

Permit

Environmental Protection Act 1994

Environmental authority EA0001299

This environmental authority is issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

Environmental authority number: EA0001299

Environmental authority takes effect on 18 March 2024

Environmental authority holder(s)

Name(s)	Registered address
FITZROY (CQ) PTY LTD	Level 20, 324 Queen Street BRISBANE CITY QLD 4000
Nebo Central Coal Pty Ltd	Level 20, 324 Queen Street BRISBANE CITY QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 13: Mining black coal	ML700024
Ancillary 08 - Chemical Storage 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML700024
Ancillary 63 - Sewage Treatment 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (a-i) 21 to 100EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML700024

Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority (EA) is issued is a restatement of the ERA as defined by legislation at the time the EA is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an EA as to the scale, intensity or manner of carrying out an ERA, the conditions prevail to the extent of the inconsistency.

An EA authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the EA specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Contaminated land

It is a requirement of the EP Act that an owner or occupier of contaminated land give written notice to the administering authority if they become aware of the following:

- the happening of an event involving a hazardous contaminant on the contaminated land (notice must be given within 24 hours); or
- a change in the condition of the contaminated land (notice must be given within 24 hours); or
- a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the contaminated land (notice must be given within 20 business days);

that is causing, or is reasonably likely to cause, serious or material environmental harm.

For further information, including the form for giving written notice, refer to the Queensland Government website www.qld.gov.au, using the search term 'duty to notify'.

Take effect

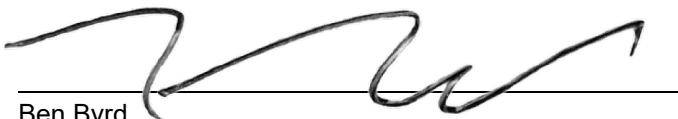
Please note that, in accordance with section 200 of the EP Act, an EA has effect:

- a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority-on the nominated day; or
- b) if the authority states a day or an event for it to take effect-on the stated day or when the stated event happens; or
- c) otherwise-on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Sustainable Planning Act 2009* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

If this EA takes effect when the additional authorisation takes effect, you must provide the administering authority written notice within 5 business days of receiving notification of the related additional authorisation taking effect.

If you have incorrectly claimed that an additional authorisation is not required, carrying out the ERA without the additional authorisation is not legal and could result in your prosecution for providing false or misleading information or operating without a valid environmental authority.



Ben Byrd
Department of Environment, Science and Innovation
Delegate of the administering authority
Environmental Protection Act 1994

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Date issued: 18 March 2024

Conditions of environmental authority

Agency 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, the holder of this environmental authority must comply with Appendix 1: Approved Project Layout and Appendix 2: Approved Surface Infrastructure .
A3	Disturbance from mining activities conducted under this environmental authority, excluding exploration activities, must not exceed the maximum disturbance areas depicted in Appendix 3: Maximum Disturbance Areas .
A4	This environmental authority authorises the extraction rate of up to six (6) million tonnes per annum (mtpa) of run-of-mine (ROM) coal.
A5	The holder of this environmental authority must: a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority; b) maintain such measures, plant and equipment in a proper and efficient condition; c) operate such measures, plant and equipment in a proper and efficient manner; and d) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.
A6	All monitoring records or reports required by this environmental authority must be kept for a period of not less than five (5) years .
A7	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 years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation; 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.
A8	The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (ISO31000:2009), or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management, prior to the commencement of construction.
A9	Notification of emergencies, incidents and exceptions The holder of this environmental authority must notify the administering authority, in writing, within twenty-four (24) hours of becoming aware of any emergency or incident that results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this environmental authority.

A10	Within ten (10) business days following the 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.
A11	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.
A12	The holder of this environmental authority must, when requested by the administering authority, undertake specified monitoring within a 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.
A13	The holder of this environmental authority must: a) within one (1) year of the commencement of this environmental authority, obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority; b) obtain further such reports at regular intervals, not exceeding three (3)-yearly intervals, from the completion of the report referred to above; and c) provide each report to the administering authority within ninety (90) days of its completion and include: i. Actions taken by the holder of this environmental authority to ensure compliance with this environmental authority; and ii. Actions taken to prevent a recurrence of non-compliance.
A14	Exploration Activities The holder of the environmental authority must not carry out exploration activities within areas mapped as matters of state environmental significance (MSES).

Agency interest: Air	
Condition number	Condition
B1	Point source releases to air (On Site Gas Fired Power Station) The release of contaminants to air from the power station must only occur from the release points identified in Table B1 – Power station release points (air) and Appendix 9 – Power station infrastructure.

Table B1—Power station release points (air)

Release point	Release point location (latitude/longitude) GDA2020		Release point description	Source description	Minimum release height (metres above ground)	Minimum exit gas temperature (°C)	Minimum efflux velocity (m/s)
RP1	-21.738679	148.168148	J320 exhaust stack	Exhaust pipe discharge	7.0	405 (full load) 444 (part load)	28.4 (full load) 6.0 (part load)
RP2	-21.738679	148.168100					
RP3	-21.738644	148.168041					
RP4	-21.738608	148.167993					
RP5	-21.738563	148.167934					
RP6	-21.739104	148.168093	J620 exhaust stack	Exhaust pipe discharge	12.9	318 (full load) 436 (part load)	29.5 (full load) 18.0 (part load)
RP7	-21.739032	148.167996					
RP8	-21.738880	148.167889					
RP9	-21.738880	148.167792					
RP10	-21.738809	148.167685					

B2	Contaminants must be released to the atmosphere from a release point at a height and a flow rate not less than the corresponding height and velocity stated in Table B1 – Power station release limits (air) .
B3	Contaminants must not be released to the atmosphere from a release point at an emission concentration, when measured at a monitoring point, that exceeds the emissions concentration stated in Table B2 – Power station contaminant limits (air) .

Table B2—Power station contaminant limits (air)

Contaminant	Release point	Limit type	Release limit	Release limit units*	Minimum monitoring frequency
NOx	RP1, RP2, RP3, RP4 and RP5	Maximum	500	mg/Nm ³ @ 5% O ₂ (dry)	Once within 3 months of commissioning, and once annually for 3 years
NOx	RP6, RP7, RP8, RP9 and RP10	Maximum	500	mg/Nm ³ @ 5% O ₂ (dry)	Once within 3 months of commissioning, and once annually for 3 years

*mg/Nm³ – milligrams per normal cubic metre, at 5% oxygen, dry at 1 atmosphere and 0 degrees Celsius.

B4	The holder of the environmental authority must meet the following requirements for stack monitoring: a) Monitoring must be undertaken during a release and at the authorised release points and frequency and for the contaminants specified in Table B2 – Power station contaminant limits (air). b) Monitoring must be undertaken when emissions are expected to be representative of actual operating conditions for the sample period. c) All monitoring devices must be effectively calibrated and maintained in accordance with the manufacturer's instructions and Australian and international standards. d) Air Monitoring must be in accordance with the current edition of the administering authority's Air Quality Sampling Manual. If monitoring requirements are not described in the department's Air Quality Sampling Manual, monitoring protocols must be in accordance with a method as approved by New South Wales EPA, or United States EPA. e) Monitoring for the release points (stack) listed in Table B1 – Power station release points (air) must comply with the Australian Standard AS 4323.1 - 1995 'Stationary source emissions Method 1: Selection of sampling positions'. f) All air emission stack monitoring must be conducted by an experienced person or body which holds current National Association of Testing Authorities (NATA) accreditation. g) The following tests must be performed for each required determination specified in Table B2 – Power station contaminant limits (air): i. gas velocity and volume flow rate; ii. temperature and oxygen content; and iii. water vapour concentration. h) During the sampling period the following additional information must be gathered: i. any typical factors that may influence air pollutant emissions; and ii. reference to the actual test methods and accuracies.
B5	The only type of fuel to be burnt in the power generator is coal seam gas (coal mine waste gas) produced at the Ironbark No. 1 Coal Mine.

B6	The environmental authority holder must ensure that 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: - Dust deposition of 120 milligrams per square metre per day, averaged over one 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. - A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM₁₀) suspended in the atmosphere of 50 micrograms per cubic metre over a twenty-four (24) hour averaging time when monitored in accordance with the most recent version of either: - 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 - Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM₁₀ low volume sampler—Gravimetric method. - A concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a one (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.
B7	Air Emissions from Mining Activities and the Power Station 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 department), air quality monitoring 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 (1) month. This monitoring must be carried out at a place(s) relevant to the potentially affected sensitive place. Monitoring must be conducted in accordance with the appropriate standards.
B8	Unless venting is authorised under <i>the Petroleum and Gas (Production and Safety) Act 2004</i> or the <i>Petroleum Act 1923</i>, waste gas must be flared in a manner that complies with the following requirements: - an automatic ignition system is used, and - a flame is visible at all times while the waste gas is being flared, and - there are no visible smoke emissions other than for a total period of no more than 5 minutes in any 2 hours, or - it uses an enclosed flare.

