PEMBROKE

Olive Downs Coking Coal Project

Additional Information to the Environmental Impact Statement

Appendix B

Proposed Environmental Authority Conditions

PROPOSED ENVIRONMENTAL AUTHORITY CONDITIONS

This section presents the proposed EA conditions for the Project.

The conditions are generally consistent with the *Model Mining Conditions* (Version 6.02), *Model water conditions for coal mines in the Fitzroy basin* (version 3.01) or the guideline *Structures which are dams and levees constructed as part of environmentally relevant activities* (version 8.01).

Department interest: General	
Condition number	**Condition**
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: a) may occur in the areas marked 'A'; and b) must not occur in the areas marked 'B' in the map that is **Figure 1 – Schedule 1** to this environmental authority.
A3	The holder of this environmental authority must: c) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority; d) maintain such measures, plant and equipment in a proper and efficient condition; e) operate such measures, plant and equipment in a proper and efficient manner; and f) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.
A4	**Monitoring** Except where specified otherwise in another condition of this authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than **five (5) years**.
A5	**Financial assurance** 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.
A6	The amount of financial assurance must be reviewed by the holder of this environmental authority when a plan of operations (or subsequent document required under regulation) is amended or replaced or the authority is amended.
A7	**Risk management** 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 (ISO 31000:2009), or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management, prior to the commencement of mining activities.

Department interest: General	
A8	**Notification of emergencies, incidents and exceptions** The holder of this environmental authority must notify the administering authority by written notification within **twenty four (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.
A9	Within **ten (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.
A10	**Complaints** The holder of this environmental authority must record all environmental complaints received about the mining activities including: a) name, address and contact number 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.
A11	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 **ten (10) business days** of completion of the investigation, or no later than **ten (10) business days** after the end of the timeframe nominated by the administering authority to undertake the investigation.
A12	**Third-party reporting** The holder of this environmental authority must: a) within **one (1) year** of the commencement of this authority, obtain from a suitably qualified and experienced third party a report on compliance with the conditions of this environmental authority; b) obtain further such reports at regular intervals not exceeding **three (3) years** from the completion of the report referred to above; and c) provide each report to the administering authority within **90 days** of its completion.

Department interest: General	
A13	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 **two (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 referred to in **Condition J28** 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.

Department interest: Air	
Condition number	**Condition**
B1	**Dust nuisance** The environmental authority holder 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 **one (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_{10}) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the most recent version of either: i) *Australian Standard AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 high volume sampler with size-selective inlet – Gravimetric method*, or ii) *Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 low volume sampler—Gravimetric method*. c) A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres ($PM_{2.5}$) suspended in the atmosphere of 25 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*. 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*.

Department interest: Air	
B2	When requested by the administering authority or as a result of a complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer), dust and particulate monitoring (including dust deposition, total suspended particles (TSP), PM_{10} and $PM_{2.5}$) must be undertaken, and the results thereof notified to the administering authority within **fourteen (14) days** following completion of monitoring. This includes providing interim reports if the monitoring lasts for more than one month. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place. Monitoring must be conducted in accordance with the appropriate standards.
B3	If the monitoring which is carried out in accordance with **Condition B2** indicates an exceedance of the relevant limits in **Condition B1**, then the environmental authority holder must investigate whether the exceedance is due to emissions from the activity. If the mining activity is found to be the cause of the exceedance then the environmental authority holder must: a) address the complaint including the use of appropriate dispute resolution if required; and b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.
B4	The environmental authority holder must notify the administering authority within **seven (7) days** of an exceedance of the relevant limits in **Condition B1**.

Department interest: Waste management	
Condition number	**Condition**
C1	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, waste must not be burnt.
C2	The holder of this environmental authority may burn vegetation cleared in the course of carrying out extraction activities provided the activity does not cause environmental harm at any sensitive place or commercial place.
C3	Tailings must be managed in accordance with procedures contained within the current Plan of Operations (or subsequent documents required under regulation). These procedures must include provisions for: a) containment of tailings; b) the management of seepage and leachates both during operation and the foreseeable future; c) the control of fugitive emissions to air; d) a program of progressive sampling and characterisation to identify acid producing potential and metal concentrations of tailings; e) maintaining records of the relative locations of any other waste stored within the tailings; f) rehabilitation strategy; and g) monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of tailings, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover.

Department interest: Waste management	
C4	A Mineral Waste Management Plan must be developed by a suitably qualified and experienced person and implemented prior to the commencement of mining activities.
C5	The Mineral Waste Management Plan must include, where relevant, at least: a) effective characterisation of the waste rock and spoil to predict under the proposed placement and disposal strategy the quality of runoff and seepage generated concerning potentially environmentally significant effects including salinity, acidity, alkalinity and dissolved metals, metalloids and non-metallic inorganic substances; b) a program of progressive sampling and characterisation to identify dispersive and non-dispersive spoil and the salinity, acid and alkali producing potential and metal concentrations of waste rock; c) a materials balance and disposal plan demonstrating how potentially acid forming and acid forming waste rock will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; d) where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming waste rock; e) how often the performance of the plan will be assessed; and f) the indicators or other criteria on which the performance of the plan will be assessed. g) rehabilitation strategy.

Department interest: Noise	
Condition number	**Condition**
D1	The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in **Table D1: Noise limits** to be exceeded at a sensitive place or commercial place.
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 D2: Blasting noise limits** to be exceeded at a sensitive place or commercial place.
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 $_{LpLIN,T}$ 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 50% of all blasts undertaken on this site in each month at the nearest sensitive place; and

Department interest: Noise	
	b) all blasts conducted during any time period specified by the administering authority at the nearest and most affected sensitive place(s) or commercial place(s) or another such place to investigate an allegation of environmental nuisance caused by blasting.

Table D1: Noise limits

Sensitive Place						
Noise level dB(A) measured as:	**Monday to Saturday**			**Sunday and Public Holidays**		
	7am – 6pm	**6pm – 10pm**	**10pm – 7am**	**9am – 6pm**	**6pm – 10pm**	**10pm – 9am**
$L_{Aeq, adj, 15 mins}$	35	35	35	35	35	35

NOTE

a) "$L_{Aeq\ adj,15}$" means the equivalent continuous A-weighted sound pressure level, adjusted for noise character, measured in the presence of the noise under investigation over a time period of 15 minutes, using Fast response.

Table D2: Blasting noise limits

Blasting noise limits	**Sensitive or commercial place blasting noise limits**	
	7am to 6pm	**6pm to 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 is allowed during these times
Ground vibration peak particle velocity	5mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	No blasting is allowed during these times

Department interest: Groundwater	
Condition number	**Condition**
E1	The holder of this environmental authority must not release contaminants to groundwater.
E2	The holder of this environmental authority must develop and implement a groundwater monitoring program for **stage 1 mining operations** prior to the commencement of **stage 1 mining operations**. The program must be able to detect a change in groundwater quality values (consistent with the current suitability of the groundwater for agricultural use) due to activities that are part of this mining activity. All determinations of groundwater monitoring must be performed by an appropriately qualified person.
E3	The holder of this environmental authority must develop and implement a groundwater monitoring program for **stage 2 and later mining operations** at least twelve (12) months prior to the commencement of **operations at the Willunga domain**. The program must be able to detect a change in groundwater quality values (consistent with the current suitability of the groundwater for agricultural use) due to activities that are part of this mining activity. All determinations of groundwater monitoring must be performed by an appropriately qualified person. Bores included in the groundwater monitoring program for **stage 2 and later mining operations** must be installed at least twelve (12) months prior to the commencement of **operations at the Willunga domain.**

Department interest: Groundwater	
E4	Bores referred to in **Table E1 - Groundwater Monitoring Locations and Frequency - Stage 1 Mining Operations and Table E3 - Groundwater Level Monitoring- Stage 1 Mining Operations**, must be installed within 12 months from the commencement of **stage 1 mining operations**.
E5	Groundwater quality and levels must be monitored at the locations and frequencies defined in **Table E1 – Groundwater monitoring locations and frequency, Schedule 1– Figure 2 (Groundwater Bore Monitoring Locations),** for quality characteristics identified in **Table E2 – Groundwater Quality Triggers and Limits.** Results and analysis of groundwater monitoring must be submitted to the administering authority via WaTERS with each annual return.
E6	Groundwater levels when measured at the monitoring locations and frequency specified in **Table E3 - Groundwater Level Monitoring – Stage 1 Mining Operations** must not exceed the groundwater level trigger change thresholds specified in **Table E3 - Groundwater Level Monitoring – Stage 1 Mining Operations**. Results and analysis of groundwater monitoring must be submitted to the administering authority via WaTERS with each annual return.
E7	In the event that groundwater fluctuations in excess of groundwater level trigger change thresholds specified in **Table E3 - Groundwater Level Monitoring – Stage 1 Mining Operations** are detected, an investigation must be undertaken an investigation must be undertaken within 14 days of detection to determine if the fluctuations are a result of: a) mining activities; b) pumping from licensed bores; or c) seasonal variation.
E8	In the event that groundwater fluctuations are a result of mining activities the environmental authority holder must meet the notification requirement of **Condition A9** of this environmental authority.
E9	For quality characteristics of groundwater from compliance bores identified in **Table E1 - Groundwater Monitoring Locations and Frequency,** if the median (50th percentile) concentration from the most recent (8) consecutive samples from a compliance bore exceed any of the contaminant trigger levels stated in **Table E2 - Groundwater Quality Triggers and Limits**, the holder of this environmental authority must: a) Notify the administering authority via WaTERS within fourteen (14) days of receiving the analysis results. b) Compare the compliance monitoring bore results for the relevant quality characteristic(s) to the reference bore dataset and other relevant data. c) Complete an investigation in accordance with ANZECC and ARMCANZ 2000. The exceedance investigation under condition must be completed and submitted to the administering authority via WaTERS within **three (3) months** of notifying the administering authority.

Department interest: Groundwater	
E10	The reference datasets, as referred to in **Schedule E** of this environmental authority, are to consist of at least **eight (8)** values collected over a minimum of at least one year: a) Prior to the commencement of mining operations; or b) Routine monitoring data determined by an appropriately qualified person to not be impacted by the operation. Routine monitoring data for a compliance bore collected after the start of mining operations may be transferred to is baseline dataset after **eight (8)** monitoring events have demonstrated no trigger level exceedance and no trending in the dataset has been identified.
E11	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.

