography; and

(d) not be so close to the test sites that any disturbance at the test site also results in a change at the reference site.

**Table 6.5 Groundwater Quality Triggers and Limits**

Parameter	Units	Contaminant Trigger <sup>2</sup>	Contaminant Limit <sup>3</sup>
pH <sup>1</sup>	pH	6.0 - 8.0	6.0 – 9.0
TDS	mg/L	3200	4000 or 95 <sup>th</sup> percentile of reference data whichever is higher
Sulphate	mg/L	800	1000 or 95 <sup>th</sup> percentile of reference data whichever is higher
Aluminium	mg/L	4	5 or 95 <sup>th</sup> percentile of reference data whichever is higher
Arsenic	mg/L	0.4	0.5 or 95 <sup>th</sup> percentile of reference data whichever is higher
Boron	mg/L	4	5 or 95 <sup>th</sup> percentile of reference data whichever is higher
Cadmium	mg/L	0.008	0.01 or 95 <sup>th</sup> percentile of reference data whichever is higher
Chromium	mg/L	0.8	1 or 95 <sup>th</sup> percentile of reference data whichever is higher
Cobalt	mg/L	0.8	1 or 95 <sup>th</sup> percentile of reference data whichever is higher
Copper	mg/L	0.8	1 or 95 <sup>th</sup> percentile of reference data whichever is higher
Fluoride	mg/L	1.6	2 or 95 <sup>th</sup> percentile of reference data whichever is higher
Lead	mg/L	0.08	0.1 or 95 <sup>th</sup> percentile of reference data whichever is higher
Mercury	mg/L	0.0016	0.002 or 95 <sup>th</sup> percentile of reference data whichever is higher
Molybdenum	mg/L	0.12	0.15 or 95 <sup>th</sup> percentile of reference data whichever is higher
Nickel	mg/L	0.8	1 or 95 <sup>th</sup> percentile of reference data whichever is higher
Selenium	mg/L	0.016	0.02 or 95 <sup>th</sup> percentile of reference data whichever is higher
Zinc	mg/L	16	20 or 95 <sup>th</sup> percentile of reference data whichever is higher

<sup>1</sup> Contaminant trigger limits are based on Table 3.3.4 and 3.3.5 of *Aquatic Ecosystems ANZECC (2000)*.

<sup>2</sup> Contaminant trigger limits are based on 80% of the contaminant limits defined in the *ANZECC (2000) Livestock Drinking Water* and are to be analysed as *Total Metals (unfiltered)*.

<sup>3</sup> Contaminant limits based on *ANZECC (2000) Livestock drinking water quality* and are analysed as *Total Metals (unfiltered)*

- E4** Groundwater levels measured at the monitoring locations specified in Table 6.4 Groundwater Monitoring Locations and Frequency when located more than 500 metres from the nearest active workings must not exceed the groundwater level trigger change thresholds specified in Table 6.6 Groundwater Level Monitoring below.

**Table 6.6 Groundwater Level Monitoring**

Monitoring Location	Current SWL (m BTOC*) tbc	Level Trigger Threshold (m)	Threshold SWL (m BTOC) tbc
<b>Reference Bores</b>			
MB01B	22.69	9	31.69
MB02S	46.93	20	66.93
MB02C	46.96	20	66.96
MB03S	54.02	12	66.02
MB04S	43.73	15	58.73
MB04C	43.75	15	58.75
TAR040C	37.41	17	54.41
MB06B	Dry at 26.40	15	
MB07B	Dry at 30.52	8	
MB08B	29.02	4	33.02
MB09T	7.07	4	11.07
MB10T	11.75	3	14.75
<b>Compliance Bores</b>			
TAR016C	39.79	25	64.79
TAR053	25.47	30	55.47
MB05C	46.64	7	53.64
TAR176C	11.76	7	18.76
TAR177C	12.92	7	19.92
TAR189C	45.10	7	52.10
TAR249C	49.10	15	64.10

Note: \* BTOC – Below Top of Casing

tbc - Initial and trigger reference level to be confirmed prior to mine construction

### Exceedance Investigation

- E5** If quality characteristics of groundwater from compliance bores identified in Table 6.4 Groundwater monitoring locations and frequency exceed any of the trigger levels stated in Table 6.5 Groundwater quality triggers and limits or exceed any of the groundwater level trigger threshold stated in Table 6.6 Groundwater level monitoring, the holder of this environmental authority must compare the compliance monitoring bore results to the reference bore results

and complete an investigation in accordance with the ANZECC and ARMCANZ 2000.

- E6** Results of monitoring of groundwater from compliance bores identified in Table 6.4 Groundwater monitoring locations and frequency, must not exceed any of the limits defined in Table 6.5 Groundwater quality triggers and limits.

#### **Bore Construction and Maintenance and Decommissioning**

- E7** The construction, maintenance and management of groundwater bores (including groundwater monitoring bores) must be undertaken in a manner that prevents or minimises impacts to the environment and ensures the integrity of the bores to obtain accurate monitoring.

### **6.6 Schedule F - Water**

#### **Contaminant release**

- F1** Contaminants that will, or have the potential to cause, environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.
- F2** Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to waters must only occur from the release points specified in Table 6.7 Mine Affected Water Release Points, Sources and Receiving Waters.
- F3** The release of mine affected water to internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with condition F26 is permitted.

**Table 6.7 Mine Affected Water Release Points, Sources and Receiving Waters**

<b>Release Point (RP)</b>	<b>Latitude (decimal degree, GDA94)</b>	<b>Longitude (decimal degree, GDA94)</b>	<b>Mine Affected Water Source and Location</b>	<b>Monitoring Point</b>	<b>Receiving Waters Description</b>
RP 1	TBC	TBC	CPP Water Recycle Dam	Pipe or drain	Taraborah Creek
RP 2	TBC	TBC	Mine Wastewater Dam	Pipe or drain	Taraborah Creek
RP 3	TBC	TBC	Sediment Dam	Pipe or drain	Taraborah Creek
RP 4	TBC	TBC	Sediment Dam	Pipe or drain	Taraborah Creek
RP 5*	TBC	TBC	Mine Wastewater Dam	Inlet pipe to pumping system	Selma Irrigation System - Main Channel adjacent to Capricorn Highway

*Note – Release point coordinates will be confirmed with the administering authority once construction of dams and spillways has been finalised.*

*\* For the purpose of releasing excess groundwater to irrigation, to be confirmed.*





- F4** The release of mine affected water to waters in accordance with condition F2 must not exceed the release limits stated in Table 6.8 Mine Affected Water Release Limits when measured at the monitoring points specified in Table 6.7 for each quality characteristic.

**Table 6.8 Mine Affected Water Release Limits**

Quality Characteristic	Release Limits*	Monitoring Frequency	Comment
Electrical conductivity (uS/cm)	Release limits specified in Table 6.10 for variable flow criteria or condition F11	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)	-
Suspended Solids (mg/L)	1,500*	Daily during release (first sample within 2 hours of commencement of release)	Suspended solids are required to measure the performance of sediment and erosion control measures.
Sulphate (SO <sub>4</sub> <sup>2-</sup> ) (mg/L)	Release limits specified in Table 6.10 for variable flow criteria	Daily during release (first sample within 2 hours of commencement of release)	-

- F5** The release of mine affected water to waters from the release points must be monitored at the locations specified in Table 6.7 Mine Affected Water Release Points, Sources and Receiving Waters for each quality characteristics and at the frequency specified in Table 6.8 Mine Affected Water Release Limits and Table 6.9 Release Contaminant Trigger Investigation Levels Potential Contaminants.

*Note: the administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition F5 is contravened due to a temporary lack of safe or practical access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.*

**Table 6.9 Release Contaminant Trigger Investigation Levels Potential Contaminants**

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	5000	<i>For stock drinking water protection</i>	Commencement of release and thereafter weekly during release
Arsenic	13	<i>For aquatic ecosystem protection, based on SMD guideline</i>	
Cadmium	10	<i>For stock drinking water protection</i>	
Chromium	1000	<i>For stock drinking water protection</i>	
Copper	500	<i>For stock drinking water protection</i>	
Iron	300	<i>For aquatic ecosystem protection, based on low reliability guideline</i>	
Lead	4	<i>For aquatic ecosystem protection, based on SMD guideline</i>	
Mercury	0.2	<i>For aquatic ecosystem protection, based on LOR for CV FIMS</i>	
Nickel	1000	<i>For stock drinking water protection</i>	
Zinc	8	<i>For aquatic ecosystem protection, based on SMD guideline</i>	
Boron	370	<i>For aquatic ecosystem protection, based on SMD guideline</i>	
Cobalt	90	<i>For aquatic ecosystem protection, based on low reliability guideline</i>	
Manganese	1900	<i>For aquatic ecosystem protection, based on SMD guideline</i>	
Molybdenum	34	<i>For aquatic ecosystem protection, based on low reliability guideline</i>	
Selenium	10	<i>For aquatic ecosystem protection, based on LOR for ICPMS</i>	
Silver	1	<i>For aquatic ecosystem protection, based on LOR for ICPMS</i>	
Uranium	1	<i>For aquatic ecosystem protection, based on LOR for ICPMS</i>	
Vanadium	10	<i>For aquatic ecosystem protection, based on LOR for ICPMS</i>	
Ammonia	900	<i>For aquatic ecosystem protection, based on SMD guideline</i>	
Nitrate	1100	<i>For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN</i>	
Petroleum hydrocarbons (C6-C9)	20	-	
Petroleum hydrocarbons (C10-C36)	100	-	
Fluoride (total)	2000	<i>Protection of livestock and short term irrigation guideline</i>	
Sodium (mg/L)	180	<i>Australian Drinking Water Guidelines. Trigger may require amendment if future advice from Queensland Health becomes available</i>	
Suspended Solids (mg/L)	1,500	-	
Sulphate (SO <sub>4</sub> <sup>2-</sup> ) (mg/L)	Sliding scale	Refer to Table 6.10 below for flow conditions and release limits	

Note:

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



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

5. Stock drinking water guidelines (ANZECC & ARMCANZ (2000)) have been used where the aquatic ecosystem protection guideline has been exceeded on a number of times during background surface water sampling.