B9	Odour Nuisance The release of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not exceed the guidelines for noxious or offensive odour(s), specified in the latest version of the administering authority's guideline <i>Odour Impact Assessment from Developments</i> (2013), at any sensitive or commercial place.
B10	When requested by the administering authority, odour monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.
B11	If the administering authority determines the odour released to constitute a noxious or offensive odour, then the environmental authority holder must: a) address the complaint including the use of appropriate dispute resolution if required; and b) immediately implement odour abatement measures so that emissions of odour from the activity do not result in further environmental nuisance.

Agency interest: Waste	
Condition number	Condition
C1	Unless otherwise permitted by the conditions of this environmental authority, or with prior approval from the administering authority, waste must not be disposed of on the mining tenure.
C2	Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.
C3	The holder of this environmental authority may burn vegetation cleared in the course of carrying out extraction activities provided the activity does not cause environmental harm at any sensitive place or commercial place.

C4	Waste Management The holder of this environmental authority must develop, implement and maintain a Waste Management Plan, in accordance with the waste management hierarchy of the <i>Waste Reduction and Recycling Act 2011</i>. The Waste Management Plan must be developed prior to commencement of mining activities and include: a) The waste management control strategies must consider: i. The type of wastes; ii. Segregation of the wastes; iii. Storage of the wastes; iv. Transport of wastes; v. Monitoring and reporting matters concerning the waste; vi. Emergency response planning; and vii. Disposal, reused and recycling options; b) The hazardous characteristics of the wastes generated including disposal procedures for hazardous wastes; c) A program for reusing, recycling or disposing of all wastes; d) How the waste will be dealt with in accordance with the waste management hierarchy, including a description of the types and amounts of waste that will be dealt with under each of the waste management practices in the waste management hierarchy (i.e. avoidance, reuse, recycling, energy recovery, disposal); e) Procedures for identifying and implementing opportunities to minimise the amount of waste generated, promote efficiency in the use of resources and improve the waste management practices employed; f) Procedures for dealing with accidents, spills and other incidents; g) Details of any accredited management system employed, or planned to be employed, to deal with waste; h) How often the performance of the waste management program will be assessed; i) The indicators or other criteria on which the performance of the waste management program will be assessed; and j) Staff training and induction to the waste management program.
C5	Waste Rock A waste rock and spoil disposal plan must be developed and implemented by a suitably qualified person for all stages of the authorised mining activities. The waste rock and spoil disposal plan must be submitted to the administering authority for review, prior to being implemented and prior to the commencement of construction activities.

C6	The waste rock and spoil disposal plan must include: 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 and acid-forming waste rock; e) how often the performance of the plan will be assessed; f) the indicators or other criteria on which the performance of the plan will be assessed; g) a rehabilitation strategy; and h) periodic review of environmental performance against the plan and continual improvement.
C7	All general and regulated waste may be temporarily stored on ML700024 in the process of being removed from site.
C8	The only contaminant permitted to be released to land is treated sewage effluent in compliance with the release limits stated in Table C1 - Contaminant release limits to land .
C9	Treated sewage effluent may only be released to land in accordance with the conditions of this approval at the following locations: a) Within the nominated area(s) identified in Appendix 2 – Approved Surface Infrastructure, for sewage treatment plant (STP) and effluent disposal (Irrigation Area) b) Other land for the purpose of dust suppression and/or firefighting.
C10	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.
C11	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.
C12	All sewage effluent released to land must be monitored at the frequency and for the parameters specified in Table C1: Contaminant release limits to land .

Table C1: 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

C13	The daily volume of effluent release to land must be measured and records kept of the volumes of effluent released.
C14	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.
C15	A minimum area of 1.5ha of land, excluding any necessary buffer zones, must be utilised for the irrigation and/or beneficial reuse of treated sewage effluent.
C16	Treated sewage effluent must only be supplied to another person or organisation that has a written plan detailing how the user of the treated sewage effluent will comply with their general environmental duty under section 319 of the Act whilst using the treated sewage effluent.

Agency interest: Acoustic	
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.

Table D1- Noise Limits

Sensitive place			
Noise level dB(A) measured as:	Monday to Sunday (including public holidays)		
	7am to 6pm	6pm to 10pm	10pm to 7am
LA _{eq, adj, 15 mins}	CV = 50 AV = 5	CV = 45 AV = 5	CV = 40 AV = 0
LA _{1, adj, 15 mins}	CV = 55 AV = 10	CV = 50 AV = 10	CV = 45 AV = 5
Commercial place			
Noise level dB(A) measured as:	Monday to Sunday (including public holidays)		
	7am to 6pm	6pm to 10pm	10pm to 7am
LA _{eq, adj, 15 mins}	CV = 55 AV = 10	CV = 50 AV = 10	CV = 45 AV = 5

Note:

- (1) CV = Critical Value
- (2) AV = Adjustment Value
- (3) to calculate noise limits in Table D1:
 - (i) if $bg \leq (CV - AV)$: Noise limit = $bg + AV$
 - (ii) if $(CV - AV) < bg \leq CV$: Noise limit = CV
 - (iii) if $bg > CV$: Noise limit = $bg + 0$
- (4) in the event that measured bg (LA_{90, adj, 15 mins}) is less than 30 dB(A), then 30 dB(A) can be substituted for the measured background level.
- (5) bg = background noise level (LA_{90, adj, 15 mins}) measured over 3-5 days at the nearest sensitive place.
- (6) if the project is unable to meet the noise limits as calculated above alternative limits may be calculated using the processes outlined in the "Planning for Noise Control" guideline.

Table D2 – Blasting noise limits

Blasting noise limits	Sensitive or Commercial Place Limits	
	7am to 6pm	6pm to 7am
Air blast overpressure	115 dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time	No blasting
Ground vibration peak particle velocity	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

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D3	Noise monitoring and recording must include the following descriptor characteristics and matters: a) LAN,T (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins); b) background noise LA90; 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 method of measurement and reporting of noise monitoring or vibration and/or airblast overpressure limits must comply with the current edition of the administering authority's Noise Measurement Manual.
D5	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 department), noise monitoring must be undertaken and the results thereof notified to the administering authority within fourteen (14) days following completion of the monitoring period.
D6	If the monitoring indicates an exceedance of the relevant limits in Table D1 - Noise limits , then the environmental authority holder must investigate whether the exceedance is due to the authorised mining activity. If the authorised mining activities are found to be the cause of the exceedance then the environmental authority holder must immediately implement noise abatement measures so that noise from the activity does not result in further exceedances.
D7	If during monitoring as required by condition D5, there is an exceedance of the relevant limits listed in Table D1 - Noise limits , the environmental authority holder must notify the administering authority within seven (7) days of the exceedance occurring. The notification must also include the actions taken in accordance with condition D6.
D8	When requested by the administering authority, or as a result of a complaint, complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the department), vibration and / or airblast overpressure monitoring must be undertaken, and the results thereof notified to the administering authority within fourteen (14) days following completion of the monitoring period. Vibration from the authorised mining activities must not exceed the limits specified in Table D2 – Blasting noise limits , at any sensitive place or commercial place.
D9	Monitoring required by condition D8 must include: a) peak particle velocity (mm/s); b) air blast overpressure level (dB linear peak);c) location of the blast/s within the mining area (including which bench level); d) atmospheric conditions including temperature, relative humidity and wind speed and direction; and e) location, date and time of recording.

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D10	If the monitoring indicates an exceedance of the relevant limits in Table D2 –Blasting noise limits , then the environmental authority holder must investigate whether the exceedance is due to the authorised mining activity. If the authorised mining activities are found to be the cause of the exceedance then the environmental authority holder must immediately implement abatement measures so that vibration from the activity does not result in further exceedances.
D11	If during monitoring as required by condition D8 , there is an exceedance of the relevant limits listed in Table D2 – Blasting noise limits , the environmental authority holder must notify the administering authority within seven (7) days of the exceedance occurring. The notification must also include the actions taken in accordance with condition D10 .

Agency interest: Groundwater	
Condition number	Condition
E1	The holder of this environmental authority must not release contaminants to groundwater.
E2	All determinations of groundwater quality and biological monitoring must be performed by an appropriately qualified person.
E3	Groundwater quality and levels must be monitored at the locations and frequencies defined in Table E1: Groundwater monitoring locations and frequency , as shown in Appendix 4 – Groundwater Monitoring Bores , for quality characteristics identified in Table E2: Groundwater quality triggers and limits .