Table E1
Groundwater Monitoring Locations and Frequency - Stage 1 Mining Operations

Monitoring Point	Location		Surface RL (m AHD)[1]	Monitoring Frequency
	Easting	Northing		
Reference Bores[2]				
GW22	640193*	7547639*	182.00	Q
GW23	646895*	7537007*	169.09	D/Q
GW24	648450*	7533805*	166.00	D/Q
GW25	640345*	7540008*	185.97	D/Q
GW26	639307*	7538727*	192.71	D/Q
GW27	639465*	7535303*	178.00	D/Q
GW28	642729*	7533536*	172.01	D/Q
RN158484	648152	7524058	160.00	D/Q
GW01s	642481	7547491	180.65	D/Q
GW02s	641152	7546517	179.11	D/Q
GW02d	641141	7546507	179.11	D/Q
GW04	643388	7544973	178.23	D/Q
GW06s	639329	7542005	191.77	D/Q
GW08s	645312	7539839	172.27	D/Q
GW12s	641504	7532788	175.84	D/Q
S11	642455	7545332	178.45	D/Q
S8	642340	7546343	177.84	D/Q
S4	641567	7546845	178.85	D/Q
S5	642239	7547332	179.26	D/Q
S2	641386	7547617	176.97	D/Q
GW01d (VWP1, VWP2, VWP3, VWP4)	642479	7547491	181.58	D
GW06d (VWP1, VWP2, VWP3, VWP4)	639334	7542008	192.86	D
GW08d (VWP1, VWP2, VWP3, VWP4)	645312	7539846	172.18	D
GW12d (VWP1, VWP2, VWP3, VWP4)	641495	7532795	176.89	D
Bore 8[3]	640186	7547990	188.00	Q
Swamp Bore[3]	645595	7528661	171.00	Q
RN122458 (Rolfies #2)[3]	644971	7526779	174.00	Q

Table E1 (Continued)
Groundwater Monitoring Locations and Frequency - Stage 1 Mining Operations

Monitoring Point	Location		Surface RL (m AHD)[1]	Monitoring Frequency
	Easting	Northing		
RN122458 (Rolfies #1)[3]	644973	7526776	172.00	Q
Compliance Bores				
GW22	640193*	7547639*	182.00	Q
GW23	646895*	7537007*	169.09	D/Q
GW24	648450*	7533805*	166.00	D/Q
GW26	639307*	7538727*	192.71	D/Q
GW27	639465*	7535303*	178.00	D/Q
GW01s	642481	7547491	180.65	D/Q
GW21s	661590	7521656	162.07	D/Q
GW21d	661585	7521655	162.09	D/Q
GW01d (VWP1, VWP2, VWP3, VWP4)	642479	7547491	181.58	D
GW06d (VWP1, VWP2, VWP3, VWP4)	639334	7542008	192.86	D
GW12d (VWP1, VWP2, VWP3, VWP4)	641495	7532795	176.89	D
Bore 8[3]	640186	7547990	188.00	Q
Swamp Bore[3]	645595	7528661	171.00	Q
RN122458 (Rolfies #2)[3]	644971	7526779	174.00	Q
RN122458 (Rolfies #1)[3]	644973	7526776	172.00	Q

Refer to **Schedule 1 Figure 2** for monitoring locations.

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

* Approximate location only, to be confirmed.

1. RL must be measured to the nearest 5cm from the top of the bore casing.
2. 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 (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.
3. Subject to landholder access.

D = Daily monitoring frequency using automatic logger.

Q = Quarterly monitoring frequency (i.e. dipped and sampled).

D/Q = Daily monitoring frequency using automatic logger and manually dipped and sampled on a quarterly basis.

Table E2
Groundwater Quality Triggers and Limits - Stage 1 Mining Operations

Parameter	Contaminant Triggers[1]	Limit Type
pH	7.40-8.03 / 7.1-8.10 (Deep /Shallow) (temporary) [2] 20th percentile of reference (minimum) [3] 80th percentile of reference (maximum) [3]	Range. The median pH value of the most recent eight samples should be within trigger level range.
Electrical Conductivity	16,000 / 8,910 (Deep /Shallow) [4] OR 80th percentile of reference [3], whichever is higher	Maximum. A trigger for further investigation will be deemed to have occurred when the median (50th percentile) concentration from the most recent eight (8) consecutive samples from a compliance bore exceed the contaminant trigger level.
Aluminium	80th percentile of reference [3] OR 5 mg/L [5], whichever is higher.	
Arsenic	80th percentile of reference [3] OR 0.5 mg/L [5], whichever is higher.	
Boron	80th percentile of reference [3] OR 5 mg/L [5], whichever is higher.	
Cadmium	80th percentile of reference [3] OR 0.01 mg/L [5], whichever is higher.	

Table E2 (Continued)
Groundwater Quality Triggers and Limits - Stage 1 Mining Operations

Parameter	Contaminant Triggers[1]	Limit Type
Chromium	80th percentile of reference [3] OR 1 mg/L [5], whichever is higher.	Maximum. A trigger for further investigation will be deemed to have occurred when the median (50th percentile) concentration from the most recent eight (8) consecutive samples from a compliance bore exceed the contaminant trigger level.
Copper	80th percentile of reference[2] OR 1 mg/L [5], whichever is higher	
Mercury	80th percentile of reference [3] OR 0.002 mg/L [5], whichever is higher.	
Lead	80th percentile of reference [3] OR 0.1 mg/L [5], whichever is higher.	
Molybdenum	80th percentile of reference [3] OR 0.05 mg/L [5], whichever is higher.	
Nickel	80th percentile of reference [3] OR 1 mg/L [5], whichever is higher.	
Selenium	80th percentile of reference [3] OR 0.02 mg/L [5], whichever is higher.	
Uranium	80th percentile of reference [3] OR 0.2 mg/L [5], whichever is higher.	
Zinc	80th percentile of reference[3] OR 0.317 mg/L/ 0.060 mg/L (shallow/deep)[4], whichever is higher	

1. Triggers will be developed for each main hydrogeological unit.
2. Until sufficient baseline data is available, Fitzroy Plan Water Quality Objectives for Zone 34 (deep and shallow groundwater – 80th percentile values) (DEHP 2011) will be used temporarily as trigger values where available. [Department of Environment and Heritage Protection, 2011. Isaac River Sub-basin Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of the Isaac River Sub-basin (including Connors River). State of Queensland, 2011.]
3. Trigger values derived from estimates of 20th and 80th percentiles based on DSITI (2017) *Using monitoring data to assess groundwater quality and potential environmental impacts*. Version 1. Department of Science, Information Technology and Innovation. Trigger values derived from estimates of 20th or 80th percentiles at a reference site based on a minimum of 18 samples using Department of Environment and Heritage Protection (2009) *Queensland Water Quality Guidelines* methodology (Section 4.3.3). An interim trigger value can be derived from estimates of 20th or 80th percentiles at a reference site based on > 8 but <17 samples using Department of Environment and Heritage Protection (2009) *Queensland Water Quality Guidelines* methodology (Section 4.3.3).
4. Isaac River Sub-basin Quality Objectives for Zone 34 (deep and shallow groundwater – 80th percentile values) (DEHP 2011). [Department of Environment and Heritage Protection, 2011. Isaac River Sub-basin Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of the Isaac River Sub-basin (including Connors River). State of Queensland, 2011.]
5. Water quality trigger values (low risk) for heavy metals and metalloids in livestock drinking water (ANZECC 2000).
6. 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 (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
7. All metals and metalloids must be measured as total (unfiltered) and dissolved (<0.45 µm filtered). Contaminant limits for metals and metalloids are only considered to be exceeded if the results for dissolved metal or metalloid exceed the trigger level or contaminant limit.
8. The quality characteristics and/or trigger levels in Table E2 may be reviewed 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 E2 by amendment.

Table E3
Groundwater Level Monitoring- Stage 1 Mining Operations

Monitoring Points	Location		Level Trigger Threshold[1]
	Easting	Northing	
GW22	640193*	7547639*	> 2 metres per year beyond baseline data ranges
GW23	646895*	7537007*	> 2 metres per year beyond baseline data ranges
GW24	648450*	7533805*	> 2 metres per year beyond baseline data ranges
GW26	639307*	7538727*	> 2 metres per year beyond baseline data ranges
GW27	639465*	7535303*	> 2 metres per year beyond baseline data ranges
GW29	661474*	7529571*	> 2 metres per year beyond baseline data ranges
GW31	656306*	7524283*	> 2 metres per year beyond baseline data ranges
GW32	656588*	7528729*	> 2 metres per year beyond baseline data ranges
GW01s	642481	7547491	> 2 metres per year beyond baseline data ranges
GW21s	661590	7521656	> 2 metres per year beyond baseline data ranges
GW21d	661585	7521655	> 2 metres per year beyond baseline data ranges
GW01d (VWP1, VWP2, VWP3, VWP4)	642479	7547491	> 2 metres per year beyond baseline data ranges
GW06d (VWP1, VWP2, VWP3, VWP4)	639334	7542008	> 2 metres per year beyond baseline data ranges
GW12d (VWP1, VWP2, VWP3, VWP4)	641495	7532795	> 2 metres per year beyond baseline data ranges
Bore 8[2]	640186	7547990	> 2 metres per year beyond baseline data ranges
RN97181 (Pisscutter)[2]	656325	7523641	> 2 metres per year beyond baseline data ranges
Swamp Bore[2]	645595	7528661	> 2 metres per year beyond baseline data ranges
RN122458 (Rolfies #2)[2]	644971	7526779	> 2 metres per year beyond baseline data ranges
RN122458 (Rolfies #1)[2]	644973	7526776	> 2 metres per year beyond baseline data ranges

Refer to Figure 2 for monitoring locations.

1. Site specific trigger levels would be established once 12 to 24 months of data has been collected from the site monitoring network.
2. Subject to landholder access.

Department interest: Water	
Condition number	**Condition**
F1	**Contaminant release** 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 F1: Mine affected water release points, sources and receiving waters – Stage 1 mining Operations.** The holder of this environmental authority must advise the administering authority of mine affected water release points, sources and receiving waters at least twelve (12) months prior to the commencement of releasing mine affected water from locations other than those listed in **Table F1: Mine affected water release points, sources and receiving waters – Stage 1 mining Operations.**

Table F1
Mine Affected Water Release Points, Sources and Receiving Waters – Stage 1 Mining Operations

Release Point [1]	Easting (GDA94 – Zone 55)	Northing (GDA94 – Zone 55)	Mine Affected Water Source and Location	Monitoring Point	Receiving Waters Description
RP1	642233	7546564	P9	Pipe Outlet	Isaac River
RP2	643461	7543378	P20	Pipe Outlet	Isaac River

1. Release points for mine affected water source locations P33, P46 and WROM will be provided at least 12 months prior to release from those locations.

Department interest: Water	
F3	The release of mine affected water to internal water management infrastructure installed and operated in accordance with a water management plan that complies with **Conditions F27** is permitted.
F4	The release of mine affected water to waters in accordance with **Condition F2** must not exceed the release limits stated in **Table F2: Mine affected water release limits** when measured at the monitoring points specified in **Table F1: Mine affected water release points, sources and receiving waters** for each quality characteristic.