**F6** If quality characteristics of the release exceed any of the trigger levels specified in Table 6.9 Release Contaminant Trigger Investigation Levels Potential Contaminants during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in Table 6.9 Release Contaminant Trigger Investigation Levels Potential Contaminants and:

- a) Where the trigger values are not exceeded then no action is to be taken; or
- b) Where the downstream results exceed the trigger values specified Table 6.9 Contaminant Trigger Investigation Levels Potential Contaminants for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and;
  - 1) If the result is less than the background monitoring site data, then no action is to be taken; or
  - 2) If the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
    - i. Details of the investigations carried out; and
    - ii. Actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with F6 2(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*

**F7** If an exceedance in accordance with condition F6 2(b) is identified, the holder of the authority must notify the administering authority within fourteen (14) days of receiving the result.

#### **Mine Affected Water Release Events**

**F8** The holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in Table 6.10 Mine Affected Water Release during Flow Events.

**F9** Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with condition F2 must only take place in accordance with the receiving water flow criteria for discharge specified in Table 6.10 Mine Affected Water Release during Flow Events for the release point(s) specified in Table 6.7 Mine Affected Water Release Points, Sources and Receiving Waters.

**F10** The release of mine affected water to waters in accordance with condition F2 must not exceed the Electrical Conductivity and Sulphate release limits or the Maximum Release Rate (for all combined release point flows) for each receiving water flow criteria for discharge specified in Table 6.10 Mine Affected Water Release during Flow Events when measured at the monitoring points specified in Table 6.7 Mine Affected Water Release Points, Sources and Receiving



Waters.

- F11** The daily quantity of mine affected water released from each release point must be measured and recorded at the monitoring points in Table 6.7 Mine Affected Water Release Points, Sources and Receiving Waters.
- F12** 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.

**Table 6.10 Mine Affected Water Release during Flow Events**

Receiving Waters/ Stream	Release Point (RP)	Gauging Station	Gauging Station Latitude (decimal degree, GDA94)	Gauging Station Longitude (decimal degree, GDA94)	Receiving Water Flow Recording Frequency	Receiving Water Flow Criteria for discharge (m <sup>3</sup> /s)	Maximum release rate (for all combined RP flows)	Electrical Conductivity Release Limits
Taroborah Creek	RP1 – RP4	Taroborah Creek upstream (TBC)	TBC	TBC	Continuous (minimum daily)	Low/No Flow 28 days after natural flow events that exceed 0.15 m <sup>3</sup> /s at Nogoia River	0.05 m <sup>3</sup> /s	Electrical conductivity (uS/cm): <488 (Maximum, based on 80 <sup>th</sup> percentile of historic data)  Sulphate (mg/L): <300
						Medium Flow ≥ 0.15 m <sup>3</sup> /s in the Nogoia River	0.08 m <sup>3</sup> /s  0.02 m <sup>3</sup> /s	Electrical conductivity (uS/cm) < 1,500  Electrical conductivity (uS/cm) < 3,500  Sulphate (mg/L): <600

## Notification of Release Event

**F13** The environmental authority holder must notify the administering authority as soon as practicable and no later than 24 hours after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information:

- a) Release commencement date/time;
- b) Expected release cessation date/time;
- c) Release point/s;
- d) Release volume (estimated);
- e) Receiving water/s including the natural flow rate; and
- f) Any details (including available data) regarding likely impacts on the receiving water(s).

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

**F14** The environmental authority holder must notify the administering authority as soon as practicable (nominally within twenty-four (24) hours after cessation of a release event) of the cessation of a release notified under Condition F13 and within 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 Agency Interest: Water of this environmental authority (i.e. contamination limits, natural flow, discharge volume);
- e) All in-situ water quality monitoring results; and
- f) Any other matters pertinent to the water release event.

*Note: Successive or intermittent releases occurring within twenty-four (24) hours of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with conditions F13 and F14, provided the relevant details of the release are included within the notification provided in accordance with conditions F13 and F14.*

## Notification of Release Event Exceedance

**F15** If the release limits defined in Table 6.8 Mine Affected Water Release Limits are exceeded, the holder of the environmental authority must notify the administering authority within twenty-four (24) hours of receiving the results.



**F16** The authority holder must, within twenty-eight (28) days of a release that exceeds the conditions of this authority, provide a report to the administering authority detailing:

- a) The reason for the release;
- b) The location of the release;
- c) All water quality monitoring results;
- d) Any general observations;
- e) All calculations; and
- f) Any other matters pertinent to the water release event.

### Receiving Environment Monitoring and Contaminant Trigger Levels

**F17** The quality of the receiving waters must be monitored at the locations specified in Table 6.12 Receiving Water Upstream Background Sites and Downstream Monitoring Points and depicted in Schedule K – Figure 3 – Receiving Water Monitoring Locations for each quality characteristic and at the monitoring frequency stated in Table 6.11 Receiving Water Contaminant Trigger Levels.

**Table 6.11 Receiving Waters Contaminant Trigger Levels**

Quality Characteristic	Trigger Level*	Monitoring Frequency
pH	6.5 – 8.0	Daily during the release*
Electrical Conductivity (µS/cm)	1000	
Suspended solids (mg/L)	1500	
Sulphate (SO <sub>4</sub> <sup>2-</sup> ) (mg/L)	300	
Sodium (mg/L)	180	

\*Samples shall not be collected where access to monitoring points presents a serious health and safety risk.

**Table 6.12 Receiving Water Upstream Background Sites and Downstream Monitoring Points**

Monitoring Points	Receiving Waters Location Description	Latitude (GDA94)	Longitude (GDA94)
<b>Upstream Background Monitoring Points</b>			
MP 1	Taroborah Creek	592460	7394520
MP 2	Tributary south of Taroborah Creek	593875	7392625
MP3	Retreat Creek	594555	7402037
<b>Downstream Monitoring Points</b>			
MP4	Taroborah Creek	595695	7394650
MP5	Retreat Creek	597840	7402650
MP6	Retreat Creek	600070	7402480
MP7	Taroborah Creek	598685	7391555

Notes:

- a) The upstream monitoring point should be within 5 km of the release point.
- b) The downstream point should not be greater than 5 km from the release point.
- c) The data from background monitoring points must not be used where they are affected by releases from other mines.

**F18** If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table 6.11 Receiving Water Contaminant Trigger Levels during a release event the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and:

- a) Where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or
- b) Where the downstream results exceed the upstream results complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
  - i. Details of the investigations carried out; and
  - ii. Actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with F18 (b)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*

**F19** All determinations of water quality and biological monitoring must be performed by an appropriately qualified person.





## Receiving Environment Monitoring Program (REMP)

**F20** The environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site. For the purposes of the REMP, the receiving environment is Taroborah Creek and Retreat Creek within 10 km downstream of the release points. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

**F21** A REMP Design Document that addresses the requirements of the REMP must be prepared and made available to the administering authority upon request.

*Note: A REMP framework for Retreat Creek and Taroborah Creek is provided in Appendix 28. A full REMP Design Document will be developed within approximately 24 months, by which time sufficient background data on the receiving environment water quality should have been obtained.*

**F22** A report outlining the findings of the REMP, including all monitoring results and interpretations must be prepared annually and made available on request to the administering authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

## Water Reuse

**F23** Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party (with consent of the third party)

## Annual Water Monitoring Reporting

**F24** The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format with each annual return:

- a) The date on which the sample was taken;
- b) The time at which the sample was taken;
- c) The monitoring point at which the sample was taken;
- d) The measured or estimated daily quantity of mine affected water released from all release points;
- e) The release flow rate at the time of sampling for each release point;
- f) The results of all monitoring and details of any exceedances of the conditions of this environmental authority; and



- g) Water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

### **Temporary Interference with Waterways**

- F25** Excavating or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with the provisions of a Riverine Protection Permit issued by the Department of Natural Resources and Mines, unless they meet the Riverine Protection Permit exemption requirements.

### **Water Management Plan**

- F26** A Water Management Plan must be developed by an appropriately qualified person and implemented.

### **Stormwater and Water Sediment Controls**

- F27** An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

- F28** Stormwater, other than mine affected water, is permitted to be released to waters from:

- a) Erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition F27; and
- b) Water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with conditions F26, for the purpose of ensuring water does not become mine affected water.

## 6.7 Schedule G - Sewage Treatment

- G1** The only contaminant permitted to be released to land is treated sewage effluent in compliance with the release limits stated in Table 6.13 Contaminant Release Limits to Land.

**Table 6.13 Contaminant Release Limits to Land**

Quality Parameters	Units	Release Limit	Limit type	Monitoring Frequency
Biochemical Oxygen Demand	mg/l	20 median	Maximum	Monthly
Total Suspended solids	mg/l	30	Maximum	Monthly
Total nitrogen	mg/l	30	Maximum	Monthly
Total phosphorus	mg/l	15	Maximum	Monthly
Coliforms	Colony forming units / 100 ml	1000	Maximum	Monthly
pH	pH units	6.0 – 9.0	Maximum	Monthly

- G2** Treated sewage effluent may only be released to land in accordance with the conditions of this approval at the following locations:
- Within the nominated area(s) identified in Schedule K—Figure 4 - Sewage Treatment Plant and Effluent Disposal); and
  - Other land for the purpose of dust suppression and/or firefighting.
- G3** The application of treated effluent to land must be carried out in a manner such that:
- Vegetation is not damaged;
  - There is no surface ponding of effluent; and
  - There is no run-off of effluent.
- G4** If areas irrigated with effluent are accessible to employees or the general public, prominent signage must be provided advising that effluent is present and care should be taken to avoid consuming or otherwise coming into unprotected contact with the effluent.
- G5** All sewage effluent released to land must be monitored at the frequency and for the parameters specified in Table 6.13 Contaminant Release Limits to Land.
- G6** The daily volume of effluent release to land must be measured and records kept of the volumes of effluent released.
- G7** When circumstances prevent the irrigation or beneficial reuse of treated sewage effluent such as during or following rain events, waters must be directed to a wet weather storage or

alternative measures must be taken to store/lawfully dispose of effluent.