Table E1 – Groundwater monitoring locations and frequency

Bore ID	Latitude (GDA2020)	Longitude (GDA2020)	Aquifer	Reduced Level	Steel Casing Height	Screen Interval	Monitoring Frequency	
				(m AHD ¹)	(mAGL ²)	(mBGL ³)	Standing Water Level	Groundwater quality
Reference Bores								
IBGWR1	-21.745805	148.194893	Alluvium	326.53	0.685	41 – 47	Quarterly	Quarterly
IBGWR2	-21.822756	148.185527	Triassic	304.47	0.785	15 – 24	Quarterly	Quarterly
Compliance Bores								
EFGW1S	-21.784698	148.154893	Alluvium	283.15	0.395	8.7 – 11.7	Quarterly	Quarterly
EFGW2D	-21.775457	148.195632	Triassic	308.81	0.65	23 – 25.6	Quarterly	Quarterly
EFGW4D	-21.755859	148.159458	Triassic	300.22	0.425	37.5 – 40.5	Quarterly	Quarterly
PT1	-21.737044	148.169459	Permian/ Leichardt seam	329.68	0.325	124 – 138	Quarterly	Quarterly
Observation Bores								
EFGW3D	-21.755153	148.182544	Triassic	306.59	0.45	27.4 – 30.4	Quarterly	Quarterly
EFGW4S	-21.755896	148.159265	Alluvium	300.16	0.635	1.5 – 4.5	Quarterly	Quarterly
EFGW5D	-21.741964	148.168590	Triassic	320.75	0.415	56 – 59	Quarterly	Quarterly
IBGW006*	-21.788069	148.182756	Permian/ Leichardt seam	306.27	0.82	410 - 413	Quarterly	Quarterly
Legend: ¹ m AHD – metres Australian Height Datum ² mAGL – metres above ground level ³ mBGL – metres below ground level * IBGW006 observation bore is proposed to become a compliance bore once sufficient data has been collected.								

Table E2 - Groundwater quality triggers and limits

Indicators	LOR	EFGW1S		EFGW2D		EFGW4D		PT1	
		Limit A	Limit B	Limit A	Limit B	Limit A	Limit B	Limit A	Limit B
Aluminium - Dissolved (mg/L)	0.01	N/A	0.02	N/A	0.05 ^A	0.023	0.025	N/A	0.05 ^A
Arsenic - Dissolved (mg/L)	0.001	0.001	0.002	0.011	0.013	N/A	0.003	0.012	0.013
Electrical Conductivity (µS/cm)	1	5814	6669	8960	9430	27400	28800	11380	11495
Iron - Dissolved (mg/L)	0.05	0.1	0.2	N/A	0.06	4.28	4.72	0.62	0.76
Lead - Dissolved (mg/L)	0.001	N/A	0.003 ^A	N/A	0.003	N/A	0.003 ^A	N/A	0.003 ^A
Manganese - Dissolved (mg/L)	0.001	1.642	1.973	0.955	1.13	0.797	0.994	0.031	0.073
pH (pH Units)	0.01	7.4 - 7.8	7.1 - 7.9	7.5 - 8.0	7.4 - 8.1	6.9 - 7.5	6.8 - 7.8	7.6 - 8.0	7.5 - 8.1
Sulfate (mg/L)	1	67	77	7	8	698	726	N/A	2
Total Petroleum Hydrocarbons C10-C36 (µg/L)	50	N/A	50 ^B	360	551	126	379	50 ^B	140
Total Petroleum Hydrocarbons C6-C9 (µg/L)	20	N/A	20 ^C	N/A	20 ^C	N/A	20 ^C	N/A	20 ^C
Zinc - Dissolved (mg/L)	0.005	0.036	0.077	0.054	0.091	0.129	0.265	0.016	0.048
Major ions - Calcium, Sodium, Magnesium, Potassium, Chloride, Bicarbonate, Carbonate (mg/L)		N/A Interpretation purposes only							
Total phase metals and metalloids - Aluminium, Arsenic, Iron, Lead, Manganese, Zinc	As per dissolved phase	N/A Interpretation purposes only							
Notes: All Limit A values are derived from the 80th percentile value of site specific data, unless stated otherwise. All Limit B values are derived from the 95th percentile value of site specific data, unless stated otherwise. A ANZG (2018) Default guideline value for ecosystem protection of 95% of freshwater aquatic species B Limit of reporting value for total petroleum hydrocarbons C10 - C36 (µg/L) C Limit of reporting value for total petroleum hydrocarbons C6 - C9 (µg/L)									

E4	Groundwater Management and Monitoring Program A Groundwater Monitoring and Management Program (GMMP) must be developed by an appropriately qualified person and implemented by 1 May 2023. The GMMP must be updated following each annual review required by condition E6 if required.
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E5	The GMMP required by condition E4 must: a) provide a hydrogeological conceptual groundwater model; and b) identify all potential sources of contamination to groundwater from the activities authorised under this environmental authority; and c) identify all environmental values that may be impacted; and d) detail groundwater levels in all identified hydrogeological units present across and adjacent to the site to confirm existing groundwater flow paths; and e) ensure all potential groundwater impacts due to the activities authorised under this environmental authority are identified, monitored and mitigated; and f) ensure adequate groundwater monitoring and data analysis is undertaken to achieve the following objectives: i) detect any impacts to groundwater quality due to the activities authorised under this environmental authority; and ii) detect any changes to groundwater level due to the activities authorised under this environmental authority; and iii) determine compliance with condition E11 and condition E12; and iv) determine trends in groundwater quality; and v) determine any interaction or impact from groundwater on surface water (groundwater monitoring locations should align with receiving environment surface water quality monitoring locations, if appropriate); and g) document groundwater management and monitoring methodologies undertaken for the duration of all the activities authorised under this environmental authority; and h) provide an appropriate quality assurance and quality control program; and i) include a review process to identify improvements to the program that includes addressing any comments provided by the administering authority.
E6	The GMMP must be reviewed by 1 April each year by an appropriately qualified person to determine compliance with the requirements in condition E5.
E7	Annual Groundwater Monitoring Report An Annual Groundwater Monitoring Report (AGMR) must be completed and submitted to the administering authority via WaTERS by 1 April each year.
E8	The AGMR required by condition E7 must include: a) a review of all the groundwater quality and standing water level data of all groundwater bores listed within Table E1: Groundwater monitoring locations and frequency; and b) an assessment of groundwater quality and standing water level trends for all data from all groundwater bores listed in Table E1: Groundwater monitoring locations and frequency; and c) details of any review undertaken of the groundwater conceptual model; and d) an assessment of any impacts on groundwater level due to the mining activities; and e) comparison with receiving environment surface water quality monitoring results to determine any interaction or impact from groundwater on surface water.

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E9	The following information must be recorded in relation to all groundwater water sampling: 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; and d) the results of all monitoring.
E10	The method of water sampling required by this environmental authority must comply with that set out in the latest edition of the administering authority's Water Quality Sampling Manual.
E11	Exceedance Investigation Groundwater measured at any compliance bore specified in Table E1: Groundwater monitoring locations and frequency, must not exceed a limit defined as Limit A, for the compliance bore, as specified in Table E2: Groundwater quality limits, on any five (5) consecutive sampling occasions.
E12	Groundwater measured at any compliance bore specified in Table E1: Groundwater monitoring locations and frequency must not exceed a limit defined as Limit B, for the compliance bore, as specified in Table E2: Groundwater quality limits , on any three (3) consecutive sampling occasions.
E13	If an exceedance under condition E11 or condition E12 is detected, the environmental authority holder must: a) notify the administering authority via WaTERS within twenty-four (24) hours of receiving the results; and b) complete an investigation into the cause of the exceedance within forty-eight (48) days of detection of an exceedance under condition E11 or condition E12.
E14	If the standing water level of the groundwater measured at any Alluvial or Triassic compliance bore specified in Table E1: Groundwater monitoring locations and frequency, shows groundwater drawdown in excess of two (2) metres per year, the environmental authority holder must: a) notify the administering authority via WaTERS within seven (7) days of receiving the results; and b) complete an investigation into the cause of the exceedance within forty-eight (48) days of detecting the drawdown in excess of two (2) metres per year.
E15	If the standing water level of the groundwater measured for Permian/Leichardt Seam compliance bore PT1 specified in Table E1: Groundwater monitoring locations and frequency, shows groundwater drawdown below 196.6 m AHD, the environmental authority holder must: a) notify the administering authority via WaTERS within seven (7) days of receiving the results; and b) complete an investigation into the cause of the exceedance within forty-eight (48) days of detecting the drawdown below 196.6 m AHD.
E16	A report detailing the findings and recommendations of the investigation required by condition E13 and condition E14 must be prepared by an appropriately qualified person and submitted to the administering authority via WaTERS within fourteen (14) days of completing the investigation.
E17	Bore construction and maintenance and decommissioning The construction, maintenance and management of groundwater bores (including groundwater monitoring bores) must be undertaken in accordance with the Minimum Construction Requirements for Water Bores in Australia (National Uniform Drillers Licensing Committee, 2011).