Table F2
Mine Affected Water Release Limits

Quality Characteristic	Release Limits[1]	Monitoring Frequency
Electrical conductivity (µS/cm)	Release limits specified in **Table F4: Mine Affected Water Release during Flow Events** during flow events for variable flow criteria.	Daily during release (the first sample must be taken within two hours of commencement of release).
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within two hours of commencement of release).
Turbidity (NTU)	Mine waters released must not exceed background level	Daily during release (first sample within two hours of commencement of release)

Department interest: Water	
F5	The release of mine affected water to waters from the release points must be monitored at the locations specified in **Table F1: Mine affected water release points, sources and receiving waters** for each quality characteristics and at the frequency specified in **Table F2: Mine affected water release limits** and **Table F3: Release contaminant trigger investigation levels**. ***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 F3
Release Contaminant Trigger Investigation Levels, Potential Contaminants

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	55	For aquatic ecosystem protection, based on SMD guideline	Commencement of release and thereafter weekly during release.
Arsenic	13	For aquatic ecosystem protection, based on SMD guideline	
Cadmium	0.2	For aquatic ecosystem protection, based on SMD guideline	
Chromium	1	For aquatic ecosystem protection, based on SMD guideline	
Copper	2	For aquatic ecosystem protection, based on LOR for ICPMS	
Iron	300	For aquatic ecosystem protection, based on low reliability guideline	
Lead	4	For aquatic ecosystem protection, based on SMD guideline	
Mercury	0.2	For aquatic ecosystem protection, based on LOR for ICPMS	
Nickel	11	For aquatic ecosystem protection, based on SMD guideline	
Zinc	8	For aquatic ecosystem protection, based on SMD guideline	
Boron	370	For aquatic ecosystem protection, based on SMD guideline	
Cobalt	90	For aquatic ecosystem protection, based on low reliability guideline	
Manganese	1900	For aquatic ecosystem protection, based on SMD guideline	
Molybdenum	34	For aquatic ecosystem protection, based on low reliability guideline	
Selenium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Silver	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Uranium	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Vanadium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Ammonia	900	For aquatic ecosystem protection, based on SMD guideline	
Nitrate	1100	For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN	
Petroleum Hydrocarbon (C_6 – C_9)	20		
Petroleum Hydrocarbon (C_{10} – C_{36})	100		
Fluoride (total)	2000	Protection of livestock and short-term irrigation guideline	

1. All metals and metalloids must be measured as total (unfiltered) and dissolved (<0.45 µm filtered). Contaminant limits for metals and metalloids are only considered to be exceeded if the results for dissolved metal or metalloid exceed the trigger level.
2. The quality characteristics required to be monitored as per **Table F3 - Release Contaminant Trigger Investigation Levels, Potential Contaminants** 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 F3 - Release contaminant trigger investigation levels, potential contaminants** by amendment.
3. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC & ARMCANZ (2000).
4. LOR (limit of reporting) – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.

Department interest: Water	
F6	If quality characteristics of the release exceed any of the trigger levels specified in **Table F3: Release contaminant trigger investigation levels**, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in **Table F3: Release contaminant trigger investigation levels** and: 1) where the trigger values are not exceeded then no action is to be taken; or 2) where the downstream results exceed the trigger values specified **Table F3: Release contaminant trigger investigation levels** for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and; a) if the result is less than the background monitoring site data, then no action is to be taken; or b) if the result is greater than the background monitoring site data, complete an investigation 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* ***Condition 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 via WaTERS within **fourteen (14) days** of receiving the result.
F8	**Mine affected water release events** The holder must ensure a stream flow gauging station(s) is installed, operated and maintained to determine and record stream flows at the locations specified in specified in **Table F4: 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 during periods of natural flow events in accordance with the receiving water flow criteria for discharge specified in **Table F4: Mine affected water release during flow events** for the release point(s) specified in **Table F1: 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 F4: Mine affected water release during flow events** when measured at the monitoring points specified in **Table F1: Mine affected water release points, sources and receiving waters**.

Table F4
Mine Affected Water Release during Flow Events– Stage 1 Mining Operations

Receiving Water	Release Points (RP) [1]	Gauging Station	Gauging Station Easting (GDA94 – Zone 55)	Gauging Station Northing (GDA94 – Zone 55)	Receiving water flow recording frequency	Receiving water flow criteria for discharge (m^3/s)	Maximum release rate (for all combined RP flows)	Electrical conductivity release limits
Isaac River	RP1 RP2	130410A Isaac River at Deverill	639282	7548368	Continuous (minimum daily)	Medium Flow after natural flow events that exceed 4 m^3/s	0.5 m^3/s	1,000 µS/cm SO_4^{2-} mg/L TBD [2]
						Medium Flow after natural flow events that exceed 10 m^3/s	1.0 m^3/s	1,200 µS/cm SO_4^{2-} mg/L TBD [2]
						High Flow after natural flow events that exceed 50 m^3/s	2.0 m^3/s	4,000 µS/cm SO_4^{2-} mg/L TBD [2]
						High Flow after natural flow events that exceed 100 m^3/s	3.0 m^3/s	6,000 µS/cm SO_4^{2-} mg/L TBD [2]
						Very High Flow after natural flow events that exceed 300 m^3/s	5.0 m^3/s	10,000 µS/cm SO_4^{2-} mg/L TBD [2]

1. Release points for mine affected water locations P33, P46 and WROM will be included in Table F4 at least 12 months prior to release from those locations.
2. Limit to be determined prior to the commencement of releasing mine affected water from locations listed in Table F1: Mine affected water release points, sources and receiving waters – Stage 1 mining Operations, based on achieving downstream target level of 770 mg/L (maximum) (for 95% species protection (source: Dunlop, J. Hobbs, D. Mann, R. Nanjappa, V., Smith, R. Vardy, S. and Vink S. (2011), *ACARP Report C18033 Development of Ecosystem Protection Trigger Values for Sodium Sulfate in Seasonally Flowing Streams of the Fitzroy River Basin.*)

Department interest: Water	
F11	The daily quantity of mine affected water released from each release point must be measured and recorded.
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.
F13	**Notification of release event** The environmental authority holder must notify the administering authority as soon as practicable and no later than **twenty four (24) hours,** via WaTERS**,** 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.*
F14	The environmental authority holder must notify the administering authority, via WaTERS, 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 **twenty eight (28) days** provide the following information in writing: a) release cessation date/time; b) natural flow volume in receiving water; c) volume of water released; d) details regarding the compliance of the release with the conditions of this 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 **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 C**onditions F13** and **F14**, provided the relevant details of the release are included within the notification provided in accordance with **Conditions F13** and **F14**.*
F15	**Notification of release event exceedance** If the release limits defined in **Table F2: Mine affected water release limits** when measured at the monitoring points' are exceeded, the holder of the environmental authority must notify the administering authority, via WaTERS, within **twenty four (24) hours** of receiving the results.

Department interest: Water	
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, via WaTERS, 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.
F17	**Receiving Environment Monitoring and Contaminant Trigger Levels** The quality of the receiving waters must be monitored at the locations specified in **Table F6 - Receiving Water Upstream Background Sites and Downstream Monitoring Points** for each quality characteristic and at the monitoring frequency stated in **Table F5 - Receiving Waters Contaminant Trigger Levels**.

Table F5
Receiving Waters Contaminant Trigger Levels

Quality Characteristic	Trigger Level	Monitoring Frequency
pH (pH units)	6.5 – 9.0	Daily during the release
Electrical Conductivity (µS/cm)	1,000	
Total Suspended Solids (mg/L)	TBD [1]	
Sulphate (SO_4^{2-}) (mg/L)	770 [2]	

1. Limit to be determined prior to the commencement of releasing mine affected water from locations listed in **Table F1: Mine affected water release points, sources and receiving waters – Stage 1 Mining Operations**.
2. For 95% species protection (source: Dunlop, J. Hobbs, D. Mann, R. Nanjappa, V., Smith, R. Vardy, S. and Vink S. (2011), *ACARP Report C18033 Development of Ecosystem Protection Trigger Values for Sodium Sulfate in Seasonally Flowing Streams of the Fitzroy River Basin*.)

Table F6
Receiving Water Upstream Background Sites and Downstream Monitoring Points - Stage 1 Mining Operations

Monitoring points[1]	Receiving waters location description	Easting (GDA94 – Zone 55)	Northing (GDA94 – Zone 55)
Upstream background monitoring points			
Monitoring point at Gauge No. 130410A 'Deverill', Isaac River	Isaac River - upstream of RP1 and RP2.	642393	7547244
Downstream monitoring points			
TBD[2]	Isaac River - downstream of RP1 and RP2, upstream of Boomerang Creek confluence.	TBD	TBD

1. Receiving water upstream background sites and downstream monitoring points, for release points for mine affected water locations P33, P46 and WROM, will be included in Table F6 at least 12 months prior to release from those locations.
2. Monitoring location to be determined prior to the commencement of releasing mine affected water from locations listed in **Table F1: Mine affected water release points, sources and receiving waters – Stage 1 Mining Operations**.

Department interest: Water	
F18	If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in **Table F5 - Receiving Waters Contaminant Trigger Levels** during a release event the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and: 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: 1. details of the investigations carried out; and 2. actions taken to prevent environmental harm. *Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with F19 b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*
F19	All determinations of water quality monitoring must be performed by suitably experienced and qualified person.
F20	**Receiving environment monitoring program (REMP)** The environmental authority holder must develop and implement a REMP to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site. For the purposes of the REMP, the receiving environment is the waters of the Isaac River and connected or surrounding waterways within 1 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.

Department interest: Water	
F21	The REMP must: a) assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality); b) be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected; c) include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in Table F7); d) specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the Queensland Water Quality Guidelines 2009. This should include monitoring during periods of natural flow irrespective of mine or other discharges; e) include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in Table F6: Onsite water storage contaminant limits and Table F3: Release contaminant trigger investigation levels); f) include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.1 Guidance on Sampling of Bottom Sediments); g) include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology; h) apply procedures and/or guidelines from ANZECC and ARMCANZ 2000 and other relevant guideline documents; i) describe sampling and analysis methods and quality assurance and control; and j) incorporate stream flow and hydrological information in the interpretations of water quality and biological data.
F22	A REMP Design Document that addresses each criterion presented in **Conditions F20** and **F21** must be prepared and submitted to the administering authority no later than three (3) months after the date of issue of this environmental authority. Due consideration must be given to any comments made by the administering authority on the REMP Design Document and subsequent implementation of the program.
F23	A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with **Conditions F20** and **F21,** must be prepared annually within three (3) months of the environmental authority anniversary date and made available on request to the administrating authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.
F24	**Water reuse** 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 the consent of the third party).

Department interest: Water	
F25	**Annual Water Monitoring Reporting** The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format 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.
F26	**Temporary interference with waterways** Destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with Department of Natural Resources and Mine's *Guideline - Activities in a Watercourse, Lake or Spring Associated with Mining Activities*.
F27	**Water Management Plan** A Water Management Plan for stage 1 mining operations must be developed by an appropriately qualified person and implemented prior to the commencement of stage 1 mining operations. A Water Management Plan for stage 2 and later mining operations must be developed by an appropriately qualified person and implemented prior to the commencement of operations at the Willunga domain.
F28	**Stormwater and water sediment controls** An Erosion and Sediment Control Plan for stage 1 mining operations must be developed by an appropriately qualified person and implemented prior to the commencement of stage 1 mining operations, to minimise erosion and the release of sediment to receiving waters and contamination of stormwater. An Erosion and Sediment Control Plan for stage 2 and later mining operations must be developed by an appropriately qualified person and implemented prior to the commencement of operations at the Willunga domain, to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.
F29	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 F28**; and b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with **Conditions F27**, for the purpose of ensuring water does not become mine affected water.

Department Interest: Sewage treatment	
Condition number	**Condition**
G1	The only contaminant permitted to be released to land is treated sewage effluent in compliance with the release limits stated in **Table G1: Contaminant release limits to land**.

Table G1
Contaminant Release Limits to Land

Contaminant	Unit	Release Limit	Limit Type	Frequency
5 day Biochemical oxygen demand (BOD)	mg/L	20	Maximum	Monthly
Total suspended solids	mg/L	30	Maximum	Monthly
Nitrogen	mg/L	30	Maximum	Monthly
Phosphorus	mg/L	15	Maximum	Monthly
E-coli	Organisms/100ml	1000	Maximum	Monthly
pH	pH units	6.0 – 9.0	Range	Monthly

Department Interest: Sewage treatment	
G2	Treated sewage effluent may only be released to land in accordance with the conditions of this approval within the nominated area(s) identified in **Schedule 1 Figure 3** (sewage treatment plant and effluent disposal).
G3	The application of treated effluent to land must be carried out in a manner such that: a) vegetation is not damaged; b) there is no surface ponding of effluent; and c) 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 G1: 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 5.5 ha 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 *Environmental Protection Act 1994* whilst using the treated sewage effluent.