- G8** A minimum area of 2.5 hectares of land, excluding any necessary buffer zones, must be utilised for the irrigation and/or beneficial reuse of treated sewage effluent.
- G9** Treated sewage effluent must only be supplied to another person or organisation that has a written plan detailing how the user of the treated sewage effluent will comply with their general environmental duty under section 319 of the Act whilst using the treated sewage effluent.

## **6.8 Schedule H – Land and Rehabilitation**

- H1** Land disturbed by mining must be rehabilitated in accordance with Table 6.14 Rehabilitation Requirements.
- H2** Rehabilitation must commence progressively in accordance with the plan of operations.

**Table 6.14 Rehabilitation Requirements**

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Opencut Mining Area</b>	Long term safety	Structurally safe with no hazardous materials	Safety assessment of landform stability	Certification by an appropriately qualified person in the Rehabilitation Report that highwalls and slopes are now safe and exhibit characteristics for long term stability.
				A risk assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.
				Final landform meets the design maximum slope angle requirements of 70° for competent rock, 45° for incompetent rock and 30° for spoil material.
			Exposure to and availability of heavy metals and other toxic materials	Certification by an appropriately qualified person that the Rehabilitation Report includes predictions about future changes and that the specified cover thickness is in place.
				Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in the environmental authority.
			Results of site contaminated land investigation report	Evidence in the Rehabilitation Report that protective measures required in the site contaminated land investigation report have been implemented.
		Site is safe for humans and animals now and in the foreseeable future	Safety assessment of landform stability (geotechnical studies)	An appropriately qualified person certifies the long term geotechnical stability of the residual slopes and faces in the voids and evidence of this is documented in the Rehabilitation Report.
			Installation of safety barriers and human/wildlife exclusion fencing of opencut voids	If required, mitigation measures documented in a Safety Plan, e.g. fencing and other suitable barrier around the opencut voids and slopes, are installed to restrict access

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Opencut Mining Area (cont)</b>			Adequacy and predicted long term performance of safety barriers	Evidence in the Rehabilitation Report that a safety risk assessment of the opencut voids and slopes has been completed and proposed mitigation measures are documented in a Safety Plan.
	Non-polluting	Mine affected water contained on site.	Downstream surface water quality	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
			Groundwater quality	Certification by an appropriately qualified person that groundwater quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
			Final landform water storages are contained on-site, with no overflows into external surface water systems.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
				Receiving water affected by surface water run-off has contaminated limits in accordance with the environmental authority.
			Opencut voids protected from flooding	Certification by a suitably qualified and experienced person in the Rehabilitation Report that the opencut voids have an adequate protection system to prevent inundation from a 1:1000 year annual exceedance probability flood event.
		Hazardous materials adequately managed	Exposure to and availability of heavy metals and other toxic materials	Certification by an appropriately qualified person in the Rehabilitation Report that includes predictions about future changes and that the specified cover thickness for waste cells is in place.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Opencut Mining Area (cont)</b>	Non-polluting (cont)			Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in the environmental authority.
		Removal of potential sources of contamination	Results of site contaminated land investigation report	Evidence in the Rehabilitation Report that measures required in site contaminated land investigation reports have been implemented.
	Stable landform	Very low probability of rock falls with serious environmental consequences	Past record of rock falls	Evidence in the Rehabilitation Report that appropriate control measures are in place to prevent recurrence.
			Geotechnical Studies	Evidence in the Rehabilitation Report that a risk assessment has been undertaken and mitigation measures (if any) have been documented and implemented.
		Landform design achieves appropriate erosion rates	Slope angle and length	Evidence in the Rehabilitation Report that the rehabilitated slopes have been designed to the specifications of maximum 70° for competent rock, 45° for incompetent rock and 30° for spoil material.
			Engineered structures to control water flow	Evidence in the Rehabilitation Report that any required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and functioning.
			Rates of soil loss	Certification by an appropriately qualified person that land disturbed by mining activities does not exhibit any signs of continued erosion greater than that exhibited at a comparable local or regional reference site. The comparable reference site must have similar chemical and physical characteristics, including slope, as the rehabilitated landform.
			Dimensions and frequency of occurrence of erosion rills and gullies.	Evidence in the Rehabilitation Report that the dimensions and frequency of occurrence of erosion rills and gullies are no greater than that at comparable local or regional reference sites.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Opencut Mining Area (cont)</b>	Stable landform (cont)	Vegetation cover sufficient for a self-sustaining community and to minimise erosion	Vegetation type and density	Evidence that the vegetation types and densities are of similar species to comparable reference sites and are suited to the rehabilitated sites' characteristics including soil type, topography, and climate and that soil erosion meets the goals as set in these criteria.
			Foliage cover	Minimum of 70% groundcover is present (50% if rocks, logs or other features are present), with no bare surfaces >20m <sup>2</sup> in area or >10m in length down slope.
		Overland flow diversions and run-off drainage lines mirror natural stream functions	Design and stability of diversions and drainage lines	Documentation in the Rehabilitation Report how overland flow diversions and drainage lines have changed over the life of mine and that, should they remain, are stable at closure and likely to remain that way for the foreseeable future.
	Sustainable land-use	Soil properties support the desired land-use	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of topsoil support the proposed vegetation and land-use	<p>Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land-use and are consistent with the following:</p> <ul style="list-style-type: none"> <li>• soil salinity content is &lt; 0.6dS/m;</li> <li>• soil pH is between 5.0 and 8.5;</li> <li>• soil exchange sodium percentage (ESP) is &lt;15%;</li> <li>• nutrient accumulation and recycling processes are occurring as evidenced by the presence of a litter layer, mycorrhizae and/or microsymbionts; and</li> <li>• adequate macro and micro nutrients are present.</li> </ul>
			Physical properties of topsoil support the proposed vegetation and land-use	<p>Certification in the Rehabilitation Report that the topsoil physical properties (e.g. rockiness, depth of soil, wetness and plant available water capacity) are adequate for plant growth.</p> <p>Certification in the Rehabilitation Report of the topsoil's suitability to support the current land-use (cattle grazing) in accordance with the Department of Minerals and Energy (DME) 1995 <i>Land Suitability Assessment Techniques in Technical Guidelines for Environmental Management of Exploration and Mining</i>.</p>



Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Opencut Mining Area (cont)</b>	Sustainable land-use (cont)	Soil properties support the desired land-use (cont)	Topsoil thickness	Certification in the Rehabilitation Report that the topsoil has been respread according to the depths specified in the topsoil management plan
			Site soil characteristics	Certification in the Rehabilitation Report that the site's soil characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition as defined in the <i>Australian Soil and Land Survey Field Handbook</i> (National Committee on Soil and Terrain 2009).
	Establish self-sustaining natural vegetation or habitat	Presence of key plant species	Presence of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site occur on the rehabilitation site. The presence of key plant species may also be guided by future vegetation trials for rehabilitation.
			Density of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site is similar to the rehabilitation site. The density of key plant species may also be guided by future vegetation trials for rehabilitation.
			Structure of vegetation habitat	Certification by an appropriately qualified person that the structure of vegetation (i.e. groundcover, shrub and canopy structure) on the rehabilitation site is trending towards being similar to a comparable reference site.
	Self-sustaining natural vegetation or habitat	Native fauna species	Native fauna species	Certification by an appropriately qualified person that the native fauna species identified in the pre-mining baseline studies and the reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.
			Plant regeneration	Certification by an appropriately qualified person that plants in rehabilitated areas show evidence of flowering, seed setting and seed germination.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Opencut Mining Area (cont)	Sustainable land-use (cont)	Self-sustaining natural vegetation or habitat (cont)	Abundance of declared plants (weeds) identified through surveys	Certification by an appropriately qualified person that the abundance of declared plants (weeds) identified in rehabilitated areas is no greater than comparable reference sites.
			Actions taken to eradicate plants declared under local or State legislation	Evidence to demonstrate that action has been taken to eradicate declared plants (weeds) under local or State legislation should they occur on the rehabilitated site.
			Abundance of declared animals identified through surveys	Certification by an appropriately qualified person that the abundance of declared animals identified in rehabilitated areas is no greater than comparable reference sites.
			Actions taken to control animals declared under local or State legislation	Evidence to demonstrate that action has been taken to control declared animals under local or State legislation should they occur on the rehabilitated site.
			Weed hygiene procedures	Records indicating that appropriate weed and seed hygiene procedures were implemented during revegetation.
		Agricultural grazing	Livestock stocking rates	An appropriately qualified person has predicted and defined the economics/benefits and these have been agreed with relevant stakeholders.
			Landform stability when grazed	Land maintenance requirements are comparable to comparable reference sites.
			Stock access to water sources	Stock has access as presently available to water that meets accepted livestock drinking water guidelines.
Underground Mining Area	Long term safety	Rehabilitation or conversion of exploration drill holes, groundwater monitoring bores and mine	All non-artesian exploration drill holes undertaken on the mining lease have been rehabilitated or	Certification by an appropriately qualified person that all non-artesian exploration drill holes that have not been converted to either a water bore or a groundwater monitoring bore have been rehabilitated.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Underground Mining Area (cont)		dewatering bores.	converted to water bores.	Certification by an appropriately qualified person that all sub-artesian aquifers have been isolated where exploration drill holes have intersected more than one sub-artesian aquifer, in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (Australian Government February 2012) or latest edition.
				Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to water bores have been converted in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (Australian Government February 2012) or latest edition.
				Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to water bores are compliant with the <i>Water Act 2000</i> (QLD).
		Structurally safe with no hazardous materials	All monitoring and mine dewatering bores undertaken on the mining lease have been rehabilitated.	Certification by an appropriately qualified person that all monitoring and dewatering bores have been rehabilitated in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (Australian Government February 2012) or latest edition.
			Safety assessment of portals and shafts	Certification by an appropriately qualified person in the Rehabilitation Report that portal bulkheads and vertical shaft cappings are now safe and exhibit characteristics for long term stability.
				A risk assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Underground Mining Area (cont)</b>	Long term safety (cont)		Stream bank erosion	Evidence in the Rehabilitation Report that drainage line banks in the underground mining domain are currently stable and exhibit characteristics of long term stability.
	Non-polluting	Mine affected water contained on site.	Downstream surface water quality	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
				Receiving water affected by surface water run-off has contaminated limits in accordance with the environmental authority.
			Groundwater quality	Certification by an appropriately qualified person that groundwater quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
		Hazardous materials adequately managed	Exposure to and availability of heavy metals and other toxic materials	Certification by an appropriately qualified person in the Rehabilitation Report that includes predictions about future changes and that the specified cover thickness is in place.
				Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in the environmental authority.
		Removal of potential sources of contamination	Results of site contaminated land investigation report	Evidence in the Rehabilitation Report that measures required in site contaminated land investigation reports have been implemented.
	Stable landform	Landform design achieves appropriate erosion rates	Engineered structures to control water flow	Evidence in the Rehabilitation Report that any required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and functioning.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Underground Mining Area (cont)</b>	Stable landform (cont)	Landform design achieves appropriate erosion rates (cont)	Rates of soil loss	Certification by an appropriately qualified person that land disturbed by mining activities does not exhibit any signs of continued erosion greater than that exhibited at a comparable local or regional reference site. The comparable reference site must have similar chemical and physical characteristics, including slope, as the rehabilitated landform.
		Vegetation cover sufficient for a self-sustaining community and to minimise erosion	Vegetation type and density	Evidence that the vegetation types and densities are of similar species to comparable reference sites and are suited to the rehabilitated sites' characteristics including soil type, topography, and climate and that soil erosion meets the goals as set in these criteria.
			Foliage cover	Minimum of 70% groundcover is present (50% if rocks, logs or other features are present), with no bare surfaces >20m <sup>2</sup> in area or >10m in length down slope.
		Run-off drainage lines mirror natural stream functions	Design and stability of run-off drainage lines	Documentation in the Rehabilitation Report how run-off drainage lines have changed over the life of mine and that they are stable at closure and likely to remain that way for the foreseeable future.
		Surface water drainage	Stable drainage works	Certification by an appropriately qualified person that local drainage works (e.g. small diversion bunds and engineered rock chute structures) work as intended and are stable.
		Minimal changes to hydrological conditions	Ponding	Evidence in the Rehabilitation Report to demonstrate unimpeded drainage/flows of subsidence basins and run-off drainage lines.
			Cracking	Evidence in the Rehabilitation Report that no surface cracks greater than 50mm in width, and that are attributable to subsidence, remain in the underground mining area.
	Sustainable land- use	Soil properties continue to support the desired land-use	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of	Certification in the Rehabilitation Report that the soil chemical properties do not limit the suitability of the land for the intended land-use and are consistent with the following:

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Underground Mining Area (cont)</b>	Sustainable land- use (cont)		soil support the proposed vegetation and land-use	<ul style="list-style-type: none"> <li>soil salinity content is &lt; 0.6dS/m;</li> <li>soil pH is between 5.0 and 8.5;</li> <li>soil exchange sodium percentage (ESP) is &lt;15%;</li> <li>nutrient accumulation and recycling processes are occurring as evidenced by the presence of a litter layer, mycorrhizae and/or microsymbionts; and</li> <li>adequate macro and micro nutrients are present.</li> </ul>
			Physical properties of soil support the proposed vegetation and land-use	Certification in the Rehabilitation Report that the soil physical properties (e.g. rockiness, depth of soil, wetness and plant available water capacity) are adequate for plant growth.
				Certification in the Rehabilitation Report of the soil's suitability to support the current land-use (cattle grazing and broadacre dryland cropping) in accordance with the Department of Minerals and Energy (DME) 1995 <i>Land Suitability Assessment Techniques in Technical Guidelines for Environmental Management of Exploration and Mining</i> .
			Topsoil thickness	Certification in the Rehabilitation Report that the topsoil has been respread (where required) according to the depths specified in the topsoil management plan
			Site soil characteristics	Certification in the Rehabilitation Report that the site's soil characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition as defined in the <i>Australian Soil and Land Survey Field Handbook</i> (National Committee on Soil and Terrain 2009).
	Establish self-sustaining natural vegetation or habitat		Presence of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site occur on the rehabilitation site. The presence of key plant species may also be guided by future vegetation trials for rehabilitation.
			Density of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site is similar to

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Underground Mining Area (cont)</b>	Sustainable land- use (cont)			the rehabilitation site. The density of key plant species may also be guided by future vegetation trials for rehabilitation.
			Structure of vegetation habitat	Certification by an appropriately qualified person that the structure of vegetation (i.e. groundcover, shrub and canopy structure) on the rehabilitation site is trending towards being similar to a comparable reference site.
		Self-sustaining natural vegetation or habitat	Native fauna species	Certification by an appropriately qualified person that the native fauna species identified in the pre-mining baseline studies and the reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.
			Plant regeneration	Certification by an appropriately qualified person that plants in rehabilitated areas show evidence of flowering, seed setting and seed germination.
			Abundance of declared plants (weeds) identified through surveys	Certification by an appropriately qualified person that the abundance of declared plants (weeds) identified in rehabilitated areas is no greater than comparable reference sites.
			Actions taken to eradicate plants declared under local or State legislation	Evidence to demonstrate that action has been taken to eradicate declared plants (weeds) under local or State legislation should they occur on the rehabilitated site.
			Abundance of declared animals identified through surveys	Certification by an appropriately qualified person that the abundance of declared animals identified in rehabilitated areas is no greater than comparable reference sites.
			Actions taken to control animals declared under local or State legislation	Evidence to demonstrate that action has been taken to control declared animals under local or State legislation should they occur on the rehabilitated site.
			Weed hygiene procedures	Records indicating that appropriate weed and seed hygiene procedures were implemented during revegetation.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Underground Mining Area (cont)	Sustainable land- use (cont)	Agricultural grazing	Landform stability when grazed	Land maintenance requirements are comparable to comparable reference sites.
			Stock access to water sources	Stock has access as presently available to water that meets accepted livestock drinking water guidelines.
		Broadacre Dryland Cropping	Crop Productivity	Evidence in the Rehabilitation Report to indicate that cropping yields of rehabilitated land that is currently cropped achieve >80% of cropping yields for comparable undisturbed land over the same time period.
Mine Infrastructure Area	Long term safety	Rehabilitation or conversion of exploration drill holes and groundwater monitoring bores.	All non-artesian exploration drill holes undertaken on the mining lease have been rehabilitated or converted to water bores.	Certification by an appropriately qualified person that all non-artesian exploration drill holes that have not been converted to either a water bore or a groundwater monitoring bore have been rehabilitated.
				Certification by an appropriately qualified person that all sub-artesian aquifers have been isolated where exploration drill holes have intersected more than one sub-artesian aquifer, in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (Australian Government February 2012) or latest edition.
				Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to water bores have been converted in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (Australian Government February 2012) or latest edition.
				Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to water bores are compliant with the <i>Water Act 2000</i> (QLD).
		All monitoring bores undertaken on the mining	Certification by an appropriately qualified person that all monitoring and dewatering bores have been rehabilitated in	



Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Mine Infrastructure Area (cont)			lease have been rehabilitated.	accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (Australian Government February 2012) or latest edition.
		Structurally safe with no hazardous materials	Safety assessment of portals and shafts	A risk assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.
		Site is safe for humans and animals now and in the foreseeable future	Appropriate decommissioning of infrastructure	Certification by an appropriately qualified person in the Rehabilitation Report that the site infrastructure has been decommissioned and rehabilitated. Buildings, water storages(s), roads (except those used by the public), conveyors, stockpile pads and other infrastructure have been removed unless stakeholders have entered into formal agreements for their retention. Access to the area is conducive of the intended purpose of post-mining land use.
	Non-polluting	Mine affected water contained on site	Downstream surface water quality	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
				Receiving water affected by surface water run-off has contaminated limits in accordance with the environmental authority.
			Groundwater quality	Certification by an appropriately qualified person that groundwater quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Mine Infrastructure Area (cont)</b>	Non-polluting (cont)	Hazardous materials adequately managed	Exposure to and availability of heavy metals and other toxic materials	Certification by an appropriately qualified person in the Rehabilitation Report that includes predictions about future changes and that the specified cover thickness is in place.
				Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in the environmental authority.
		Removal of potential sources of contamination	Results of site contaminated land investigation report	Evidence in the Rehabilitation Report that measures required in site contaminated land investigation reports have been implemented.
	Stable landform	Landform design achieves appropriate erosion rates	Engineered structures to control water flow	Evidence in the Rehabilitation Report that any required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and functioning.
		Landform design achieves appropriate erosion rates (cont)	Rates of soil loss	Certification by an appropriately qualified person that land disturbed by mining activities does not exhibit any signs of continued erosion greater than that exhibited at a comparable local or regional reference site. The comparable reference site must have similar chemical and physical characteristics, including slope, as the rehabilitated landform.
		Vegetation cover sufficient for a self-sustaining community and to minimise erosion	Vegetation type and density	Evidence that the vegetation types and densities are of similar species to comparable reference sites and are suited to the rehabilitated sites' characteristics including soil type, topography, and climate and that soil erosion meets the goals as set in these criteria.
			Foliage cover	Minimum of 70% groundcover is present (50% if rocks, logs or other features are present), with no bare surfaces >20m <sup>2</sup> in area.
		Run-off drainage lines mirror natural stream	Design and stability of run-off drainage lines	Documentation in the Rehabilitation Report how run-off drainage lines have changed over the life of mine and that they are stable

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Mine Infrastructure Area (cont)		functions		at closure and likely to remain that way for the foreseeable future.
	Sustainable land-use	Soil properties support the desired land-use	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of topsoil support the proposed vegetation and land-use	Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land-use and are consistent with the following: <ul style="list-style-type: none"> <li>• soil salinity content is &lt; 0.6dS/m;</li> <li>• soil pH is between 5.0 and 8.5;</li> <li>• soil exchange sodium percentage (ESP) is &lt;15%;</li> <li>• nutrient accumulation and recycling processes are occurring as evidenced by the presence of a litter layer, mycorrhizae and/or microsymbionts; and</li> <li>• adequate macro and micro nutrients are present.</li> </ul>
			Physical properties of topsoil support the proposed vegetation and land-use	Certification in the Rehabilitation Report that the topsoil physical properties (e.g. rockiness, depth of soil, wetness and plant available water capacity) are adequate for plant growth.
				Certification in the Rehabilitation Report of the topsoil's suitability to support the current land-use (cattle grazing) in accordance with the Department of Minerals and Energy (DME) 1995 <i>Land Suitability Assessment Techniques in Technical Guidelines for Environmental Management of Exploration and Mining</i> .
			Topsoil thickness	Certification in the Rehabilitation Report that the topsoil has been respread according to the depths specified in the topsoil management plan
			Site soil characteristics	Certification in the Rehabilitation Report that the site's soil characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition as defined in the <i>Australian Soil and Land Survey Field Handbook</i> (National Committee on Soil and Terrain 2009).