Agency interest: Surface Water	
Condition number	Condition
F1	Contaminants that will or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.
F2	All determinations of water quality and biological monitoring must be performed by a suitably qualified and experienced person.
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 condition F7 is permitted.
F4	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).
F5	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 via WaTERS by 1 July each year in the specified format: 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 results of all monitoring and details of any exceedances of the conditions of this environmental authority; and e) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.
F6	A Water Management Plan must be developed by a suitably qualified person and implemented. The Water Management Plan must be submitted to the administering authority upon request.
F7	The Water Management Plan must: a) provide for effective management of actual and potential environmental impacts resulting for water management associated with the mining activity carried out under this environmental authority; and b) include: i. A study of the source of contaminants; ii. A water balance model for the site; iii. A Water Management System for the site; iv. Measures to manage and prevent Saline Drainage v. Measures to manage and prevent Acid Rock Drainage; vi. Contingency procedures for emergency; vii. A program for monitoring and review of the effectiveness of the water management plan; and viii. An erosion and sediment control plan for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

F8	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 F7. b) Water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with condition F7, for the purpose of ensuring water does not become mine affected water.
F9	Water storages compliant with Condition F8 and listed in Table F1: Water Storage Monitoring, must be monitored for water quality characteristics specified in Table F2: Onsite Water Storage Contaminant Limits, at the monitoring locations and frequency specified in Table F1: Water Storage Monitoring.

Table F1: Water Storage Monitoring

Water storage description	Latitude (GDA2020)	Longitude (GDA2020)	Monitoring location	Frequency of monitoring
MIA Sediment Dam	-21.737430 -21.737028 -21.737303 -21.737954 -21.737581	148.159533 148.160081 148.160905 148.160794 148.159921	Spillway Inlet	Quarterly
ROM Dam	-21.742574 -21.742389 -21.743363 -21.743477	148.157611 148.158296 148.158459 148.157696	Spillway Inlet	Quarterly
Waste Dump Sediment Dam	-21.741936 -21.742191 -21.742498	148.164945 148.165943 148.165916	Spillway Inlet	Quarterly
Dam C	-21.736018 -21.736066 -21.739129 -21.739454	148.172758 148.172381 148.176061 148.176054	Spillway Inlet	Quarterly

Table F2: Onsite Water Storage Contaminant Limits

Quality characteristic	Test value	Contaminant limit
pH (pH unit)	Range	Greater than 4, less than 9 ⁽¹⁾ ⁽²⁾
EC (µs/cm)	75th percentile of surrounding groundwater quality	20,400
Sulphate (mg/L)	Maximum	1,000 ⁽¹⁾
Fluoride (mg/L)	Maximum	2 ⁽¹⁾
Aluminium (mg/L)	Maximum	10 ⁽¹⁾
Arsenic (mg/L)	Maximum	0.5 ⁽¹⁾
Cadmium (mg/L)	Maximum	0.01 ⁽¹⁾
Cobalt (mg/L)	Maximum	1 ⁽¹⁾
Copper (mg/L)	Maximum	1 ⁽¹⁾
Lead (mg/L)	Maximum	0.1 ⁽¹⁾
Nickel (mg/L)	Maximum	1 ⁽¹⁾
Zinc (mg/L)	Maximum	20 ⁽¹⁾

Notes:

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

(2) Page 4.2-4.15 of ANZECC & ARM CANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4–9".

F10	Mine affected water is permitted to be released to storage ponds for reuse in accordance with conditions of this approval and on land for the purposes of dust suppression.
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F11	Mine affected water used for dust suppression must meet the contaminant limits defined in Table F2: Onsite Water Storage Contaminant Limits .
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Agency interest: Land	
Condition number	Condition
G1	Areas affected by mining activities and subsidence as a result of underground mining, except for watercourse subsidence that is subject to conditions I1 to I13 , must be rehabilitated to a grazing post-mining land-use in accordance with Appendix 8: Rehabilitation Criteria .
G2	Subsidence management procedures must be developed and implemented during the continuation of the environmental authority, except for watercourse subsidence that is subject to condition I1 to I13 . The subsidence management strategies must be detailed in the Subsidence Management Plan and must at a minimum include: a) subsidence modelling prior to mining; b) rehabilitation methodology; and c) land management practices pre and post subsidence.
G3	Areas impacted by subsidence, or proposed to be impacted by subsidence must be identified within the Subsidence Management Plan.
G4	Topsoil must be stripped ahead of surface disturbance (other than subsidence) in accordance with a topsoil management plan.
G5	A topsoil inventory which identifies the topsoil requirements for the authorised mining activities and availability of suitable topsoil on site must be: a) provided with any Estimated Rehabilitation Cost application; and b) detailed in the Topsoil Management Plan.
G6	Land disturbed by mining must be rehabilitated in accordance with: i. Appendix 8 - Rehabilitation criteria; and ii. the Rehabilitation Management Plan required by condition G12.
G7	Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.
G8	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 G1 .
G9	Minimise the potential for contamination of land by hazardous contaminants.

G10	Land disturbed by the activities must be rehabilitated in a manner that ensures it is: a) Safe for humans and wildlife; b) Non-polluting; c) Stable; and d) Able to sustain agreed post-mining land use.
G11	Rehabilitation must commence when areas become available as specified in Appendix 8 – Rehabilitation Criteria.
G12	A rehabilitation management plan for all areas disturbed by mining must be developed by a suitably qualified person and submitted to the administering authority at least 3 months prior to the commencement of any rehabilitation activities, for review and approval. Following approval, the rehabilitation management plan must be implemented and submitted with any Estimated Rehabilitation Cost application.
G13	The Rehabilitation Management Plan must, at a minimum: a) develop design criteria for rehabilitation of each domain; b) specify spoil characteristics, soil analysis, and soil separation for use on rehabilitation; c) identify success factors and completion criteria for each domain; d) identify a minimum of three (3) reference and three (3) rehabilitation sites to be used to develop rehabilitation success criteria; e) describe the monitoring of reference sites inclusive of statistical design; f) detail rehabilitation methods applied to each domain; g) contain landform design criteria including end of mine design; h) detail how landform design will be consistent with the surrounding topography; i) provide schematic representation of final landform inclusive of: i. drainage design and features; ii. slope designs; iii. cover design; iv. erosion controls proposed on reformed land; j) describe rehabilitation monitoring and maintenance requirements to be applied to all areas of disturbance; k) develop a contingency plan for rehabilitation maintenance or redesign; and l) describe end of mine design plan and post mining land uses across the mine.
G14	Once rehabilitation has commenced, the holder of the environmental authority must conduct a Rehabilitation Monitoring Program on a yearly basis, which must include sufficient spatial and temporal replication to enable statistically valid conclusions as established under the rehabilitation program.
G15	The Rehabilitation Monitoring Program must be developed and implemented by a suitably qualified person.

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G16	Verification of rehabilitation success, determined by the rehabilitation success criteria developed as per condition G13 is to be carried out as follows: a) the minimum sampling intensity must be specified for the monitoring of progressive rehabilitation; b) justification of the suitability of the minimum sampling intensity must be provided; c) monitoring must include sufficient replication to enable statistical analysis of results at an acceptable power; and d) undertaken at twelve (12) monthly intervals.
G17	The Rehabilitation Monitoring Program must be included in any Estimated Rehabilitation Cost application and updated with each subsequent Estimated Rehabilitation Cost application, describing: a) how the rehabilitation objectives as per the Rehabilitation Management Plan will be achieved; and b) verification of rehabilitation success as per condition G16.
G18	Significant residual impacts to prescribed environmental matters are not authorised under this environmental authority or the <i>Environmental Offsets Act 2014</i> unless: a) The impact(s) is specified in Table G1: Significant residual impacts to prescribed environmental matters; or b) Offsets are provided, if required, by the <i>Environmental Protection and Biodiversity (EPBC) Act 1999</i> (Commonwealth) approval (EPBC 2007/3643).
G19	Records demonstrating that each impact to a prescribed environmental matter not listed in Table G1: Significant residual impacts to prescribed environmental matter, did not, or is not likely to, result in a significant residual impact to that matter must be: a) completed by a suitably qualified person; and b) kept for the life of the environmental authority.
G20	An environmental offset made in accordance with the <i>Environmental Offsets Act 2014</i> 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 G1: Significant residual impacts to prescribed environmental matters, unless a lesser extent of the impact has been approved in accordance with condition G18 [for non-staged offsets].
G21	Prior to the commencement of any impacts to a prescribed environmental matter for which an environmental offset is required under the <i>Environmental Offsets Act 2014</i> by condition G18, a report completed by a suitably qualified person that contains an analysis of the estimated maximum extent of impact to each prescribed environmental matter must be provided to the administering authority.
G22	The report required by condition G21 must be approved by the administering authority before the notice of election, if applicable, is given to the administering authority.
G23	The notice of election for the environmental offset required by condition G22, if applicable, must be provided to the administering authority no less than three (3) months before the proposed commencement of the significant residual impacts for which the environmental offset is required.