Department interest: Land and rehabilitation	
Condition number	**Condition**
H1	Land disturbed by mining must be rehabilitated in accordance with: a) **Table H1: Rehabilitation Requirements**, attached to this environmental authority; b) **Table H2: Rehabilitation Domains and Post-mining Land Use**; and c) The rehabilitation management plan required by **Condition H3**.
H2	Only the final voids shown in **Schedule 1 – Figure 1** are permitted.

Table H2
Rehabilitation Domains and
Post-mining Land Use

Rehabilitation Domain	**Post-mining Land Use**		
	Agriculture (Low Intensity Cattle Grazing)	Native Vegetation (Woodland)	Fauna Habitat
Waste Rock Emplacements	✓	✓	
Final Voids			✓
Infrastructure Areas	✓	✓	
Water Management Infrastructure	✓	✓	
ILF Cells	✓		
Ripstone Creek Diversion		✓	

Department interest: Land and rehabilitation	
H3	**Rehabilitation Management Plan** The holder of this environmental authority must develop, implement and submit to the administering authority a Rehabilitation Management Plan within three (3) years from commencement of commercial coal production. The Rehabilitation Management Plan for all areas disturbed by the authorised mining activities must be developed by an appropriately qualified person and include, at a minimum, the following: a) a map of existing areas of rehabilitation including classification and status of rehabilitation; b) a strategy and schedule for the progressive rehabilitation of all disturbance during the life of mine; c) a strategy for successfully achieving rehabilitation requirements of this environmental authority; d) details of the objectives and success criteria for rehabilitation of each mining domain to achieve rehabilitation outcomes listed in **Table H1: Rehabilitation Requirements** and the post-mining land uses listed in **Table H2: Rehabilitation Domains and Post-mining Land Use**; e) details of landform design to achieve rehabilitation outcomes listed **Table H1: Rehabilitation Requirements** including end of mine design and schematic representation of final landform inclusive of: i. drainage design and features; ii. slope designs; iii. cover design; iv. erosion controls proposed on reformed land; f) details of how landform design will be consistent with surrounding topography; g) details of how the final land uses will align with local planning scheme requirements; h) specify the spoil characteristics, soil analysis and soil separation for use on rehabilitation; i) specify the topsoil requirements for the site and how topsoil will be managed for use in rehabilitation; j) details of any topsoil deficit and how any deficit will be managed for successful rehabilitation; k) details of rehabilitation methods to be applied to each domain; l) describe the monitoring of reference sites inclusive of identification of at least **three (3)** reference sites for each mine domain for use in rehabilitation monitoring; m) description of rehabilitation indicators and how these will be monitored; n) description of management actions to address unsuccessful rehabilitation or redesign; o) description of wastewater collection and reticulation and treatment systems; p) description of any risks to groundwater and how these will be managed; and q) description of seepage and leachate management considerations, including the prevention and management of acid mine drainage.

Department interest: Land and rehabilitation	
H4	An interim Rehabilitation Management Plan must be prepared and submitted to the administering authority for consideration prior to commencement of significant construction work for Stage 1 mining operations and must include rehabilitation goals, rehabilitation objectives, indicators and measurable completion criteria, for each agreed post mining land use within each domain in **Table H2 - Rehabilitation Domains and Post-mining Land Use**, that enables determination of rehabilitation success. The plan must also address, as far as practicable, those other matters listed in **Condition H3**. The holder of this environmental authority must review and update the interim Rehabilitation Management Plan yearly thereafter until the final Rehabilitation Management Plan required in accordance with **Condition H3** is developed, implemented and submitted to the administering authority
H5	Rehabilitation must commence progressively in accordance with the: a) Rehabilitation Management Plan; and b) the Plan of Operations (or subsequent document required under regulation).
H6	**Contaminated land** Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the *Environmental Protection Act 1994*, 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.
H7	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**.
H8	Minimise the potential for contamination of land by hazardous contaminants.
H9	**Impacts to Prescribed Environmental Matters** Significant residual impacts to prescribed environmental matters are not authorised under this environmental authority or the *Environmental Offsets Act 2014* unless the impact(s) is specified in **Table H3 - Significant residual impacts to prescribed environmental matters**.

Table H3
Significant Residual Impacts to Prescribed Environmental Matters

Matters of State Environmental Significance			Stage 1 Impact (ha)	Significant Residual Impacts Likely?
Regulated Vegetation	'Endangered' or 'of concern' regional ecosystems*; or	RE 11.3.1	2	Yes
		RE 11.4.8	1	Yes
		RE 11.4.9[A]	2.5	Yes
		RE 11.5.17	5	Yes
		RE 11.3.2	21.5	Yes
		RE 11.3.3	0	Yes
		RE 11.3.4	1	No
	Regional ecosystems within mapped vegetation management wetlands		7	Yes
	Regional ecosystems within the defined distance of a vegetation management watercourse		6	Yes
Connectivity Areas			830.5	Yes
Wetlands and Watercourses			9.5	Yes
Designated Precinct in a Strategic Environmental Area			0	No
Protected Wildlife Habitat*	Ornamental Snake[#]		506	Yes
	Australian Painted Snipe[#]		21	Yes
	Squatter Pigeon (southern) [#]		823	Yes
	Koala[#]		826.5	Yes
	Greater Glider[#]		826.5	Yes
Protected Areas			0	No
Highly Protected Zones of State Marine Parks			0	No
Fish Habitat Areas			0	No
Waterways Providing for Fish Passage			0	No
Marine Plants			0	No
Legally Secured Offset Areas			0	No

[A] 13 ha of this community is mapped as the Brigalow TEC under the EPBC Act

[#] This species is also listed under the EPBC Act.

* The REs and species habitats overlap (i.e. the REs and habitats are not mutually exclusive).

Department interest: Land and rehabilitation	
H10	Records demonstrating that each impact to a prescribed environmental matter not listed in **Table H3 - Significant residual impacts to prescribed environmental matters** did not, or is not likely to, result in a significant residual impact to that matter must be: a) completed by an appropriately qualified person; and b) kept for the life of the environmental authority.
H11	An environmental offset made in accordance with the *Environmental Offsets Act 2014* and Queensland Environmental Offsets Policy, as amended from time to time, must be undertaken for the maximum extent of impact to each prescribed environmental matter authorised in **Table H3 - Significant residual impacts to prescribed environmental matters**, unless a lesser extent of the impact has been approved in accordance with **condition H12**.

Department interest: Land and rehabilitation	
H12	The significant residual impacts to a prescribed environmental matter authorised in **Condition H9** for which an environmental offset is required by **Condition H11** may be carried out in stages. An environmental offset can be delivered for each stage of the impacts to prescribed environmental matters.
H13	Prior to the commencement of each stage, a report completed by an appropriately qualified person, that includes an analysis of the following must be provided to the administering authority: a) for the forthcoming stage—the estimated significant residual impacts to each prescribed environmental matter; and b) for the previous stage, if applicable—the actual significant residual impacts to each prescribed environmental matter, to date.
H14	The report required by **Condition H13** must be approved by the administering authority before a notice of election for the forthcoming stage, if applicable, is given to the administering authority.
H15	A notice of election for the staged environmental offset referred to in **Condition H14**, if applicable, must be provided to the administering authority no less than three months before the proposed commencement of that stage, unless a lesser timeframe has been agreed to by the administering authority.
H16	Within six months from the completion of the final stage of the project, a report completed by an appropriately qualified person, that includes the following matters must be provided to the administering authority: a) an analysis of the actual impacts on prescribed environmental matters resulting from the final stage; and b) if applicable, a notice of election to address any outstanding offset debits for the authorised impacts.

Department interest: Watercourse diversions	
I1	**Permanent Watercourse Diversions** Permanent watercourse diversions must be designed and constructed to: a) incorporate natural features (including geomorphic and vegetation) present at the location of the diversion; b) maintain the pre-existing hydrologic characteristics of surface water and groundwater systems for the area in which the watercourse diversion is located; c) maintain the hydraulic characteristics of the permanent watercourse diversion that are equivalent to other local watercourses and are suitable for the area in which the diversion is located without using artificial structures that require on-going maintenance; d) maintain sediment transport and water quality regimes that allow the diversion to be self-sustaining, while minimising any impacts to upstream and downstream water quality, geomorphology or vegetation; e) maintain equilibrium and functionality in all substrate conditions at the location of the diversion; f) allow the free passage of fish both upstream and downstream in a safe manner.
I2	**Design Plan – All Diversions** A certified Design Plan that achieves **Condition I1** for permanent watercourse diversions must be submitted to the administering authority at least 10 business days before commencing construction of the diversion.
I3	The certified design plan for any temporary or permanent watercourse diversion must be consistent with the functional design/s that formed a part of the application documents for this authority.
I4	**Construction and Operation – All Diversions** A certified set of 'as constructed' drawings and specifications must be submitted to the administering authority within 60 business days from the completion of construction of the temporary or permanent watercourse diversion, or re-establishment of the pre-existing watercourse. These drawings and specifications must state: a) that the 'as constructed' drawings and specifications meet the original intent of the design plan for the watercourse diversion; and b) construction of the watercourse diversion is in accordance with the design plan.
I5	**Register – All diversions** The details of watercourse diversions planned and constructed under an environmental authority must be accurately recorded on the Register of Watercourse Diversions kept by the holder of the authority. An electronic copy must be provided to the administering authority on request.

Department interest: Regulated structures	
Condition number	**Condition**
J1	**Assessment of Consequence Category** The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*,at the following times: a) prior to the design and construction of the structure, if it is not an existing structure; or b) prior to any change in its purpose or the nature of its stored contents.
J2	A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.
J3	Certification must be provided by the suitably experienced and qualified person who undertook the assessment, in the form set out in the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*.
J4	**Design and construction of a regulated structure** All regulated structures must be designed by, and constructed under the supervision of, a suitably experienced and qualified person in accordance with the requirements of the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*.
J5	Construction of a regulated structure is prohibited unless: a) the holder has submitted a consequence category assessment report and certification to the administering authority; and b) certification for the design, design plan and the associated operating procedures has been certified by a suitably experienced and qualified person in compliance with the relevant condition of this authority.
J6	Certification must be provided by the suitably experienced and qualified person who oversees the preparation of the design plan in the form set out in the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*, and must be recorded in the Register of Regulated Structures.
J7	Regulated structures must: a) be designed and constructed in compliance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*; and 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.

Department interest: Regulated structures	
J8	Certification by the suitably qualified experienced and qualified person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that: 1) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure; and 2) construction of the regulated structure is in accordance with the design plan.
J9	All affected persons must be provided with a copy of the emergency action plan in place for each regulated structure: a) for existing structures that are regulated structures, within 10 business days of this condition taking effect; b) prior to the operation of the new regulated structure; and c) if the emergency action plan is amended, within 5 business days of it being amended.
J10	**Operation of a regulated structure** Operation of a regulated structure, except for an existing structure, is prohibited unless the holder has submitted to the administering authority in respect of regulated structure, all of the following: a) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with **Condition J4**; b) a set of 'as constructed' drawings and specifications; c) certification of the 'as constructed drawings and specifications' in accordance with **Condition J6**; d) 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; e) the requirements of this authority relating to the construction of the regulated structure have been met; f) the holder has entered the details required under this authority, into a Register of Regulated Structures; and g) there is a current operational plan for the regulated structure.
J11	Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in compliance with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.
J12	**Mandatory reporting level** **Conditions J13** to **J16** inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
J13	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.
J14	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.
J15	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.