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Mine Infrastructure Area (cont)</b>	Sustainable land-use (cont)	Establish self-sustaining natural vegetation or habitat	Presence of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site occur on the rehabilitation site. The presence of key plant species may also be guided by future vegetation trials for rehabilitation.
			Density of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site is similar to the rehabilitation site. The density of key plant species may also be guided by future vegetation trials for rehabilitation.
			Structure of vegetation habitat	Certification by an appropriately qualified person that the structure of vegetation (i.e. groundcover, shrub and canopy structure) on the rehabilitation site is trending towards being similar to a comparable reference site.
	Self-sustaining natural vegetation or habitat		Native fauna species	Certification by an appropriately qualified person that the native fauna species identified in the pre-mining baseline studies and the reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.
			Plant regeneration	Certification by an appropriately qualified person that plants in rehabilitated areas show evidence of flowering, seed setting and seed germination.
			Abundance of declared plants (weeds) identified through surveys	Certification by an appropriately qualified person that the abundance of declared plants (weeds) identified in rehabilitated areas is no greater than comparable reference sites.
			Actions taken to eradicate plants declared under local or State legislation	Evidence to demonstrate that action has been taken to eradicate declared plants (weeds) under local or State legislation should they occur on the rehabilitated site.
			Abundance of declared animals identified through surveys	Certification by an appropriately qualified person that the abundance of declared animals identified in rehabilitated areas is no greater than comparable reference sites.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Mine Infrastructure Area (cont)	Sustainable land-use (cont)	Self-sustaining natural vegetation or habitat (cont)	Actions taken to control animals declared under local or State legislation	Evidence to demonstrate that action has been taken to control declared animals under local or State legislation should they occur on the rehabilitated site.
			Weed hygiene procedures	Records indicating that appropriate weed and seed hygiene procedures were implemented during revegetation.
		Agricultural grazing	Livestock stocking rates	An appropriately qualified person has predicted and defined the economics/benefits and these have been agreed with relevant stakeholders.
			Landform stability when grazed	Land maintenance requirements are comparable to comparable reference sites.
			Stock access to water sources	Stock has access as presently available to water that meets accepted livestock drinking water guidelines.
Out-of-pit Waste Storage Areas	Long term safety	Structurally safe with no hazardous materials	Safety assessment of landform stability	Certification by an appropriately qualified person in the Rehabilitation Report that highwalls and slopes are now safe and exhibit characteristics for long term stability.
				A risk assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.
				Final landform meets the design maximum slope angle requirements of 30 <sup>0</sup> for spoil material.
			Exposure to and availability of heavy metals and other toxic materials	Certification by an appropriately qualified person that the Rehabilitation Report includes predictions about future changes and that the specified cover thickness is in place.
				Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Out-of-pit Waste Storage Areas (cont)				the environmental authority.
			Results of site contaminated land investigation report	Evidence in the Rehabilitation Report that protective measures required in the site contaminated land investigation report have been implemented.
		Site is safe for humans and animals now and in the foreseeable future	Safety assessment of landform stability (geotechnical studies)	An appropriately qualified person certifies the long term geotechnical stability of the residual slopes and evidence of this is documented in the Rehabilitation Report.
			Installation of safety barriers and human/wildlife exclusion fencing of opencut voids	If required, mitigation measures documented in a Safety Plan, e.g. fencing and other suitable barrier around the opencut voids and slopes, are installed to restrict access
			Adequacy and predicted long term performance of safety barriers	Evidence in the Rehabilitation Report that a safety risk assessment of the opencut voids and slopes has been completed and proposed mitigation measures are documented in a Safety Plan.
	Non-polluting	Mine affected water contained on site.	Downstream surface water quality	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
			Receiving water quality	Receiving water affected by surface water run-off has contaminated limits in accordance with the environmental authority.
			Groundwater quality	Certification by an appropriately qualified person that groundwater quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Out-of-pit Waste Storage Areas (cont)</b>	Non-polluting (cont)	Acid mine drainage will not cause serious environmental harm	Technical design and construction of spoil dumps and rejects emplacement cells	Certification by an appropriately qualified person in the Rehabilitation Report that spoil dump covers and rejects emplacement cells are constructed in accordance with the design recommendations in the final wasterock geochemical assessment report
		Removal of potential sources of contamination	Results of site contaminated land investigation report	Evidence in the Rehabilitation Report that measures required in site contaminated land investigation reports have been implemented.
	Stable landform	Landform design achieves appropriate erosion rates	Slope angle and length	Evidence in the Rehabilitation Report that the rehabilitated slopes have been contoured to the specifications of maximum 30° for spoil material.
			Engineered structures to control water flow	Evidence in the Rehabilitation Report that any required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and functioning.
			Dimensions and frequency of occurrence of erosion rills and gullies.	Evidence in the Rehabilitation Report that the dimensions and frequency of occurrence of erosion rills and gullies are no greater than that at comparable local or regional reference sites.
		Vegetation cover sufficient for a self-sustaining community and to minimise erosion	Vegetation type and density	Evidence that the vegetation types and densities are of similar species to comparable reference sites and are suited to the rehabilitated sites' characteristics including soil type, topography, and climate and that soil erosion meets the goals as set in these criteria.
			Foliage cover	Minimum of 70% groundcover is present (50% if rocks, logs or other features are present), with no bare surfaces >20m <sup>2</sup> in area or >10m in length down slope.
	Sustainable land-use	Soil properties support the desired land-use	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of	Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land-use and are consistent with the following:

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Out-of-pit Waste Storage Areas (cont)</b>	Sustainable land-use (cont)		topsoil support the proposed vegetation and land-use	<ul style="list-style-type: none"> <li>soil salinity content is &lt; 0.6dS/m;</li> <li>soil pH is between 5.0 and 8.5;</li> <li>soil exchange sodium percentage (ESP) is &lt;15%;</li> <li>nutrient accumulation and recycling processes are occurring as evidenced by the presence of a litter layer, mycorrhizae and/or microsymbionts; and</li> <li>adequate macro and micro nutrients are present.</li> </ul>
			Physical properties of topsoil support the proposed vegetation and land-use	<p>Certification in the Rehabilitation Report that the topsoil physical properties (e.g. rockiness, depth of soil, wetness and plant available water capacity) are adequate for plant growth.</p> <p>Certification in the Rehabilitation Report of the topsoil's suitability to support the current land-use (cattle grazing) in accordance with the Department of Minerals and Energy (DME) 1995 <i>Land Suitability Assessment Techniques in Technical Guidelines for Environmental Management of Exploration and Mining</i>.</p>
			Topsoil thickness	Certification in the Rehabilitation Report that the topsoil has been respread according to the depths specified in the topsoil management plan
			Site soil characteristics	Certification in the Rehabilitation Report that the site's soil characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition as defined in the <i>Australian Soil and Land Survey Field Handbook</i> (National Committee on Soil and Terrain 2009).
		Establish self-sustaining natural vegetation or habitat	Presence of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site occur on the rehabilitation site. The presence of key plant species may also be guided by future vegetation trials for rehabilitation.
			Density of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site is similar to the rehabilitation site. The density of key plant species may also



Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Out-of-pit Waste Storage Areas (cont)</b>	Sustainable land-use (cont)	Establish self-sustaining natural vegetation or habitat (cont)		be guided by future vegetation trials for rehabilitation.
			Structure of vegetation habitat	Certification by an appropriately qualified person that the structure of vegetation (i.e. groundcover, shrub and canopy structure) on the rehabilitation site is trending towards being similar to a comparable reference site.
		Self-sustaining natural vegetation or habitat	Native fauna species	Certification by an appropriately qualified person that the native fauna species identified in the pre-mining baseline studies and the reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.
			Plant regeneration	Certification by an appropriately qualified person that plants in rehabilitated areas show evidence of flowering, seed setting and seed germination.
			Abundance of declared plants (weeds) identified through surveys	Certification by an appropriately qualified person that the abundance of declared plants (weeds) identified in rehabilitated areas is no greater than comparable reference sites.
			Actions taken to eradicate plants declared under local or State legislation	Evidence to demonstrate that action has been taken to eradicate declared plants (weeds) under local or State legislation should they occur on the rehabilitated site.
			Abundance of declared animals identified through surveys	Certification by an appropriately qualified person that the abundance of declared animals identified in rehabilitated areas is no greater than comparable reference sites.
			Actions taken to control animals declared under local or State legislation	Evidence to demonstrate that action has been taken to control declared animals under local or State legislation should they occur on the rehabilitated site.
			Weed hygiene procedures	Records indicating that appropriate weed and seed hygiene procedures were implemented during revegetation.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
		Agricultural grazing	Livestock stocking rates	An appropriately qualified person has predicted and defined the economics/benefits and these have been agreed with relevant stakeholders.
			Landform stability when grazed	Land maintenance requirements are comparable to comparable reference sites.
			Stock access to water sources	Stock has access as presently available to water that meets accepted livestock drinking water guidelines.
Water Storage Areas	Long term safety	Structurally safe with no hazardous materials	Safety assessment of landform stability	Certification by an appropriately qualified person in the Rehabilitation Report that highwalls and slopes are now safe and exhibit characteristics for long term stability.
				A risk assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.
			Exposure to and availability of heavy metals and other toxic materials	Certification by an appropriately qualified person that the Rehabilitation Report includes predictions about future changes and that the specified cover thickness is in place.
				Evidence in the Rehabilitation Report that monitoring results for dust and particulate matter indicates compliance with the limits in the environmental authority.
			Results of site contaminated land investigation report	Evidence in the Rehabilitation Report that protective measures required in the site contaminated land investigation report have been implemented.
		Site is safe for humans and animals now and in	Appropriate decommissioning of	Certification by an appropriately qualified person in the Rehabilitation Report that the site infrastructure has been