Table G1: Significant residual impacts to prescribed environmental matters

Prescribed environmental matters	Location of impact	Maximum extent of impact (ha)	Offset requirement under <i>Environmental Offsets Act 2014</i> (Qld)
Habitat for an animal that is vulnerable wildlife – Squatter Pigeon – <i>Geophaps scripta scripta</i>	Not applicable	83	No – Offsets for a significant residual impact will be provided under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act).
Habitat for an animal that is vulnerable wildlife – Yakka Skink – <i>Egernia rugosa</i>	Not applicable.	74	No – Offsets for a significant residual impact will be provided under the EPBC Act.
Brigalow threatened ecological community (TEC)	Not applicable.	9.2	No - Offsets for a significant residual impact will be provided under the EPBC Act.
Habitat for an animal that is vulnerable wildlife – Ornamental Snake - <i>Denisonia maculata</i>	Appendix 7 - Ornamental Snake Core Habitat (MSES - Essential habitat)	2.6	Yes
Regulated Vegetation that is Of Concern – Regional Ecosystem (RE) 11.3.4	Appendix 5 – Residual MSES: RE11.3.4 <i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. Woodland on Alluvial Plains– Of Concern	7.0	Yes
Regulated Vegetation within a defined distance of a watercourse – RE11.3.25	Appendix 6 – Residual MSES: REs within a Defined Distance from the Defining Banks of Relevant Watercourses	2.1	Yes
Regulated Vegetation within a defined distance of a watercourse – RE11.5.9	Appendix 6 – Residual MSES: REs within a Defined Distance from the Defining Banks of Relevant Watercourses	6.1	Yes

Agency interest: Regulated Structures	
Condition number	Condition
H1	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.
H2	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.
H3	Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933).
H4	All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933). NOTE: Certification of design and construction may be undertaken by different persons.
H5	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) has been certified by a suitably qualified and experienced person for the design and design plan and the associated operating procedures in compliance with the relevant condition of this authority.
H6	Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan in the form set out in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933) and must be recorded in the Register of Regulated Structures.

H7	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); 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) for dams that are associated with a failure to contain seepage, must 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.
H8	Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that: a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure; and b) construction of the regulated structure is in accordance with the design plan.
H9	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 ten (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 five (5) business days of it being amended.

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H10	Operation of a regulated structure, except for an existing structure, is prohibited unless the holder has submitted to the administering authority in respect of all regulated structures, 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 H5; b) a set of 'as constructed' drawings and specifications; c) certification of those 'as constructed drawings and specifications' in accordance with condition H8; d) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the design storage allowance (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 structures.
H11	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.
H12	Conditions H13 to H16 inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
H13	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.
H14	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.
H15	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.
H16	The holder must record any changes to the MRL in the Register of Regulated Structures.
H17	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.
H18	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).
H19	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.
H20	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.

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H21	Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
H22	At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced 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.
H23	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).
H24	The holder must within twenty (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 ten (10) business days of receipt of request.
H25	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.
H26	Dams must not be abandoned but be either: a) decommissioned and rehabilitated to achieve compliance with condition G10; or b) be left in-situ for a beneficial use(s) provided that: i) it no longer contains contaminants that will migrate into the environment; ii) it contains water of a quality that is demonstrated to be suitable for its intended use(s); and iii) the administering authority, the holder of the environmental authority and the landholder agree in writing that the dam will be used by the landholder following the cessation of the environmentally relevant activity(ies).
H27	A Register of Regulated Structures must be established and maintained by the holder for each regulated structure.
H28	The holder must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated structure is submitted to the administering authority.
H29	The holder must make a final entry of the required information in the Register of Regulated Structures once compliance with conditions H11 and H13 has been achieved.
H30	The holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
H31	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.

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H32	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.
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Agency interest: Subsidence	
Condition number	Condition
I1	Subject to the conditions of this environmental authority, specifically conditions I1 to I13 inclusive, the holder of this environmental authority is authorised to subside the eastern tributaries of Bullock Creek and southern tributaries of Spade Creek and Alpha Creek within ML700024, as depicted in Appendix 1: Approved Project Layout and Appendix 3: Maximum Disturbance Area . This subsidence is authorised to occur as a result of underground longwall mining activities.

12	The holder of this environmental authority must develop a Subsidence Management Plan which has been approved by the administering authority and must at a minimum include the following components: 1) The condition of the existing watercourses and tributaries (including baseline assessment); 2) The objectives and outcomes of the Subsidence Management Plan; 3) A risk assessment that identifies all potential impacts on the land, groundwater, watercourses and tributaries, and associated floodplain resulting from subsidence of the watercourses including but not limited to: a) physical condition of surface drainage: i. erosion; ii. areas susceptible to higher levels of erosion such as watercourse and tributary confluences; iii. incision processes; iv. stream widening; v. tension cracking; vi. lowering of bed and banks; vii. creation of instream waterholes; viii. changes to local drainage patterns; b) overland flow; i. capture of overland flow by subsided long-wall panels; ii. increased overbank flows due to lowering of high bank of watercourses; iii. the portion of local and large scale catchment likely to be captured by subsided longwall panels and the associated impacts on downstream users; c) water quality: i. surface water; ii. groundwater; iii. overland flow water detained in subsided long-wall panels; d) land condition: current land condition to be impacted by subsidence; e) infrastructure: detail of existing and planned infrastructure where there is a potential impact from effects of land subsidence; f) groundwater; g) erosion; h) floods. 4) The measures to be implemented to avoid, minimise and mitigate each potential impact; 5) A monitoring, maintenance and evaluation program that: a) details the level of effectiveness of the measures using indicators and success criteria; b) includes the annual review of success and appropriateness of measures, c) details how improvements will be implemented where success criteria are not met; 6) A rehabilitation plan for subsided areas of Bullock Creek (East), Alpha Creek and Spade Creek including:
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	a) rehabilitation objectives; b) completion criteria; c) schedule for progressive rehabilitation; and 7) An action plan to address the outcomes and recommendations from annual inspections.
I3	The Subsidence Management Plan must be assessed and certified by an independent, third party, suitably qualified and experienced person, that the plan is compliant in all respects with this environmental authority.
I4	Subsidence of Spade Creek, Alpha Creek and Bullock Creek (East) and associated tributaries within ML700024 must not commence until: a) the administering authority has received a copy of the certified Subsidence Management Plan; and b) the Subsidence Management Plan has been implemented.
I5	The administering authority may, within twenty-eight (28) days of receiving the certified Subsidence Management Plan as required by condition I4, provide comments in respect to the submitted plan.
I6	All comments made by the administering authority under condition I5 must be considered and incorporated into the Subsidence Management Plan within twenty-eight (28) days of receipt of the comments, and the plan be re-submitted to the administering authority.
I7	Each subsided longwall panel and the full extent of Spade Creek, Alpha Creek and Bullock Creek (East) within the ML700024, must be inspected annually by a suitably qualified and experienced person in accordance with the following minimum requirements: a) report on the condition of the bed and banks of the watercourses and tributaries; b) report on vegetation cover (%) in the riparian zone; c) a comparison of the bed depths, and bank widths from the previous inspection, to determine the overall soil loss from the subsided areas of Spade Creek, Alpha Creek and Bullock Creek (East), and the mitigation measures to be implemented to minimise further soil loss; d) assess the adequacy of all mitigation measures with respect to the subsidence management plan and any previous annual inspection; and e) detail any recommended mitigation measures or rehabilitation requirements to be undertaken.
I8	After each annual inspection, a copy of a report including any recommendations, certified by an independent, third party, suitably qualified and experienced person, must be provided to the administering authority within two (2) months of completion.
I9	Any recommended mitigation measure, as identified in the annual inspection, must be implemented prior to 1 November of the year that the recommendation was given, unless agreed to by the administering authority.
I10	If the mitigation measures recommended in the annual inspections are not implemented, no further subsidence of Spade Creek, Alpha Creek or Bullock Creek (East) within the ML700024 is permitted until the measures are completed, unless otherwise agreed to by the administering authority.

I11	The Subsidence Management Plan must be reviewed and updated to address any recommendations detailed in the annual inspection reports.
I12	All areas of Spade Creek, Alpha Creek and Bullock Creek (East) that has been affected by subsidence, must be rehabilitated to a standard consistent with items a) through e) below: a) incorporate pre-existing natural features of the watercourses (including geomorphic and vegetation), as far as practicable. b) attain the pre-existing hydrologic characteristics of surface water and groundwater systems for the area in which the watercourses are located, as far as practicable. c) attain the hydraulic characteristics of the watercourses that are equivalent to other local watercourses, and are suitable for the subsided areas of Spade Creek, Alpha Creek and Bullock Creek (East), without using artificial structures that require on-going maintenance, as far as practicable. d) attain sediment transport and water quality regimes that allow the watercourses to be self-sustaining, while minimising any impacts to upstream and downstream water quality, geomorphology and/or vegetation. e) attain equilibrium and functionality in all substrate conditions at the location of the watercourses.
I13	Rehabilitation of the subsided areas of Spade Creek, Alpha Creek and Bullock Creek (East) and associated tributaries must be undertaken progressively in accordance with the Subsidence Management Plan.
I14	Subsidence monitoring Following the commencement of mining activities resulting in subsidence, monitoring of subsidence must occur on a regular basis as set out in the Subsidence Management Plan as required by condition I2.
I15	Ponding Ponding of surface water as a result of subsidence must not occur outside of the areas shown as 'ponding areas' or 'temporary depression in stream bed' in Appendix 3: Maximum disturbance areas. Ponding of water in areas shown as 'temporary depression in stream bed' must not result in any dieback of native vegetation in or surrounding the areas.
I16	Pond water quality The ponding areas from subsidence (as depicted in Appendix 3) must meet the water quality objectives for beef cattle as per the Stock Watering Environmental Values (EV) of the "Environmental Protection (Water) Policy 2009 Isaac River Sub-basin Environmental Values and Water Quality Objectives". The relevant salinity limit is 'no adverse effects on animals'.