Department interest: Regulated structures	
J16	The holder must record any changes to the MRL in the Register of Regulated Structures.
J17	**Design storage allowance** 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.
J18	By **1 November** of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the dam (or network of linked containment systems).
J19	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.
J20	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.
J21	**Annual inspection report** Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
J22	At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably experienced and qualified person must prepare an annual inspection report containing details of the assessment and include a recommendations section, with any recommended actions to ensure the integrity of the regulated structure or a positive statement that no recommendations are required.
J23	The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*.
J24	The holder must within 20 business days of receipt of the annual inspection report, provide to the administering authority: a) the recommendations section of the annual inspection report; b) if applicable, any actions being taken in response to those recommendations; and c) if, following receipt of the recommendations and (if applicable) recommended actions, the administering authority requests a copy of the annual inspection report from the holder, provide this to the administering authority within 10 business days of receipt of the request.
J25	The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.

Department interest: Regulated structures	
J26	**Decommissioning and rehabilitation** Regulated structures must not be abandoned but be either: a) decommissioned and rehabilitated to achieve compliance with **Condition J27**; or b) be left in-situ for a use by the landholder provided that: (i) it no longer contains contaminants that will migrate into the environment; and (ii) it contains water of a quality that is demonstrated to be suitable for its intended use(s). c) the holder of the environmental authority and the landholder agree in writing that the; (i) dam will be used by the landholder following the cessation of the environmentally relevant activity(ies); and (ii) landholder is responsible for the dam, on and from an agreed date.
J27	Before surrendering this environmental authority the site must be rehabilitated to achieve the rehabilitation requirements in **Table H1 - Rehabilitation Requirements**.
J28	**Register of Regulated Structures** A Register of Regulated Structures must be established and maintained by the holder for each regulated structure:
J29	The holder must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated dam is submitted to the administering authority.
J30	The holder must make a final entry of the required information in the Register of Regulated Structures once compliance with **Condition J10** has been achieved.
J31	The holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
J32	All entries in the Register of Regulated Structures must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.
J33	The holder must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Structures, in the electronic format required by the administering authority.

END OF CONDITIONS

Definitions

Words and phrases used throughout this environmental authority are defined below. Where a definition for a term used in this environmental authority is not provided within this environmental authority, but is provided in the *EP Act 1994* or subordinate legislation, the definition in the EP Act or subordinate legislation must be used.

'acid mine drainage' means any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata are disturbed and exposed to oxygen and moisture.

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

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

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

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

a) against recommendations contained in previous annual inspections reports;

b) against recognised dam safety deficiency indicators;

c) for changes in circumstances potentially leading to a change in consequence category;

d) for conformance with the conditions of this authority;

e) for conformance with the 'as constructed' drawings;

f) for the adequacy of the available storage in each regulated dam, based on an actual 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);

g) for evidence of conformance with the current operational plan.

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

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

a) exactly what has been assessed and the precise nature of that determination;

b) the relevant legislative, regulatory and technical criteria on which the assessment has been based;

c) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and

d) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

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

a) operations of any kind and all things constructed, erected or installed for that dam; and

b) any land used for those operations.

'authority' means an environmental authority or a development approval.

'background', with reference to the water schedule means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.

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

a) rock, coal and other minerals for later recovery; or

b) structural components or other items to facilitate removal from a site or for reuse.

'certification' means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by this Manual, including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).

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

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

b) the relevant legislative, regulatory and technical criteria on which the certification has been based;

c) the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and

d) the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

'chemical' means:

a) an agricultural chemical product or veterinary chemical product within the meaning of the Agricultural and Veterinary Chemicals Code Act 1994 (Commonwealth); or

b) a dangerous good under the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council; or

c) a lead hazardous substance within the meaning of the Workplace Health and Safety Regulation 1997;

d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth; or

e) any substance used as, or intended for use as:

   i. a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or

   ii. a surface active agent, including, for example, soap or related detergent; or

   iii. a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or

   iv. a fertiliser for agricultural, horticultural or garden use; or

   v. a substance used for, or intended for use for mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or

vi. manufacture of plastic or synthetic rubber.

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

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

'consequence category' means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635).

'construction' or **'constructed'** in relation to a regulated structure includes building a new regulated structure and lifting or otherwise modifying an existing regulated structure, but does not include investigations and testing necessary for the purpose of preparing a design plan.

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

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

'design plan' is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.

'design storage allowance or **DSA'** means an available volume, estimated in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635) published by the administering authority, must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that Manual.

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

'disturbance' of land includes:

a) compacting, removing, covering, exposing or stockpiling of earth;

b) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion;

c) carrying out mining within a watercourse, waterway, wetland or lake;

d) the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls;

e) temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after the mining activity has ceased; or

f) releasing of contaminants into the soil, or underlying geological strata.

However, the following areas are not included when calculating areas of 'disturbance':

a) areas off lease (e.g. roads or tracks which provide access to the mining lease);

b) areas previously disturbed which have achieved the rehabilitation outcomes;

c) by agreement with the administering authority, areas previously disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);

d) areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner; or

e) disturbance that pre-existed the grant of the tenure.

'effluent' treated waste water released from sewage treatment plants.

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

'existing structure' means a structure that prior to 18 September 2014 meets any or both of the following, a structure:

a) with a design that is in accordance with the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams and that is considerably in progress;

b) that is under considerable construction or that is constructed.

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

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

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

'holder' means:

a) where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or

b) where this document is a development approval, any person who is the registered operator for that development approval.

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

'infrastructure' means water storage dams, levees,, roads and tracks, buildings and other structures built for the purpose of the mining activity.

'land' in 'Schedule H – Land and rehabilitation' of this document means land excluding waters and the atmosphere, that is, the term has a different meaning from the term as defined in the Environmental Protection Act 1994. For the purposes of the Acts Interpretation Act 1954, it is expressly noted that the term 'land' in this environmental authority relates to physical land and not to interests in land.

'land use' means the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

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

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

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

'm' means metres.

'mandatory reporting level or **MRL'** means a warning and reporting level determined in accordance with the criteria in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635) published by the administering authority.

'manual' means the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635) published by the administering authority.

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

'mine affected water':

a) means the following types of water:

   i) pit water, tailings dam water, processing plant water;

   ii) water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the Environmental Protection Regulation 2008 if it had not formed part of the mining activity;

   iii) rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage such runoff, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water;

   iv) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;

   v) groundwater from the mine's dewatering activities; vi) a mix of mine affected water (under any of paragraphs i)-v) and other water.

b) does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by mining activities that have not yet been completely rehabilitated, has only been in contact with:

   i) land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success; or

   ii) land that has partially been rehabilitated and monitoring demonstrates the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example:

      1. areas that are been capped and have monitoring data demonstrating hazardous material adequately contained with the site;

      2. evidence provided through monitoring that the relevant surface water would have met the water quality parameters for mine affected water release limits in this environmental authority, if those parameters had been applicable to the surface water runoff; or

iii) both.

'mining waste' means waste rock, spoil, overburden and interburden.

'modification or **modifying'** (see definition of 'construction').

'natural flow' means the flow of water through waters caused by nature.

'non polluting' means having no adverse impacts upon the receiving environment.

'operational plan' includes:

a) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA);

b) 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.

'operations at the Willunga domain' means removal and stockpiling of waste rock leading to the production of coal at the Willunga domain, coal production at the Willunga domain within pits and construction of out-of-pit waste rock emplacements in the Willunga domain.

'register of regulated structure' includes:

a) date of entry in the register;

b) name of the structure, its purpose and intended/actual contents;

c) the consequence category of the dam as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635);

d) dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam;

e) name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;

f) for the regulated dam, other than in relation to any levees –

   i) the dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;

   ii) coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area;

   iii) dam crest volume (megalitres);

   iv) spillway crest level (metres AHD).

   v) maximum operating level (metres AHD); vi) storage rating table of stored volume versus level (metres AHD);

   vi) design storage allowance (megalitres) and associated level of the dam (metres AHD);

   vii) mandatory reporting level (metres AHD);

g) the design plan title and reference relevant to the dam;

h) the date construction was certified as compliant with the design plan;

i) the name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;

j) details of the composition and construction of any liner;

k) the system for the detection of any leakage through the floor and sides of the dam;

l) dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;

m) dates when recommendations and actions arising from the annual inspection were provided to the administering authority;

n) dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

'peak particle velocity (ppv)' means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mm/s). 'protected area' means – a protected area under the Nature Conservation Act 1992; or

a) a marine park under the Marine Parks Act 1992; or

b) a World Heritage Area.

'receiving environment' in relation to an activity that causes or may cause environmental harm, means the part of the environment to which the harm is, or may be, caused. The receiving environment includes (but is not limited to):

a) a watercourse;

b) groundwater; and

c) an area of land that is not specified in of this environmental authority.

The term does not include land that is specified in Authorised Activities of this environmental authority.

'receiving waters' means the waters into which this environmental authority authorises releases of mine affected water.

'regulated structure' means any structure in the significant or high consequence category as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635) published by the administering authority. A regulated structure does not include:

a) a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container;

b) a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities;

c) a flare pit.

'rehabilitation' the process of reshaping and revegetating land to restore it to a stable landform.

'release event' means a surface water discharge from mine affected water storages or contaminated areas on the licensed place meaning the mining activities carried out at the mining tenements detailed in Figure 1 – Site map, domains and groundwater monitoring locations of this environmental authority.

'residual drilling material' means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.

'RL' means reduced level, relative to mean sea level as distinct from depths to water.

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

'sensitive place' means:

a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or

b) a motel, hotel or hostel; or

c) an educational institution; or

d) a medical centre or hospital; or

e) a protected area under the Nature Conservation Act 1992, the Marine Parks Act 1992 or a World Heritage Area; or

f) a public park or gardens.

Note: The definition of 'sensitive place' and 'commercial place' is based on Schedule 1 of EPP Noise. That is, a sensitive place is inside or outside on a dwelling, library & educational institution, childcare or kindergarten, school or playground, hospital, surgery or other medical institution, commercial & retail activity, protected area or an area identified under a conservation plan under Nature Conservation Act 1992 as a critical habitat or an area of major interest, marine park under Marine Parks Act 2004, park or garden that is outside of the mining lease and open to the public for the use other than for sport or organised entertainment. A commercial place is inside or outside a commercial or retail activity.

A mining camp (i.e., accommodation and ancillary facilities for mine employees or contractors or both, associated with the mine the subject of the environmental authority) is not a sensitive place for that mine or mining project, whether or not the mining camp is located within a mining tenement that is part of the mining project the subject of the environmental authority. For example, the mining camp might be located on neighbouring land owned or leased by the same company as one of the holders of the environmental authority for the mining project, or a related company. Accommodation for mine employees or contractors is a sensitive place if the land is held by a mining company or related company, and if occupation is restricted to the employees, contractors and their families for the particular mine or mines which are held by the same company or a related company.

For example, a township (occupied by the mine employees, contractors and their families for multiple mines that are held by different companies) would be a sensitive place, even if part or all of the township is constructed on land owned by one or more of the companies.

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

'**stage 1 mining operations**' means removal and stockpiling of waste rock leading to the production of coal at the Olive Downs South domain, coal production at the Olive Downs South domain within pits ODS1, ODS2 and ODS3, construction of out-of-pit waste rock emplacements in the north of the Olive Downs South domain.