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Water Storage Areas (cont)		the foreseeable future	infrastructure	decommissioned and rehabilitated. Water storages(s) have been drained, filled in and capped unless stakeholders have entered into formal agreements for their retention. Access to the area is conducive of the intended purpose of post-mining land use.
	Non-polluting	Mine affected water contained on site.	Downstream surface water quality	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
			Receiving water quality	Receiving water affected by surface water run-off has contaminated limits in accordance with the environmental authority.
			Groundwater quality	Certification by an appropriately qualified person that groundwater quality at monitoring locations is not negatively impacted when trends indicated by results from baseline monitoring and the 5 years previous to mine closure are compared to monitoring results for the rehabilitated landform.
		Hazardous materials adequately managed	Exposure to and availability of heavy metals and other toxic materials	Certification by an appropriately qualified person in the Rehabilitation Report that includes predictions about future changes and that the specified cover thickness is in place.
		Removal of potential sources of contamination	Results of site contaminated land investigation report	Evidence in the Rehabilitation Report that measures required in site contaminated land investigation reports have been implemented.
	Stable landform	Landform design achieves appropriate erosion rates	Slope angle and length	Evidence in the Rehabilitation Report that the rehabilitated slopes have been contoured to meet the maximum design specifications of <30°.
			Engineered structures to control water flow	Evidence in the Rehabilitation Report that any required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Water Storage Areas (cont)	Stable landform (cont)			functioning.
			Rates of soil loss	Certification by an appropriately qualified person that land disturbed by mining activities does not exhibit any signs of continued erosion greater than that exhibited at a comparable local or regional reference site. The comparable reference site must have similar chemical and physical characteristics, including slope, as the rehabilitated landform.
		Vegetation cover sufficient for a self-sustaining community and to minimise erosion	Vegetation type and density	Evidence that the vegetation types and densities are of similar species to comparable reference sites and are suited to the rehabilitated sites' characteristics including soil type, topography, and climate and that soil erosion meets the goals as set in these criteria.
			Foliage cover	Minimum of 70% groundcover is present (50% if rocks, logs or other features are present), with no bare surfaces >20m <sup>2</sup> in area.
		Run-off drainage lines mirror natural stream functions	Design and stability of run-off drainage lines	Documentation in the Rehabilitation Report how run-off drainage lines have changed over the life of mine and that they are stable at closure and likely to remain that way for the foreseeable future.
		Landform design achieves appropriate erosion rates	Engineered structures to control water flow	Evidence in the Rehabilitation Report that any required contour banks, channel linings, surface armour, engineered drop structures and other required measures are in place and functioning.
	Sustainable Land-use	Soil properties support the desired land-use	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of topsoil support the proposed vegetation and land-use	Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land-use and are consistent with the following: <ul style="list-style-type: none"> <li>• soil salinity content is &lt; 0.6dS/m;</li> <li>• soil pH is between 5.0 and 8.5;</li> <li>• soil exchange sodium percentage (ESP) is &lt;15%;</li> <li>• nutrient accumulation and recycling processes are</li> </ul>

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
Water Storage Areas (cont)	Sustainable Land-use (cont)			<p>occurring as evidenced by the presence of a litter layer, mycorrhizae and/or microsymbionts; and</p> <ul style="list-style-type: none"> <li>adequate macro and micro nutrients are present.</li> </ul>
			Physical properties of topsoil support the proposed vegetation and land-use	<p>Certification in the Rehabilitation Report that the topsoil physical properties (e.g. rockiness, depth of soil, wetness and plant available water capacity) are adequate for plant growth.</p> <p>Certification in the Rehabilitation Report of the topsoil's suitability to support the current land-use (cattle grazing) in accordance with the Department of Minerals and Energy (DME) 1995 <i>Land Suitability Assessment Techniques in Technical Guidelines for Environmental Management of Exploration and Mining</i>.</p>
			Topsoil thickness	Certification in the Rehabilitation Report that the topsoil has been respread according to the depths specified in the topsoil management plan
			Site soil characteristics	Certification in the Rehabilitation Report that the site's soil characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition as defined in the <i>Australian Soil and Land Survey Field Handbook</i> (National Committee on Soil and Terrain 2009).
	Establish self-sustaining natural vegetation or habitat		Presence of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site occur on the rehabilitation site. The presence of key plant species may also be guided by future vegetation trials for rehabilitation.
			Density of key plant species	Certification by an appropriately qualified person that key plant species identified in the comparable reference site is similar to the rehabilitation site. The density of key plant species may also be guided by future vegetation trials for rehabilitation.
			Structure of vegetation habitat	Certification by an appropriately qualified person that the structure of vegetation (i.e. groundcover, shrub and canopy

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
<b>Water Storage Areas (cont)</b>	Sustainable Land-use (cont)			structure) on the rehabilitation site is trending towards being similar to a comparable reference site.
		Self-sustaining natural vegetation or habitat	Native fauna species	Certification by an appropriately qualified person that the native fauna species identified in the pre-mining baseline studies and the reference site monitoring prior to the completion of rehabilitation are present or indicators of these species or habitat elements are developing within the rehabilitated areas.
			Plant regeneration	Certification by an appropriately qualified person that plants in rehabilitated areas show evidence of flowering, seed setting and seed germination.
			Abundance of declared plants (weeds) identified through surveys	Certification by an appropriately qualified person that the abundance of declared plants (weeds) identified in rehabilitated areas is no greater than comparable reference sites.
			Actions taken to eradicate plants declared under local or State legislation	Evidence to demonstrate that action has been taken to eradicate declared plants (weeds) under local or State legislation should they occur on the rehabilitated site.
			Abundance of declared animals identified through surveys	Certification by an appropriately qualified person that the abundance of declared animals identified in rehabilitated areas is no greater than comparable reference sites.
			Actions taken to control animals declared under local or State legislation	Evidence to demonstrate that action has been taken to control declared animals under local or State legislation should they occur on the rehabilitated site.
			Weed hygiene procedures	Records indicating that appropriate weed and seed hygiene procedures were implemented during revegetation.
		Agricultural grazing	Livestock stocking rates	An appropriately qualified person has predicted and defined the economics/benefits and these have been agreed with relevant stakeholders.

Mine Domain	Rehabilitation Goal	Rehabilitation Objectives	Rehabilitation Indicator	Completion Criteria
			Landform stability when grazed	Land maintenance requirements are comparable to comparable reference sites.
			Stock access to water sources	Stock has access as presently available to water that meets accepted livestock drinking water guidelines.

## **Contaminated Land**

- H3** Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.
- H4** Before applying for progressive rehabilitation certification for an area, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the area the subject of the application which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use under condition H1.
- H5** Minimise the potential for contamination of land by hazardous contaminants.

## **Biodiversity Offsets**

- H6** The holder of this environmental authority must provide an offset for impacts on applicable state significant biodiversity values, in accordance with Queensland Biodiversity Offset Policy. The biodiversity offset must be consistent with the requirements for an offset as identified in the Biodiversity Offset Strategy (as per condition H7) and must be provided:
- a) Prior to impacting on state significant biodiversity values; or
  - b) Where a land based offset is to be provided, within 12 months of the later of either of the following
    - i. The date of issue of this environmental authority; or
    - ii. The relevant stage identified in the Biodiversity Offset Strategy submitted under condition H7; or
  - c) Where an offset payment is to be provided, within 4 months of the later of either of the following
    - i. The date of issue of this environmental authority; or
    - ii. The relevant stage identified in the Biodiversity Offset Strategy submitted under conditions H7.
- H7** A Biodiversity Offset Strategy must be developed and submitted to the administering authority within either 30 days, or a lesser period agreed to by the administering authority, prior to impacting on the applicable state significant biodiversity values.



## 6.9 Schedule I - Regulated Structures

### Assessment of hazard category

- I1** The hazard category of any structure must be assessed by a suitably qualified and experienced person:
- a) in accordance with the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM365); and
  - b) in any of the following situations:
    - i. prior to the design and construction of the structure; or
    - ii. prior to any change in its purpose or the nature of its stored contents; and
    - iii. in accordance with the *Manual for assessing Hazard Categories and Hydraulic Performance of Dams*.
- I2** A hazard assessment report and certification must be prepared for any structure assessed and the report may include a hazard assessment for more than one structure.
- I3** The holder must, on receipt of a hazard assessment report and certification, provide to the administering authority one paper copy and one electronic copy of the hazard assessment report and certification.
- I4** Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*.
- I5** The holder must take reasonable and practical measures so that each dam associated with the mining activity is designed, constructed, operated and maintained in accordance with accepted engineering standards and is fit for the purpose for which it is intended.

### Design and construction of a regulated structure

- I6** All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*.
- I7** Construction of a regulated structure is prohibited unless the holder has:
- a) submitted a hazard category assessment report and certification to the administering authority;
  - b) commissioned a suitably qualified and experienced person to prepare a design plan for the structure; and
  - c) received the certification from a suitably qualified and experienced person for the design and design plan and the associated operating procedures in compliance with the relevant condition of this authority.
- I8** Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan, in the form set out in the *Manual for Assessing*

**I9** Regulated structures must:

- a) be designed and constructed in accordance with and conform to the requirements of the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*;
- b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of:
  - i) floodwaters from entering the regulated dam from any watercourse or drainage line; and
  - ii) wall failure due to erosion by floodwaters arising from any watercourse or drainage line.
- c) have the floor and sides of the dam designed and constructed to prevent or minimise the passage of the wetting front and any entrained contaminants through either the floor or sides of the dam during the operational life of the dam and for any period of decommissioning and rehabilitation of the dam.