Definitions

µS/cm means micro siemens per centimetre.

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

Administering authority is the agency that administers the environmental authority provisions under the *Environmental Protection Act 1994*.

Affected person means someone whose drinking water can potentially be impacted as a result of discharges from a dam or their life or property 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 means 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); and
- (g) for evidence of conformance with the current operational plan.

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

Appropriately qualified person means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance 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.

Certified with respect to watercourse diversions, means assessed and approved by a suitably qualified and experienced person. In relation to 'as constructed' drawings and specifications, the certification must be by the suitably qualified person who supervised the construction of the watercourse diversion, or re-establishment of the watercourse.

Certifying, certify or certified have a corresponding meaning as 'certification'.

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; or
- (d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth; or
- (e) any substance used as, or intended for use as:
 - (i) a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or

- (ii) a surface active agent, including, for example, soap or related detergent; or
- (iii) a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or
- (iv) a fertiliser for agricultural, horticultural or garden use; or
- (v) a substance used for, or intended for use for 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 (ESR/2016/1933).

Construction or constructed in relation to a dam includes building a new dam and modifying or lifting an existing dam but does not include investigations and testing necessary for the purpose of preparing a design plan.

Construction or constructed in relation to watercourse diversions, is the process of building, or modifying an existing diversion, but does not include investigations and testing necessary for the purpose of preparing a design plan.

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.

Contaminate means to render impure by contact or mixture.

Contaminated means the substance has come into contact with a contaminant.

Contaminant - A contaminant can be:

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

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 (ESR/2016/1933) 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.

Designated precinct has the meaning in Part 5 section 15(3) of the Regional Planning Interests Regulation 2014:

- (a) for a strategic environmental area mentioned in section 4(1)-the area identified as a designated precinct on the strategic environmental area map for the strategic environmental area; or
- (b) if a strategic environmental area is shown on a map in a regional plan - the area identified on the map as a designated precinct for the strategic environmental area.

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

Development approval means a development approval under the *Integrated Planning Act 1997*, the *Sustainable Planning Act 2009* or the *Planning Act 2016* in relation to a matter that involves an environmentally relevant activity under the *Environmental Protection Act 1994*.

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;
- (f) releasing of contaminants into the soil or underlying geological strata.

EC means electrical conductivity.

Effluent means treated wastewater 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 affected persons and the implementation of protection measures. The plan must require dam owners to annually review and update contact information where required.

Environmental has the meaning in section 7 of the *Environmental Offsets Act 2014*.

Environmental authority means an environmental authority granted in relation to an environmentally relevant activity under the *Environmental Protection Act 1994*.

Environmental authority holder means the holder of this environmental authority. **Environmental offset** has the meaning in section 7 of the *Environmental Offsets Act 2014*.

Environmentally relevant activity means an environmentally relevant activity as defined in the *Environmental Protection Act 1994* and listed in the *Environmental Protection Regulation 2008*.

Environmental nuisance has the meaning in section 15 of the *Environmental Protection Act 1994*. Equilibrium means a state where 'balance' is achieved despite changing variables.

Estimated rehabilitation cost for a resource activity, see section 300(2) of the *Environmental Protection Act 1994*.

ERC decision means a decision of the administering authority under section 300 of the *Environmental Protection Act 1994* about the estimated rehabilitation cost for a resource activity.

ERC Period for the estimated rehabilitation cost for a resource activity, means:

- (a) if a PRCP schedule applies for the activity—the period of between 1 and 5 years stated in the application for an ERC decision under section 298(2)(b); or
- (b) if the activity is a petroleum activity that is an ineligible ERA, other than a petroleum activity to which a plan of operations applies, or the activity relates to a 1923 Act petroleum tenure granted under the Petroleum Act 1923—the period of between 1 and 5 years stated in the ERC decision about the estimated rehabilitation cost; or
- (c) if a plan of operations applies for the activities—the plan period for the plan of operations; or
- (d) otherwise—the total period during which the resource activity is likely to be carried out under the environmental authority for the activity.

Existing authority has the meaning in section 94 of the *Environmental Offsets Act 2014*.

Exploration Activities are mining activities permitted under an environmental authority, that allows the holder to:

- (a) determine the existence, quality and quantity of minerals;
- (b) evaluate the potential for development of the mineral resource;
- (c) mining and engineering feasibility studies; and
- (d) other activities approved by the Minister

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 (ESR/2016/1933) published by the administering authority.

Flare pit means containment area where any hydrocarbon that is discovered in an over-pressured reservoir during a drilling operation is diverted to, and combusted. The flare pit is only used during the drilling and work over process on a petroleum well.

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

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

Functional design is a document that contains 'conceptual' information about the design, operation and revegetation criteria of a watercourse diversion that addresses the outcomes stated in the conditions on the environmental authority relating to the diversion. The document should include, but not be limited to:

- (a) geomorphic and vegetation assessment of the existing watercourse;
- (b) hydrologic conditions of the existing watercourse;
- (c) the proposed watercourse diversion route; and
- (d) results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion.

Functionality means the purpose that something is designed or expected to fulfil.

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) The holder of an environmental authority for a resource activity is the holder of the relevant tenure.
- (b) The holder of the resource tenure is the holder of the tenure under resource legislation.

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 (ESR/2016/1933).

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

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

Land in the 'land schedule' 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 capability as defined in the *DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland*.

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

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.

Licensed place means the mining activities carried out at the mining tenement ML700024.

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 (ESR/2016/1933).

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 (ESR/2016/1933) published by the administering authority.

Manual means the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) published by the administering authority, as amended from time to time.

Matters of state environmental significance (MSES) means the following natural values and areas:

- (a) protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992*
- (b) 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zones under the *Marine Parks Act 2004*.
- (c) areas within declared fish habitat areas that are management A areas or management B areas under the *Fisheries Regulation 2008*
- (d) a designated precinct, in a strategic environmental area under the Regional Planning Interests Regulation 2014, schedule 2, part 5, s15(3)

- (e) wetlands in a wetland protection area or wetlands of high ecological significance shown on the map of referable wetlands under the Environmental Protection Regulation 2008
- (f) wetlands and watercourses in high ecological value waters identified in the Environmental Protection (Water) Policy 2009, schedule 1
- (g) legally secured offset areas as defined under the *Environmental Offsets Act 2014*.
- (h) threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006
- (i) marine plants under the *Fisheries Act 1994* (excluding marine plants in an urban area)
- (j) waterways that provide for fish passage under the *Fisheries Act 1994* (excluding waterways providing for fish passage in an urban area)
- (k) high risk area on the flora survey trigger map as described in the Environmental Offsets Regulation 2014, schedule 2, part 6(1)
- (l) regulated vegetation under the *Vegetation Management Act 1999* that is:
 - (i) category B areas on the regulated vegetation management map, that are 'endangered' and 'of concern' regional ecosystems
 - (ii) category C areas on the regulated vegetation management map that are 'endangered' and 'of concern' regional ecosystems
 - (iii) category R areas on the regulated vegetation management map
 - (iv) areas of essential habitat on the essential habitat map for wildlife prescribed as 'endangered wildlife' or 'vulnerable wildlife' under the *Nature Conservation Act 1992*
 - (v) category A, B, C or R areas on the regulated vegetation management map that are located within a defined distance from the defining banks of a relevant watercourse identified on the vegetation management watercourse and drainage feature map
 - (vi) category A, B, C or R areas on the regulated vegetation management map that are located within a wetland or within 100 metres from the defining bank of a wetland identified on the vegetation management wetlands map.

Maximum extent of impact means the total, cumulative, residual extent and duration of impact to a prescribed environmental matter that will occur over a project's life after all reasonable avoidance and reasonable on-site mitigation measures have been, or will be, undertaken.

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 means the following types of 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:
 - a. areas that are been capped and have monitoring data demonstrating hazardous material adequately contained with the site;
 - b. 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.

Minimise means to reduce to the smallest possible amount or degree.

Mining activity/mining activities means the following activities—

- (a) authorised as per the definition in section 110 of the *Environmental Protection Act 1994*;
- (b) all environmentally relevant activities authorised under this environmental authority;
- (c) all mining disturbance including construction of infrastructure, overburden removal and active mining;
- (d) all care and maintenance activities;
- (e) exploration; and
- (f) rehabilitation.

Modification or modifying see definition of 'construction'.

NATA means National Association of Testing Authorities, Australia.

Natural flow means the flow of water through waters caused by nature.

Non-polluting means having no adverse impacts upon the receiving environment.