'structure' means dam or levee.

'suitably qualified and experienced person' in relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the Professional Engineers Act 2002, and has demonstrated competency and relevant experience:

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

b) for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments.

Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.

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

'the Act' means the Environmental Protection Act 1994.

'µS/cm' means micro siemens per centimetre.

'void' means any constructed, open excavation in the ground.

'watercourse' has the same meaning given in the Water Act 2000.

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

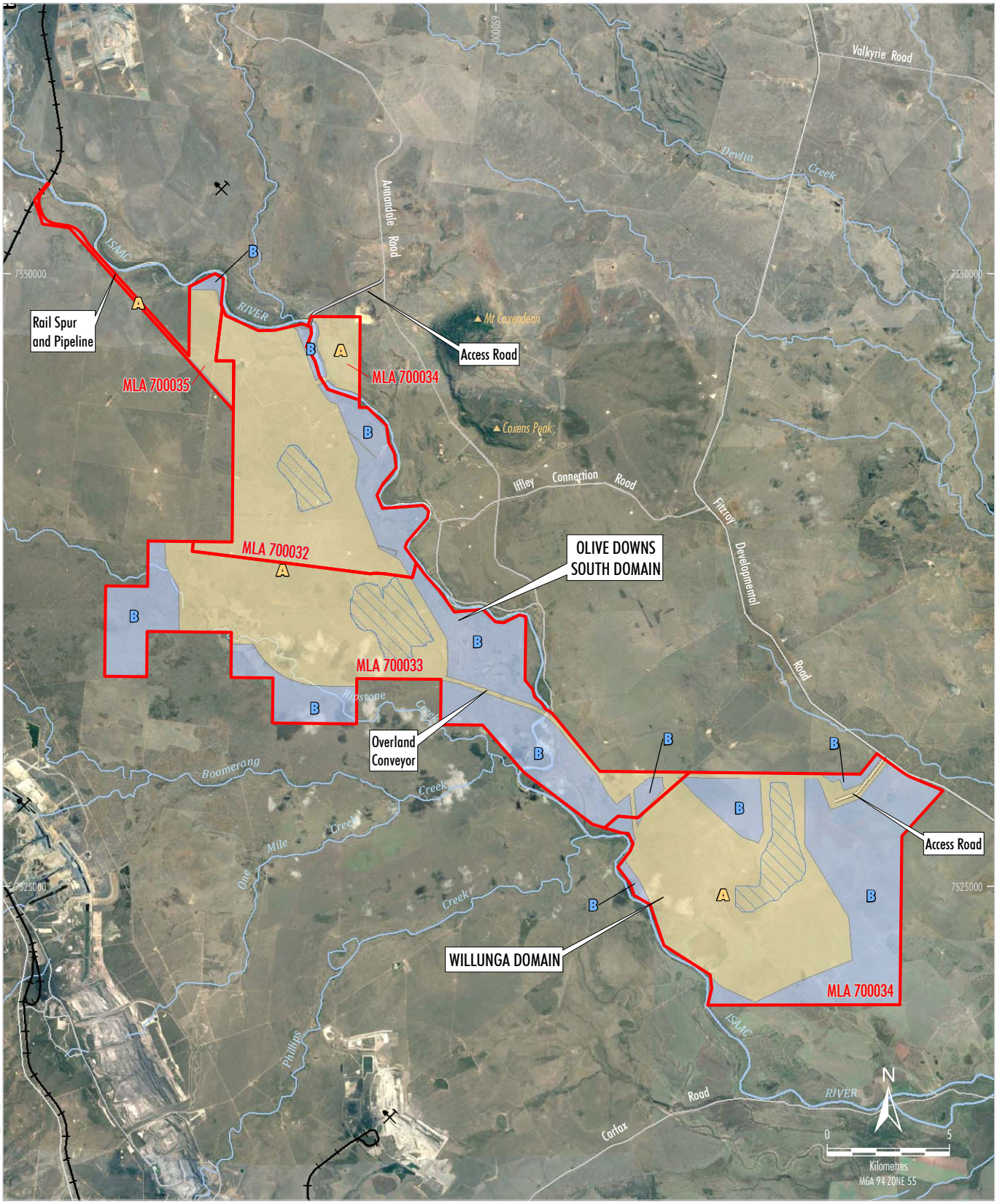
'water year' means the 12-month period from 1 July to 30 June.

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

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

END OF DEFINITIONS

Schedule 1—Approved plans



PRN-16-02_EIS-AI_AppB_201A

LEGEND

- Mining Lease Application Boundary
- Norwich Park Branch Railway
- Proposed Access Road
- A — Land Disturbance May Occur
- B — Land Disturbance Must Not Occur
- Approximate Extent of Final Voids

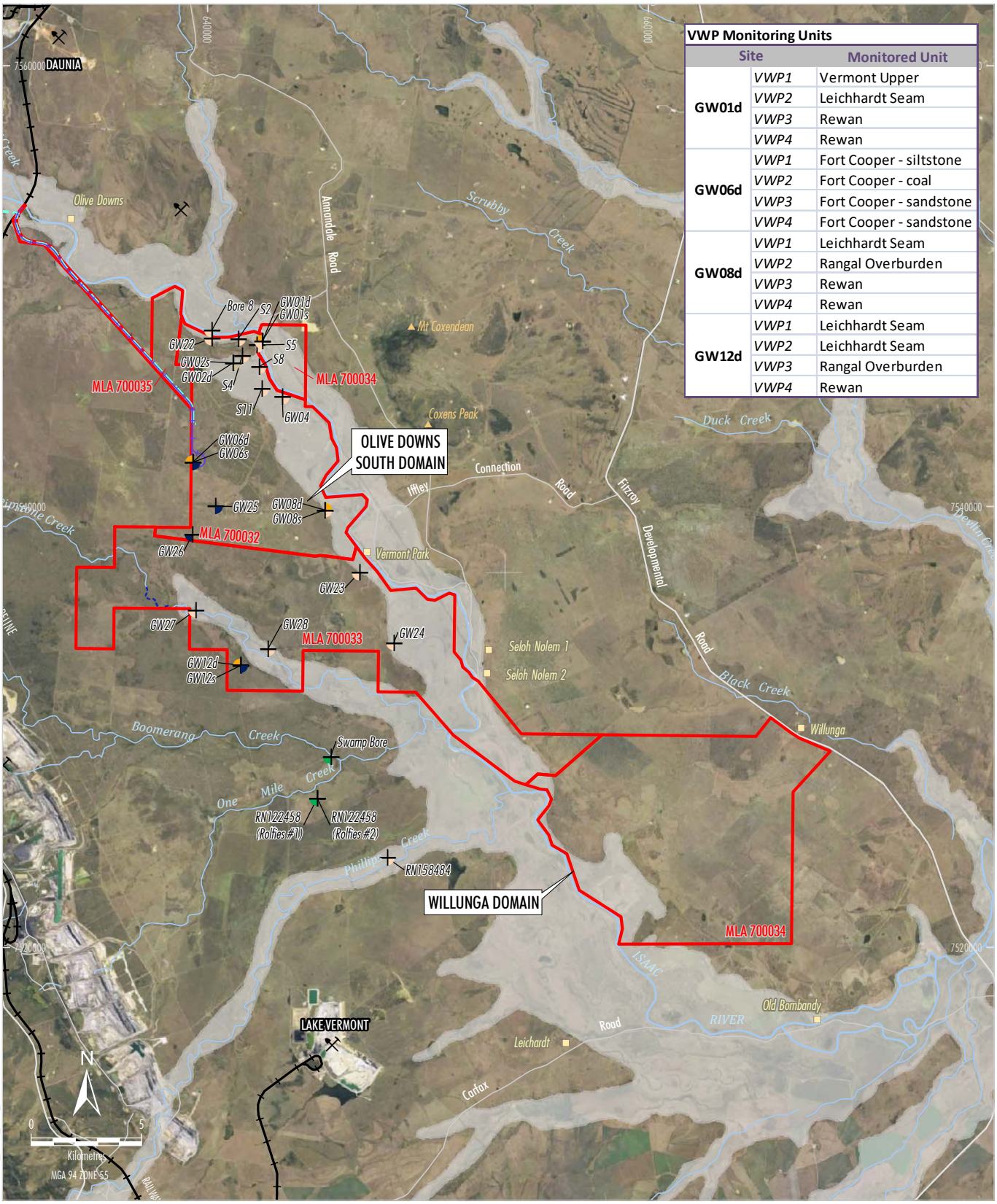
Source: Geoscience Australia - Topographical Data 250K (2006)
Queensland Department of Natural Resources and Mines (2016)
Orthophotography: Google Image (2016)

PEMBROKE

OLIVE DOWNS COKING COAL PROJECT

Land Disturbance

Figure 1



VWP Monitoring Units		
Site		Monitored Unit
GW01d	VWP1	Vermont Upper
	VWP2	Leichhardt Seam
	VWP3	Rewan
	VWP4	Rewan
GW06d	VWP1	Fort Cooper - siltstone
	VWP2	Fort Cooper - coal
	VWP3	Fort Cooper - sandstone
	VWP4	Fort Cooper - sandstone
GW08d	VWP1	Leichhardt Seam
	VWP2	Rangal Overburden
	VWP3	Rewan
	VWP4	Rewan
GW12d	VWP1	Leichhardt Seam
	VWP2	Leichhardt Seam
	VWP3	Rangal Overburden
	VWP4	Rewan

LEGEND

- Mining Lease Application Boundary
- Railway
- Dwelling
- Proposed Rail Spur and Loop
- Proposed Water Pipeline
- Proposed Creek Diversion

Standpipe

Compliance and Reference Bore (Monitored Unit)

- Alluvium
- Permian
- Regolith

Reference Bore (Monitored Unit)

- Alluvium
- Regolith
- Vermont Upper

VWP

- Compliance and Reference Bore*
- Reference Bore*

** Please refer to the "VWP Monitoring Unit" table for the monitored units.*

Source: Pembroke (2018), Geoscience Australia - Topographical Data 250K (2006), Department of Natural Resources and Mines (2016)
Orthophotography: Google Image (2016)