**I10** The design plan for a regulated structure must include, but is not limited to:

- a) certification that the design plan:
  - i. is in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, including subsidiary certifications if necessary; and
  - ii. addresses the requirements in I10(b) to (i)
- b) a design report which provides:
  - i. a description of all the documents which constitute the design plan;
  - ii. a statement of:
    - the applicable standards including engineering criteria, industry guidelines, relevant legislation and regulatory documents, relied upon in preparing the design plan; and
    - all relevant facts and data used in preparing the design plan, including any efforts made to obtain necessary facts and data, and any limitations or assumptions to facts and data used in preparing the design plan;
    - the hazard category of the regulated structure; and
    - setting out the reasoning of the suitably qualified and experienced person who has certified the design plan, as to how the design plan provides the necessary required performance;
  - i. documentation of hydrological analyses and estimates required to determine all elements of the design including volumes and flow capacities;

- ii. detailed criteria for the design, operation, maintenance and decommissioning of the regulated structure, including any assumptions;
    - iii. design, specification and operational rules for any related structures and systems used to prevent failure scenarios;
  - c) drawings showing the lines and dimensions, and locations of built structures and land forms associated with the regulated structure;
  - d) consideration of the interaction of the pit design with the levee or regulated dam design;
  - e) a description of the containment system implemented.
  - f) An operational plan that includes:
    - i. normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA allowance);
    - ii. contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure;
  - g) a plan for the decommissioning and rehabilitation of the regulated **structure** at the end of its operational life;
  - h) details of reports on investigations and studies done in support of the design plan;
  - i) any other matter required by the suitably qualified and experienced person.
- I11** Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that:
- a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure;
  - b) **construction** of the regulated structure is in accordance with the design plan;
- I12** Where a regulated dam is to be managed as part of an integrated containment system and the DSA volume is to be shared across the integrated containment system, the design and operating rules for the system as a whole must be documented in a system design plan that is certified by a suitably qualified and experienced person.
- I13** The system design plan must contain:
- a) the design plans, and
  - b) the 'as constructed' plans, and
  - c) the operational rules for each individual regulated dam that forms part of the integrated system, and

- d) the standards of serviceability and accessibility of water transfer equipment or structures, and
- e) the operational rules for the system as a whole.

### **Operation of a regulated structure**

**I14** Operation of a regulated structure is prohibited unless:

- a) the holder has submitted to the administering authority:
  - i. one paper copy and one electronic copy of the 'design plan' and certification of the 'design plan' in accordance with condition ##, and
  - ii. a set of 'as constructed' drawings and specifications', and
  - iii. certification of those 'as constructed drawings and specifications' in accordance with condition ##, and
  - iv. where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan.
- b) the requirements of this authority relating to the construction of the regulated structure have been met; and
- c) Relevant details for the dams have been included in Schedule X Table 1 and Schedule X Table 2 of this authority.

**I15** Each regulated structure must be maintained and operated in a manner that is consistent with the current design plan, the current operational plan, and the associated certified 'as constructed' drawings for the duration of its operational life until decommissioned and rehabilitated.

**I16** The holder must take reasonable and practicable control measures to prevent the causing of harm to persons, livestock or wildlife through the construction and operation of a regulated structure. Reasonable and practicable control measures may include, but are not limited to:

- a) the secure use of fencing, bunding or screening; and
- b) escape arrangements for trapped livestock and fauna.

### **Mandatory reporting level**

**I17** The Mandatory Reporting Level (the MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.

**I18** The **holder** must, as soon as practical and within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.

**I19** The holder must, immediately on becoming aware that the MRL has been reached, act to

prevent the occurrence of any unauthorised discharge from the regulated dam.

### **Annual inspection report**

- I20** Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
- I21** At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed:
- a) against the most recent hazard assessment report and design plan (or system design plan);
  - b) against recommendations contained in previous annual inspections reports;
  - c) against recognised dam safety deficiency indicators;
  - d) for changes in circumstances potentially leading to a change in hazard category;
  - e) for conformance with the conditions of this authority;
  - f) for conformance with the 'as constructed' drawings;
  - g) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems);
  - h) for evidence of conformance with the current operational plan.
- I22** A suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and including recommended actions to ensure the integrity of the regulated structure.
- I23** The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*.
- I24** **The holder must:**
- a) upon receipt of the annual inspection report, consider the report and its recommendations and take action to ensure that the regulated structure will safely perform its intended function; and
  - b) within twenty (20) business days of receipt of the annual inspection report, notify the administering authority in writing, of the recommendations of the inspection report and the actions being taken to ensure the integrity of each regulated structure.
- I25** A copy of the annual inspection report must be provided to the administering authority upon request and within ten (10) business days.

### **Design storage allowance**



- I26** On 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the dam (or network of linked containment systems).
- I27** The holder must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.
- I28** The **holder** must, immediately on becoming aware that a regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.

#### **Performance review**

- I29** The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.
- I30** The holder must take action to modify its water management or linked containment system so as to ensure that the regulated dam or linked containment system will perform in accordance with the requirements of this authority, for the subsequent November to May period.

#### **Transfer arrangements**

- I31** The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, hazard assessment, design plan and other supporting documentation, to a new holder and the administering authority on transfer of this authority.

#### **Decommissioning and rehabilitation**

- I32** Prior to the cessation of the environmentally relevant activity, each regulated structure must be decommissioned such that:
- a) ongoing environmental harm is minimised by the regulated structure:
    - i. becoming a safe site for humans and animals at the completion of rehabilitation; or
    - ii. becoming a stable landform, that no longer contains flowable substances and minimises erosion impacts; or
    - iii. not allowing for acid mine drainage; or
    - iv. being approved or authorised under relevant legislation for a beneficial use; or
    - v. being a void authorised by the administering authority to remain after decommissioning; and
  - b) the regulated structure is compliant with all other relevant rehabilitation requirements of this authority.

## Regulated structures location and performance

- I33** Each regulated structure named in Column 1, of Table 6.15 must be wholly located within the control points noted in columns 2 and 3 of Table 6.15, below, for that **structure**.

**Table 6.15 Location of Regulated structures**

Column 1 Name of Regulated Structure	Column 2 Northing (GDA94)	Column 3 Easting (GDA94)	Column 4 Unique Location ID Levees Only
Mine Water Dam (MWD)	tbd tbd tbd	tbd tbd tbd	tbd tbd tbd
Coal Preparation Plant Water Recycle Dam (CPPWRD)	tbd tbd tbd	tbd tbd tbd	tbd tbd tbd

*tbd – to be determined following detailed final design*

- I34** Each regulated dam named in column 1 of Table 6.16, must be consistent with the details noted in columns 2 through to and including 7 of Table 6.16, below, for that **dam**.

**Table 6.16 Basic Details of Regulated Dams**

Column 1 Name of Regulated Structure	Column 2 Hazard Category	Column 3 Surface area of dam at spillway (ha)	Column 4 Max. volume of dam at spillway (m3)	Column 5 Max. depth of dam at spillway (m)	Column 6 Spillway Level (mAHD)	Column 7 Use of dam
Mine Water Dam (MWD)	High	tbd	tbd	tbd	tbd	tbd
Coal Preparation Plant Water Recycle Dam (CPPWRD)	High	tbd	tbd	tbd	tbd	tbd

*tbd – to be determined following detailed final design*

- I35** Each regulated dam named in column 1 of Table 6.15, must meet the hydraulic performance criteria noted in columns 2 through to and including 4 of Table 6.17, below, for that dam.

**Table 6.17 Hydraulic Performance of Regulated Dams**

<b>Column 1</b> <b>Name of Regulated Dam</b>	<b>Column 2</b> <b>Spillway Capacity AEP</b>	<b>Column 3</b> <b>Design Storage Allowance AEP</b>	<b>Column 4</b> <b>Mandatory Reporting Level AEP</b>
Mine Water Dam (MWD)	1:1000 (minimum)*	1:100	1:100, 72 hour
Coal Preparation Plant Water Recycle Dam (CPPWRD)	1:1000 (minimum)*	1:100	1:100, 72 hour

*Note: \* Will be designed in accordance to the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures – Version 4, November, 2013.*