Notice of election has the meaning in section 18(2) *Environmental Offsets Act 2014*.

Operational plan is defined to include:

- (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.

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).

Permanent watercourse diversion is a man-made structure that incorporates the geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse and is designed, constructed, operated and maintained according to an engineering standard that ultimately achieves a self-sustaining watercourse able to function without features or characteristics that rely on ongoing maintenance or that impose a financial or other burden on the proponent, government or the community.

Ponding areas as depicted in Appendix 3, are areas that as a result of longwall underground mining activity, experience a vertical displacement of ground surface and result in ponding of surface water for more than 10%

of a 12-month period on average.

Pre-existing watercourse means the section of watercourse from which the flow of water will be diverted as a result of the construction and operation of a watercourse diversion.

Prescribed environmental matters has the meaning in section 10 of the *Environmental Offsets Act 2014*, limited to the matters of State environmental significant listed in Schedule 2 of the *Environmental Offsets Regulation 2014*.

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.

Production testing has the meaning in section 73 of the *Petroleum and Gas (Production and Safety) Act 2004*.

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

Reference site (or analogue site) may reflect the original location, adjacent area or another area where rehabilitation success has been completed for a similar biodiversity. Details of the reference site may be as photographs, computer generated images and vegetation models etc.

Register of Regulated Structures 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 structure as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)*;
- (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 GDA2020) 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);
 - (vii) Design storage allowance (megalitres) and associated level of the dam (metres AHD);
 - (viii) 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.

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 (ESR/2016/1933) 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 means 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.

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

Residual 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.

Revegetation is the re-establishment of vegetation (not including a species declared under the Land Protection (Pest and Stock Route Management) Regulation 2003 as a category class 1 pest, category class 2 pest or category class 3 pest) of a species and density of cover similar to surrounding undisturbed areas or the landform that existed before mining activities on soil surfaces associated with the construction or rehabilitation of a watercourse diversion.

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

Saline drainage means the movement of waters, contaminated with salts, as a result of the mining activity.

Self-sustaining means not requiring on-going intervention and maintenance to maintain functional riverine processes and characteristics.

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 and 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.

Significant residual impact is defined in section 8 *Environmental Offsets Act 2014*.

Significant disturbance includes land:

- (a) if it is contaminated land; or
- (b) it has been disturbed and human intervention is needed to rehabilitate it:
 - (i) to a state required under the relevant environmental authority; or
 - (ii) if the environmental authority does not require the land to be rehabilitated to a particular state, to a state immediately before its disturbance.

Some examples of **disturbed land** include:

- (a) areas where soil has been compacted, removed, covered, exposed or stockpiled;
- (b) areas where vegetation has been removed or destroyed to an extent where the land has been made susceptible to erosion; (vegetation & topsoil);
- (c) areas where land use suitability or capability has been diminished;
- (d) areas within a watercourse, waterway, wetland or lake where mining activities occur;
- (e) areas submerged by tailings or consequenceous contaminant storage and dam walls in all cases;
- (f) areas under temporary infrastructure. Temporary infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after mining activities have ceased; or
- (g) areas where land has been contaminated and a suitability statement has not been issued.

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

Stable means geotechnical stability of the rehabilitated landform where instability related to the excessive settlement and subsidence caused by consolidation / settlement of the wastes deposited and sliding / slumping instability has ceased.

Strategic environmental area has the meaning in section 11(1) of the *Regional Planning Interests Act*

2014.

Structure means dam or levee.

Storm water means all surface water runoff from rainfall.

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; or
- (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.

Suitably qualified and experienced person means a person who is a Registered Professional Engineer of Queensland under the provisions of the *Professional Engineers Act 2002*, who has an appropriate level of expertise in the structures, geomechanics, hydrology, hydraulics and environmental impact of watercourse diversions. An appropriate level of expertise includes:

- (a) demonstrable competency, experience and expertise in:
 - (i) investigation, design or construction of watercourses diversions;
 - (ii) operation and maintenance of watercourse diversions;
 - (iii) geomechanics with particular emphasis on channel equilibrium, geology and geochemistry;
 - (iv) hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology;
 - (v) hydraulics with particular reference to sediment transport and deposition and erosion control;
 - (vi) hydrogeology with particular reference to seepage and groundwater;
 - (vii) solute transport processes and monitoring thereof, or
- (b) sufficient knowledge and experience to certify that where the suitably qualified and experienced person has relied on advice and information provided by other persons with relevant expertise*:
 - (i) they consider it reasonable to rely on that advice and information;
 - (ii) the expert providing the advice and information has knowledge, competency, suitable experience and demonstrated expertise in the matters related to watercourse diversions.

***Persons with relevant expertise** include:

- (a) Geomorphologist: person who has demonstrated competency and relevant experience in stream geomorphology and watercourse diversions.
- (b) Geotechnical Expert: person who has demonstrated competency and relevant experience in geotechnical assessment of soil characteristics suitable for watercourse diversions.
- (c) Vegetation Expert: person who has demonstrated competency and relevant experience in the identification, role and function of vegetation with watercourses and adjoining floodplains and has demonstrated competency and relevant experience in revegetation of watercourse diversions and adjoining floodplains.

- (d) Groundwater Expert: person who has demonstrated competency and relevant experience in groundwater systems.
- (e) Surface Water Expert: person who has demonstrated competency and relevant experience in hydrology.
- (f) Engineer: person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the Professional Persons Act 2002 or has similar qualifications under a respected professional registration association and has demonstrated competency and relevant experience in design and construction of watercourse diversions.
- (g) Soils Expert: person who has demonstrated competency and relevant experience in soil classification including the physical, chemical and hydrologic analysis of soil.

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.

Temporary depression in stream bed means temporary depressions occurring within the stream bed of watercourses due to subsidence from underground longwall mining. These depressions should fill due to natural channel transport and erosion processes and are not expected to persist beyond the first significant stream flow event. These depressions will not form permanent ponds or cause dieback of riparian vegetation.

Temporary watercourse diversion is a man-made structure that may incorporate geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse and is designed, constructed, operated and maintained to an engineering standard that ensures the diversion does not compromise the equilibrium and performance of the diversion and adjoining watercourses. A temporary diversion is replaced by a permanent diversion, or the re-establishment of the pre-existing watercourse, within the timeframe specified in the design plan.

The Act means *the Environmental Protection Act 1994*.

Void means any man-made constructed, open excavation in the ground.

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

Waste management hierarchy has the meaning given by the *Waste Reduction and Recycling Act 2011*.

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

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

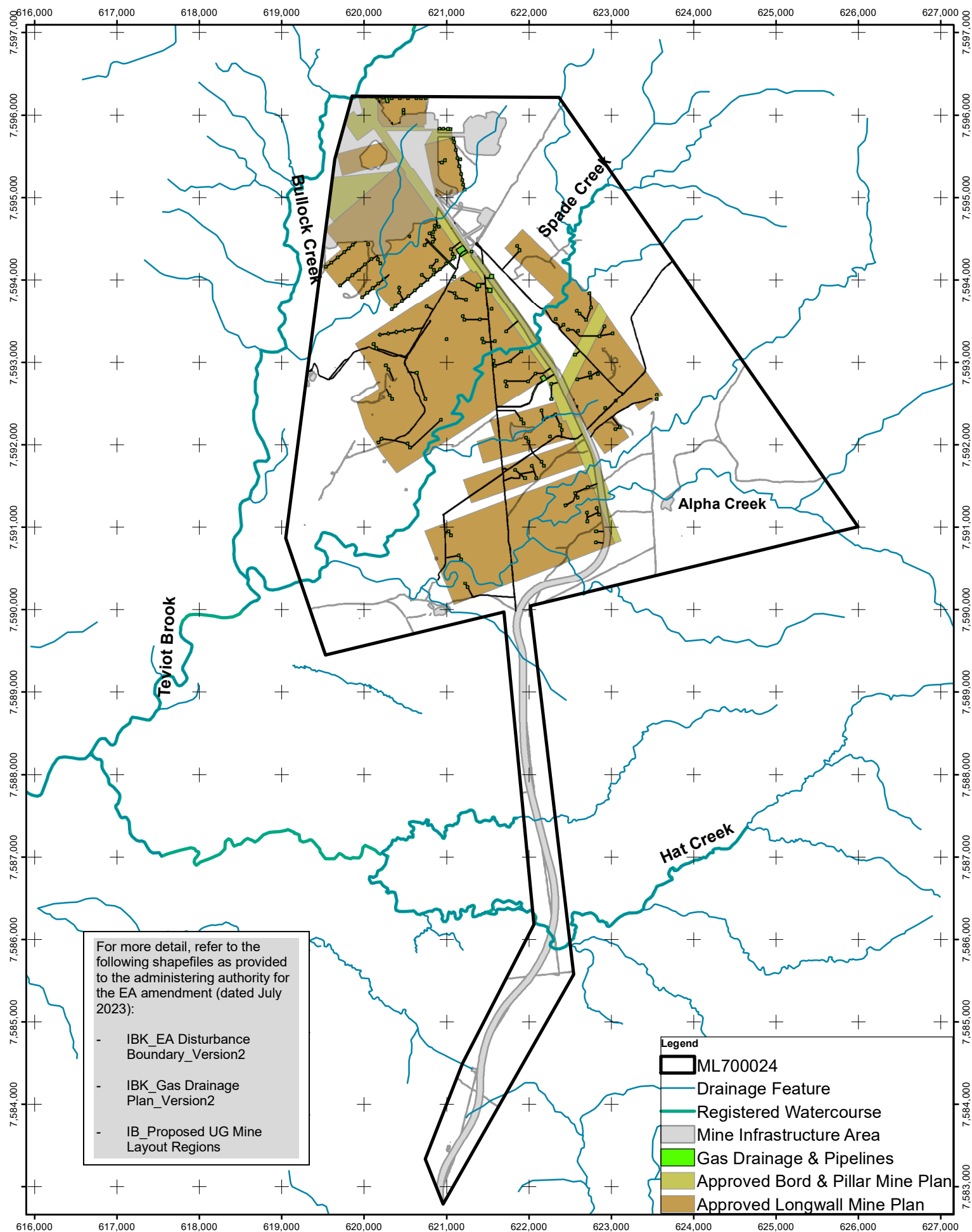
Water is defined under Schedule 4 of the *Water Act 2000*