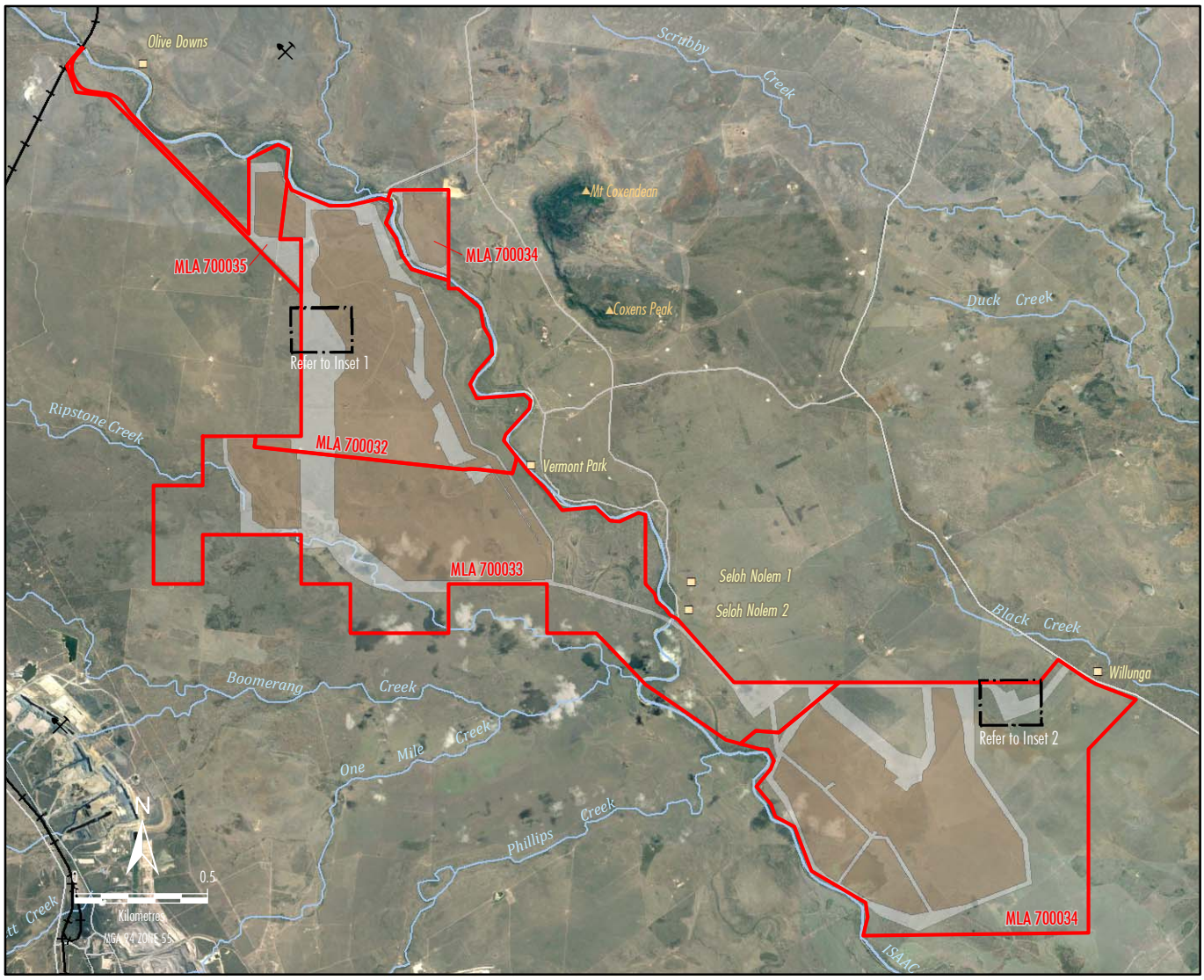
PEMBROKE

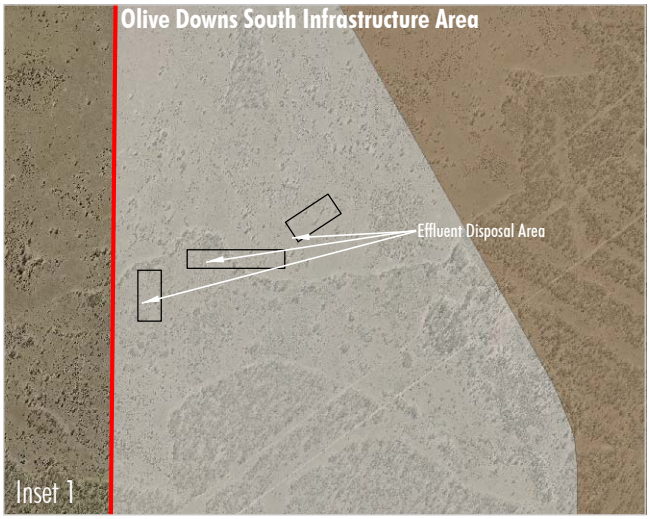
OLIVE DOWNS COKING COAL PROJECT

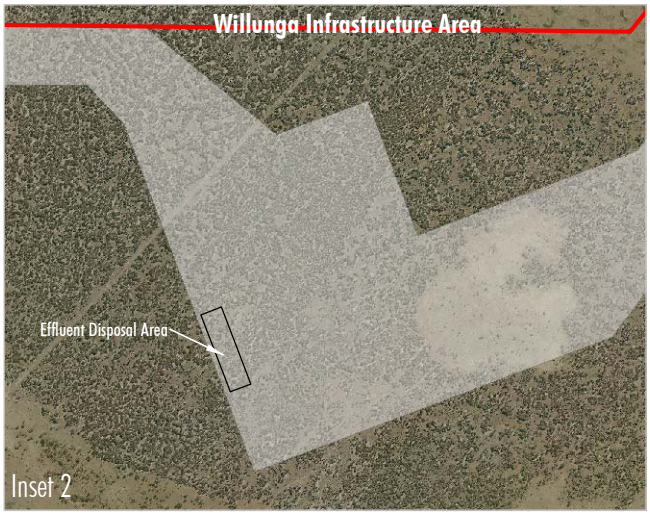
Groundwater Monitoring Sites

Figure 2

Note: The quadrant coloured within each symbol indicates whether the bore would be used as a Compliance and Reference Bore or as only a Reference Bore.







PRN-16-02_EIS-AI_AppB_203A

LEGEND
- Mining Lease Application Boundary
- Effluent Disposal Area
- Mine Infrastructure Area
- Out-of-Pit and In-Pit Waste Rock Emplacement

Source: Pembroke (2018); Phronis (2018); Department of Natural Resources and Mines (2018) Orthophotography: Google Image (2016)