## 6.10 Schedule K – Figures

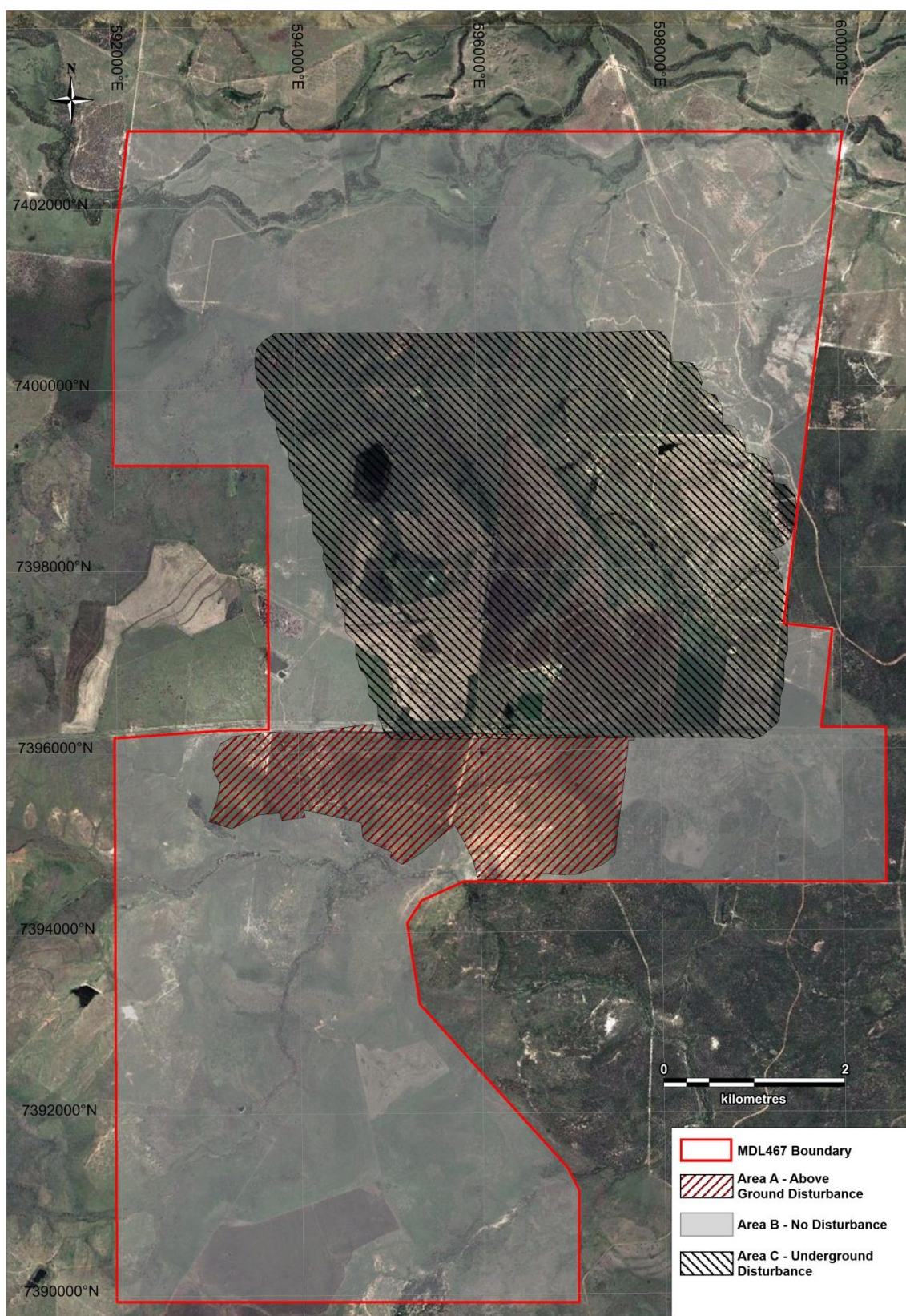


Figure 6.1 K1 - Conceptual Project Infrastructure Layout



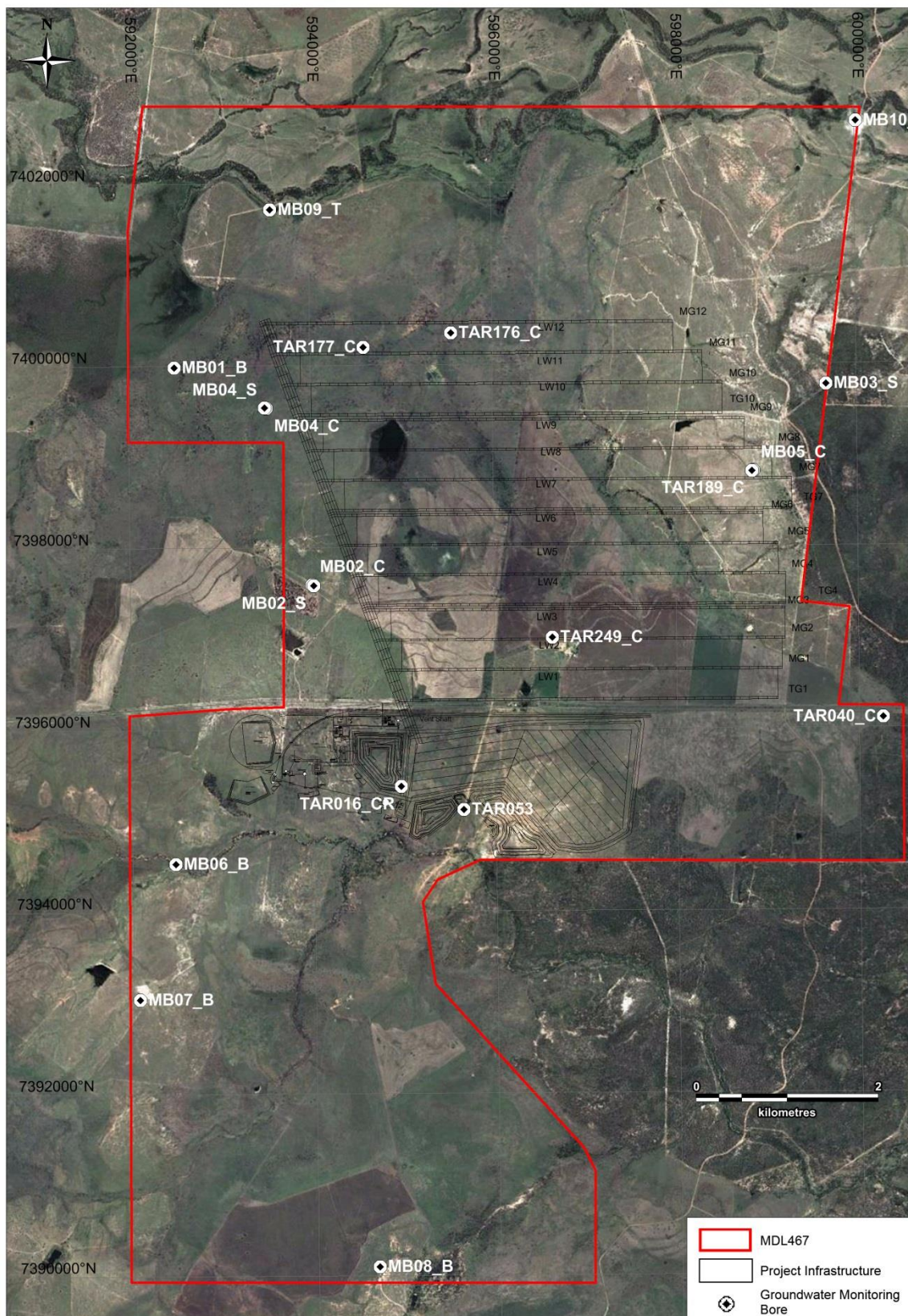


Figure 6.2 K2 - Groundwater Monitoring Points



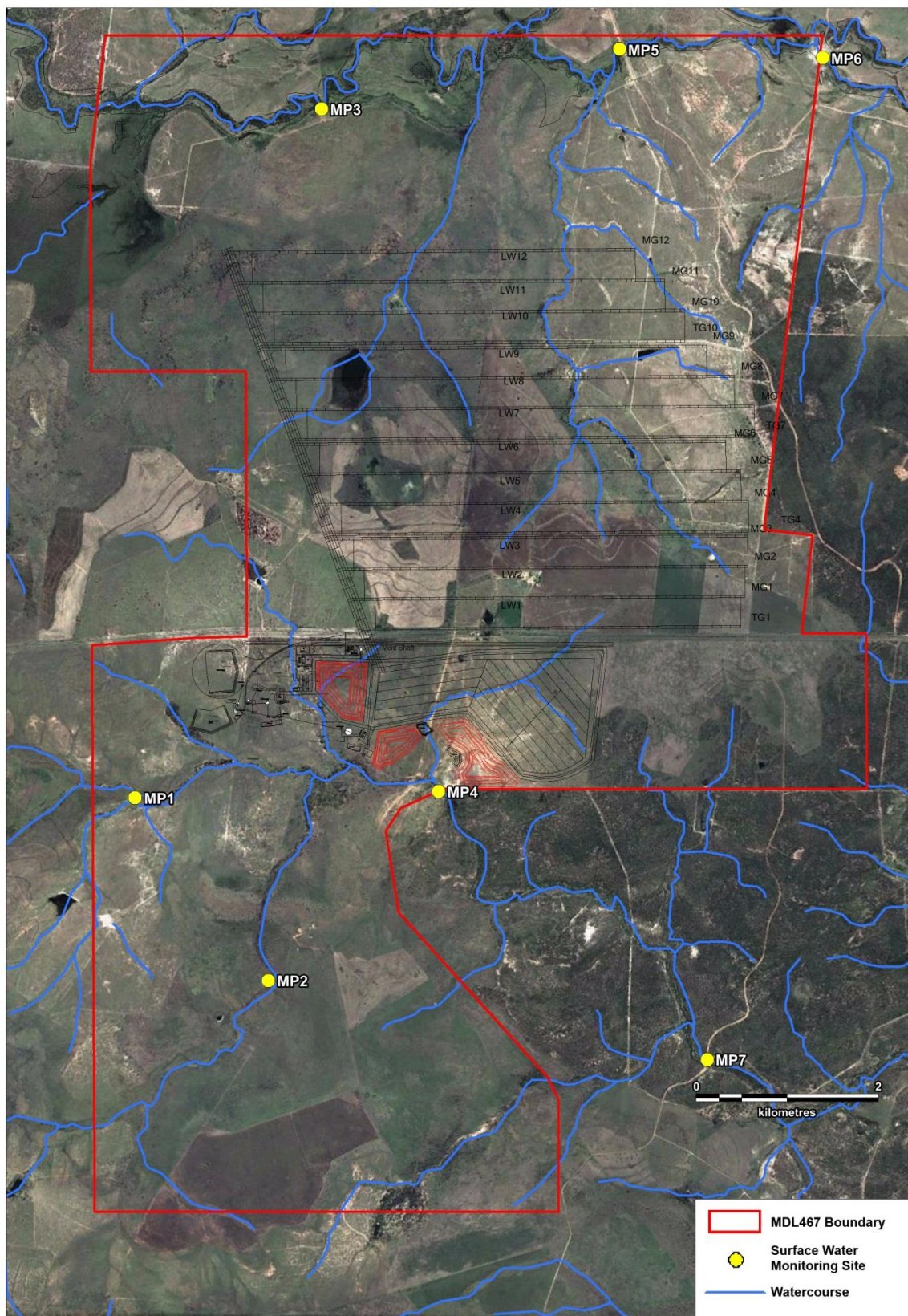


Figure 6.3 K3 - Receiving Water Monitoring Points