PEMBROKE

OLIVE DOWNS COKING COAL PROJECT

Location of Effluent Disposal Areas

Figure 3

Schedule 2—Rehabilitation

Table H1 Rehabilitation Requirements

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Waste Rock Emplacements	Long-term safety	Waste rock emplacement final landforms are geotechnically stable and safe.	Geotechnical assessment of the waste rock emplacement final landforms (slope angle and length) prepared by a suitably qualified person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	• Geotechnical assessments of final landforms are recommended by the *Planning for Integrated Min Closure: Toolkit* (International Council on Mining and Metals, 2008).	• The geotechnical assessment concludes: ▪ Waste rock emplacement final landform slopes are approximately 7 degrees (1V:8H) or lower. ▪ The toe of out-of-pit waste rock emplacements standoff the crest of the final voids by at least 50 metres (m). ▪ The geotechnical assessment concludes the waste rock emplacement final landforms are stable and safe.
		Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the domain site is suitable for the proposed post-mining land use.
		Other potential safety risks (e.g. falls from height) are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	• Post-mining safety assessment is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• The safety assessment concludes that the risks associated with other potential safety risks are low.
	Non-polluting	Runoff and seepage from waste rock emplacements are a low risk of causing environmental harm.	Surface and groundwater quality (e.g. sediment load, pH, heavy metal content, etc) monitoring data. Surface and groundwater quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface and groundwater quality criteria, for a period of at least two years post-mining.
			Environmental risk assessment prepared by a suitably qualified team. The environmental risk assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 5, Part 10 of the EP Act.	• The environmental risk assessment concludes that there is a low risk of environmental harm.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Waste Rock Emplacements (cont.)	Stable	Waste rock emplacement final landforms are geotechnically stable.	Geotechnical assessment of the waste rock emplacement final landforms (slope angle and length) prepared by a suitably qualified person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	• Geotechnical assessments of final landforms are recommended by the *Planning for Integrated Min Closure: Toolkit* (International Council on Mining and Metals, 2008).	• The geotechnical assessment concludes: ▪ Waste rock emplacement final landform slopes are approximately 7 degrees (1V:8H) or lower. ▪ The toe of out-of-pit waste rock emplacements standoff the crest of the final voids by at least 50 m. ▪ The waste rock emplacement final landforms are stable and safe.
		Landform achieves appropriate erosion rates.	Erosion (erosion rates and sheets, rills and gully formation) monitoring data. Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Erosion monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Erosion monitoring data demonstrates the following for two years post-mining: ▪ No active gully erosion observed. ▪ Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites.
			Surface water quality (e.g. pH, heavy metal content, etc) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least two years post-mining.
		Self-sustaining vegetative cover established.	Landscape function analysis (LFA) (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	• LFA monitoring demonstrates that vegetation cover, types and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Waste Rock Emplacements (cont.)	Sustainable Land Use	Establish agriculture (low intensity cattle grazing) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates: ▪ Physical, chemical and biological properties of the growth media are similar to relevant rehabilitation monitoring reference sites. ▪ Vegetation consistent with grass species suitable for grazing (e.g. including Buffel Grass (*Cenchrus ciliaris*), Wiregrass (*Aristida* sp) and Kangaroo Grass (*Themeda triandra*) comparable to relevant rehabilitation monitoring reference sites. ▪ Vegetation cover and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining. ▪ Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. ▪ Pests do not occur in substantial numbers or visibly affect the development of pasture grass species.
			Cattle stocking rate. Cattle stocking rate monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Agricultural productivity is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Cattle stocking rate monitoring demonstrates a stocking rate of 0.22 adult equivalents per hectare.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Waste Rock Emplacements (cont.)	Sustainable Land Use (cont.)	Establish self-sustaining nature conservation (woodland) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates: ▪ Physical, chemical and biological properties of the growth media are similar to relevant rehabilitation monitoring reference sites. ▪ Woodland vegetation contains a species diversity comparable to relevant rehabilitation monitoring reference sites (e.g. Poplar Box [*Eucalyptus populnea*] +/- Silver-leaved Ironbark [*E. melanophloia*] +/- Clarkson's Bloodwood [*Corymbia clarksoniana*]). ▪ Vegetation cover and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining. ▪ Generational succession of trees and shrubs. ▪ Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. ▪ Pests do not occur in substantial numbers or visibly affect the development of native plant species.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Final Voids	Long-term safety	Final void final landforms are geotechnically stable and safe.	Geotechnical assessment of the final void final landforms (slope angle and length) prepared by a suitably qualified person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	• Geotechnical assessments of final landforms are recommended by the *Planning for Integrated Min Closure: Toolkit* (International Council on Mining and Metals, 2008).	• The geotechnical assessment concludes: ▪ Final void highwalls slopes are 20º or lower where located within alluvium and tertiary clays (known as the Cenozoic overburden) to achieve a factor of safety of 1.5. ▪ Final void highwall slopes are 45º or lower where located within a fault fractured zone, and 55º where they are located away from fault zones. An overall angle of 55º is achieved by 50 m high batters at 65º incorporating 10 m wide intermediate benches. ▪ Low wall slopes are stable. ▪ The toe of out-of-pit waste rock emplacements standoff the crest of the final voids by at least 50 m. ▪ Perimeter bunding formed and security fencing installed. ▪ The final void final landforms are stable and safe.
		Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
		Other potential safety risks (e.g. falls from height) are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	• Post-mining safety assessment is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• The safety assessment concludes that the risks associated with other potential safety risks are low.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Final Voids (cont.)	Non-polluting	Final voids are isolated from the Isaac River.	Flood assessment prepared by a suitably qualified person. The flood assessment would be reported and interpreted in the Final Rehabilitation Report.	• Hydrological studies are recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• The flood assessment concludes that the final voids are isolated from all flood events, up to and including a PMF event.
		Final voids are a low risk of causing environmental harm.	Groundwater assessment prepared by a suitably qualified person. The groundwater assessment would be reported and interpreted in the Final Rehabilitation Report.		• The groundwater assessment concludes that the final voids are acting as groundwater sinks, preventing the migration of potentially saline water into adjacent aquifers and watercourses.
			Final void balance prepared by a suitably qualified person. The final void balance would be reported and interpreted in the Final Rehabilitation Report.		• The final void balance concludes that the final void water bodies would equilibrate well below the point at which they would spill to the surrounding environment.
			Surface and groundwater quality (e.g. pH, heavy metal content, etc) monitoring data. Surface and groundwater quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface and groundwater quality criteria, for a period of at least two years post-mining.
			Environmental risk assessment prepared by a suitably qualified team. The environmental risk assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 5, Part 10 of the EP Act.	• The environmental risk assessment concludes that there is a low risk of environmental harm.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Final Voids (cont.)	Stable	Final void final landforms are geotechnically stable and safe.	Geotechnical assessment of the final void final landforms (slope angle and length) prepared by a suitably qualified person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	• Geotechnical assessments of final landforms are recommended by the *Planning for Integrated Min Closure: Toolkit* (International Council on Mining and Metals, 2008).	• The geotechnical assessment concludes: ▪ Final void highwalls slopes are 20º or lower where located within alluvium and tertiary clays (known as the Cenozoic overburden) to achieve a factor of safety of 1.5. ▪ Final void highwall slopes are 45º or lower where located within a fault fractured zone, and 55º where they are located away from fault zones. An overall angle of 55º is achieved by 50 m high batters at 65º incorporating 10 m wide intermediate benches. ▪ The toe of out-of-pit waste rock emplacements standoff the crest of the final voids by at least 50 m. ▪ Perimeter bunding formed and security fencing installed. ▪ The final void final landforms are stable and safe.
	Sustainable Land Use	Establish self-sustaining (fauna habitat) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates: ▪ Sustainable fauna usage (e.g. Strip-faced Dunnart, Hoary Wattled Bat and Australian Grey Teal) of the final voids. ▪ Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. ▪ Pests do not occur in substantial numbers.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Infrastructure Areas	Long-term safety	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
		Other potential safety risks (e.g. risks associated with retained infrastructure) are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	• Post-mining safety assessment is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• The safety assessment concludes that the risks associated with other potential safety risks are low.
	Non-polluting	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Infrastructure Areas (cont.)	Stable	Landform achieves appropriate erosion rates.	Erosion (erosion rates and sheets, rills and gully formation) monitoring data. Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Erosion monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Erosion monitoring data demonstrates the following for two years post-mining: ▪ Limited erosion (presence of sheets, rills and gullies) observed. ▪ Soil loss rates are comparable to relevant rehabilitation monitoring reference sites. ▪ Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites.
			Surface water quality (e.g. pH, heavy metal content, etc) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least two years post-mining.
		Self-sustaining vegetative cover established.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates that vegetation cover, types and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Infrastructure Areas (cont.)	Sustainable Land Use	Establish agriculture (low intensity cattle grazing) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates: ▪ Physical, chemical and biological properties of the growth media are similar to relevant rehabilitation monitoring reference sites. ▪ Vegetation consistent with grass species suitable for grazing (e.g. including Buffel Grass (*Cenchrus ciliaris*), Wiregrass (*Aristida* sp) and Kangaroo Grass (*Themeda triandra*) comparable to relevant rehabilitation monitoring reference sites. ▪ Vegetation cover and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining. ▪ Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. ▪ Pests do not occur in substantial numbers or visibly affect the development of pasture grass species.
			Cattle stocking rate. Cattle stocking rate monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Agricultural productivity is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Cattle stocking rate monitoring demonstrates a stocking rate of 0.22 adult equivalents per hectare.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Infrastructure Areas (cont.)	Sustainable Land Use (cont.)	Establish self-sustaining nature conservation (woodland) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates: ▪ Physical, chemical and biological properties of the growth media are similar to relevant rehabilitation monitoring reference sites. ▪ Woodland vegetation contains a species diversity comparable to relevant rehabilitation monitoring reference sites (e.g. Poplar Box [*Eucalyptus populnea*] +/- Silver-leaved Ironbark [*E. melanophloia*] +/- Clarkson's Bloodwood [*Corymbia clarksoniana*]). ▪ Vegetation cover and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining. ▪ Generational succession of trees and shrubs. ▪ Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. ▪ Pests do not occur in substantial numbers or visibly affect the development of native plant species.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Water Management Infrastructure	Long-term safety	Retained management infrastructure is appropriately designed.	Geotechnical assessment of retained water infrastructure prepared by a suitably qualified person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	• Geotechnical assessments of final landforms are recommended by the *Planning for Integrated Min Closure: Toolkit* (International Council on Mining and Metals, 2008).	• A geotechnical assessment concludes that the retained water management infrastructure is stable and safe.
		Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
		Other potential safety risks (e.g. risks associated with retained infrastructure) are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	• Post-mining safety assessment is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• The safety assessment concludes that the risks associated with other potential safety risks are low.
	Non-polluting	Retained water infrastructure is a low risk of causing environmental harm.	Surface water quality (e.g. pH, heavy metal content, etc) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least two years post-mining.
			Environmental risk assessment prepared by a suitably qualified team. The environmental risk assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 5, Part 10 of the EP Act.	• The environmental risk assessment concludes that there is a low risk of environmental harm.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Water Management Infrastructure (cont.)	Non-polluting (cont.)	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
	Stable	Landform achieves appropriate erosion rates.	Erosion (erosion rates and sheets, rills and gully formation) monitoring data. Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Erosion monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Erosion monitoring data demonstrates the following for two years post-mining: ▪ Limited erosion (presence of sheets, rills and gullies) observed. ▪ Soil loss rates are comparable to relevant rehabilitation monitoring reference sites. ▪ Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites.
			Surface water quality (e.g. sediment load, pH, heavy metal content, etc) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least two years post-mining.
		Self-sustaining vegetative cover established.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates that vegetation cover, types and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Water Management Infrastructure (cont.)	Sustainable Land Use	Establish agriculture (low intensity cattle grazing) land use.	Surface water quality (e.g. pH, heavy metal content, etc) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least two years post-mining.
			LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates: ▪ Physical, chemical and biological properties of the growth media are similar to relevant rehabilitation monitoring reference sites. ▪ Vegetation consistent with grass species suitable for grazing (e.g. including Buffel Grass (*Cenchrus ciliaris*), Wiregrass (*Aristida* sp) and Kangaroo Grass (*Themeda triandra*) comparable to relevant rehabilitation monitoring reference sites. ▪ Vegetation cover and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining. ▪ Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. ▪ Pests do not occur in substantial numbers or visibly affect the development of pasture grass species.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Water Management Infrastructure (cont.)	Sustainable Land Use (cont.)	Establish self-sustaining nature conservation (woodland) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates: ▪ Physical, chemical and biological properties of the growth media are similar to relevant rehabilitation monitoring reference sites. ▪ Woodland vegetation contains a species diversity comparable to relevant rehabilitation monitoring reference sites (e.g. Poplar Box [*Eucalyptus populnea*] +/- Silver-leaved Ironbark [*E. melanophloia*] +/- Clarkson's Bloodwood [*Corymbia clarksoniana*]). ▪ Vegetation cover and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining. ▪ Generational succession of trees and shrubs. ▪ Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. ▪ Pests do not occur in substantial numbers or visibly affect the development of native plant species.
In-line Flocculation Cells	Long-term safety	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
		Other potential safety risks are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	• Post-mining safety assessment is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• The safety assessment concludes that the risks associated with other potential safety risks are low.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
In-line Flocculation Cells (cont.)	Non-polluting	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
	Stable	Landform achieves appropriate erosion rates.	Erosion (erosion rates and sheets, rills and gully formation) monitoring data. Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Erosion monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Erosion monitoring data demonstrates the following for two years post-mining: ▪ Limited erosion (presence of sheets, rills and gullies) observed. ▪ Soil loss rates are comparable to relevant rehabilitation monitoring reference sites. ▪ Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites.
			Surface water quality (e.g. pH, heavy metal content, etc) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least two years post-mining.
		Self-sustaining vegetative cover established.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates that vegetation cover, types and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
In-line Flocculation Cells (cont.)	Sustainable Land Use	Establish agriculture (low intensity cattle grazing) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates: ▪ Physical, chemical and biological properties of the growth media are similar to relevant rehabilitation monitoring reference sites. ▪ Vegetation consistent with grass species suitable for grazing (e.g. including Buffel Grass (*Cenchrus ciliaris*), Wiregrass (*Aristida* sp) and Kangaroo Grass (*Themeda triandra*) comparable to relevant rehabilitation monitoring reference sites. ▪ Vegetation cover and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining. ▪ Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. ▪ Pests do not occur in substantial numbers or visibly affect the development of pasture grass species.
			Cattle stocking rate. Cattle stocking rate monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Agricultural productivity is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Cattle stocking rate monitoring demonstrates a stocking rate of 0.22 adult equivalents per hectare.
Ripstone Creek Diversion	Long-term safety	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Ripstone Creek Diversion (cont.)	Long-term safety (cont.)	Other potential safety risks are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	• Post-mining safety assessment is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• The safety assessment concludes that the risks associated with other potential safety risks are low.
	Non-polluting	Ripstone Creek diversion is a low risk of causing environmental harm.	Surface water quality (e.g. pH, heavy metal content, etc) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least two years post-mining.
			Environmental risk assessment prepared by a suitably qualified team. The environmental risk assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 5, Part 10 of the EP Act.	• The environmental risk assessment concludes that there is a low risk of environmental harm.
		Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the *Queensland auditor handbook for contaminated land* (DES, 2018b) by a suitably qualified person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the requirements of Chapter 7, Part 8 of the EP Act.	• The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
	Stable	Ripstone Creek diversion is appropriately designed and constructed.	Detailed Design Plan for the Ripstone Creek diversion prepared by a suitably qualified person. The Detailed Design Plan would be reported and interpreted in the Final Rehabilitation Report.	• Consistent with the *Guideline: Works that Interfere with Water with Water in a Watercourse – Watercourse Diversions* (Department of Natural Resources and Mines, 2014).	• The Ripstone Creek diversion has been constructed and rehabilitated in accordance with the Detailed Design Plan.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Ripstone Creek Diversion (cont.)	Stable (cont.)	Landform achieves appropriate erosion rates.	Erosion (erosion rates and sheets, rills and gully formation) monitoring data. Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Erosion monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Erosion monitoring data demonstrates the following for two years post-mining: ▪ Limited erosion (presence of sheets, rills and gullies) observed. ▪ Soil loss rates are comparable to relevant rehabilitation monitoring reference sites. ▪ Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites.
			Surface and groundwater quality (e.g. sediment load, pH, heavy metal content, etc) monitoring data. Surface and groundwater quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Water quality monitoring is recommended by *Rehabilitation Requirements for Mining Resource Activities Guideline* (DEHP, 2014).	• Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least two years post-mining.
		Self-sustaining vegetative cover established.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates that vegetation cover, types and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining.

Domain	Goals	Objectives	Performance Indicators	Selection of Performance Indicator	Completion Criteria
Ripstone Creek Diversion (cont.)	Sustainable Land Use	Establish self-sustaining nature conservation (woodland) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• CSIRO.	• LFA monitoring demonstrates: ▪ Physical, chemical and biological properties of the growth media are similar to relevant rehabilitation monitoring reference sites. ▪ Woodland vegetation contains a species diversity comparable to relevant rehabilitation monitoring reference sites (e.g. Queensland Blue Gum or River Red Gum woodland fringing drainage lines). ▪ Vegetation cover and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least two years post-mining. ▪ Generational succession of trees and shrubs. ▪ Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. ▪ Pests do not occur in substantial numbers or visibly affect the development of native plant species.

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