Watercourse is defined in Schedule 4 of the *Environmental Protection Act 1994* and means:

- (a) a river, creek or stream in which water flows permanently or intermittently:
 - (i) in a natural channel, whether artificially improved or not; or
 - (ii) in an artificial channel that has changed the course of the watercourse.
- (b) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

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

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.



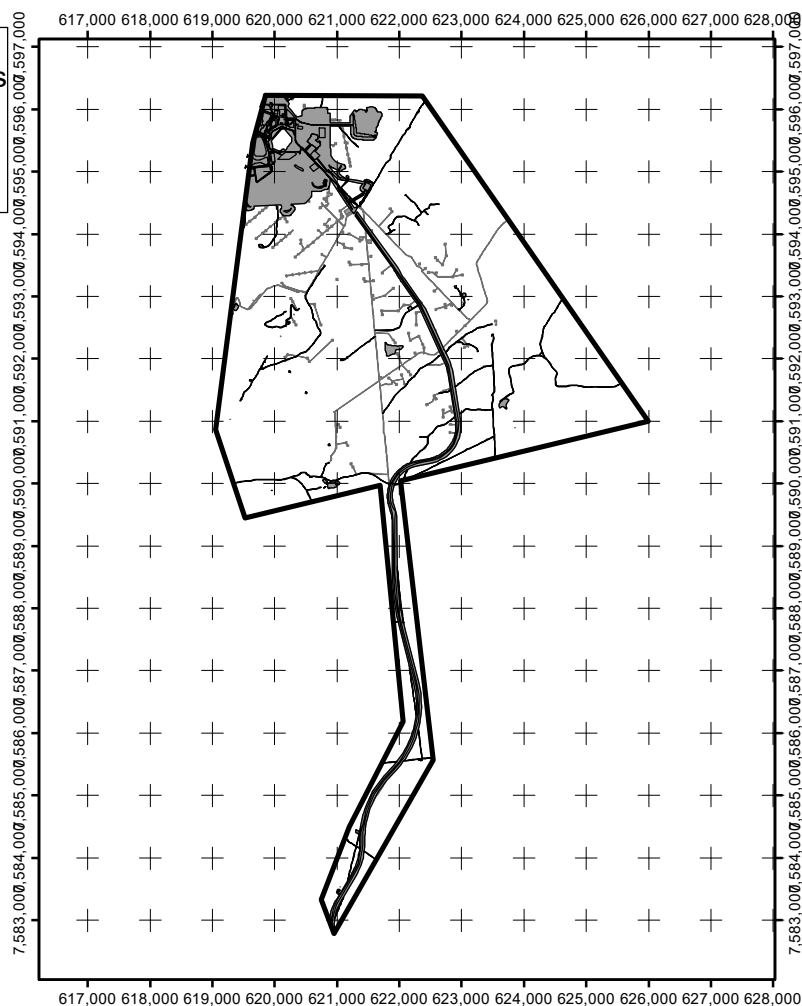
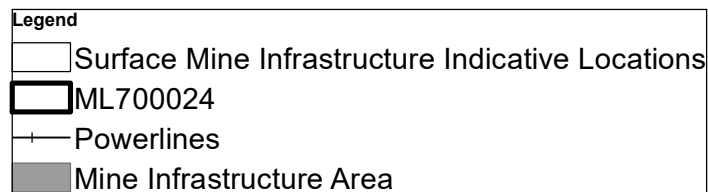
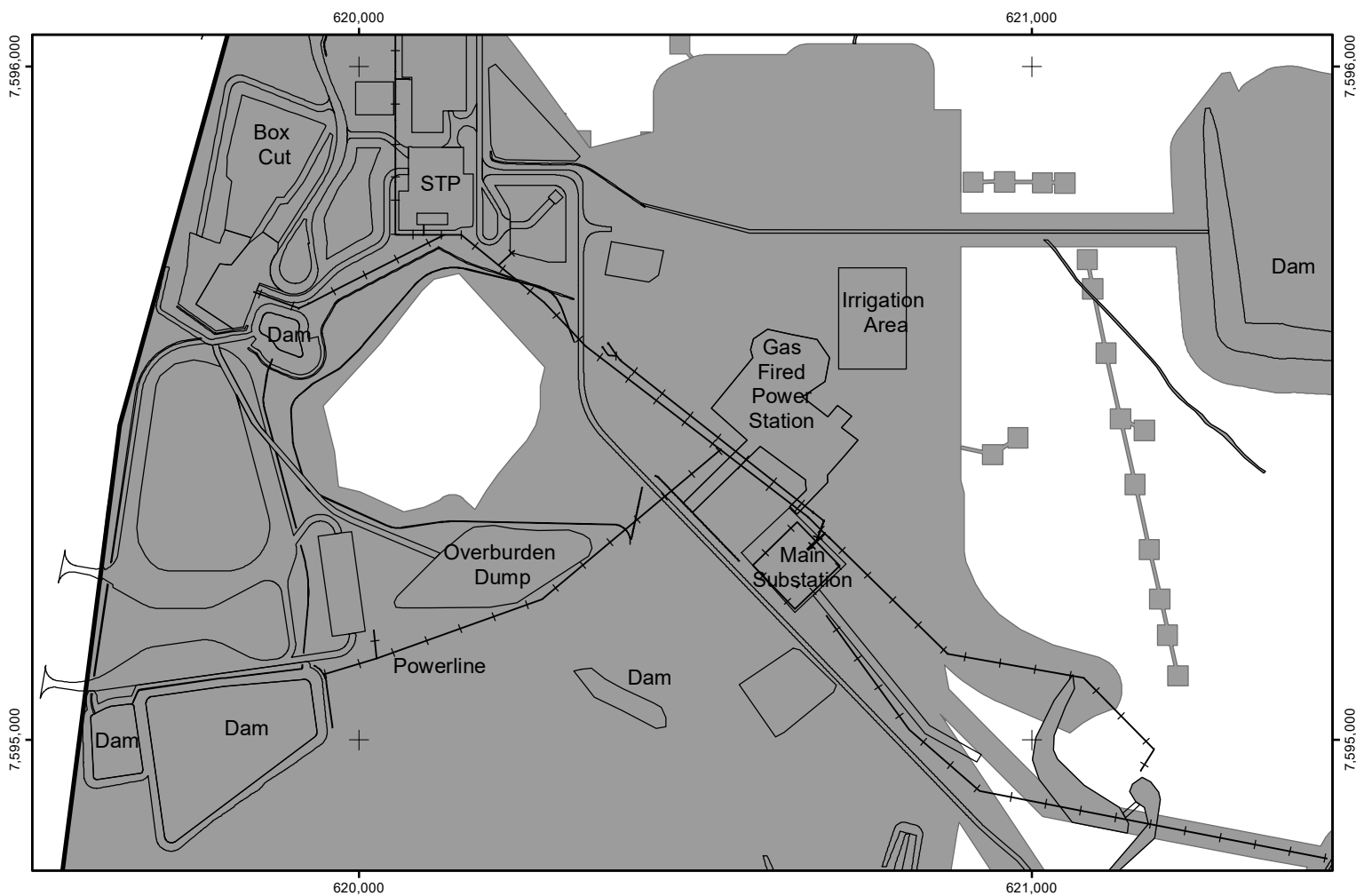
IRONBARK NO.1 COAL MINE

APPENDIX 1 - APPROVED PROJECT LAYOUT



Datum: Australian 1984 Coordinate System: AGD 1984 AMG Zone 55

Drawn By: SBereyng Date: 28/07/2023



IRONBARK NO.1 COAL MINE

APPENDIX 2 - APPROVED SURFACE INFRASTRUCTURE

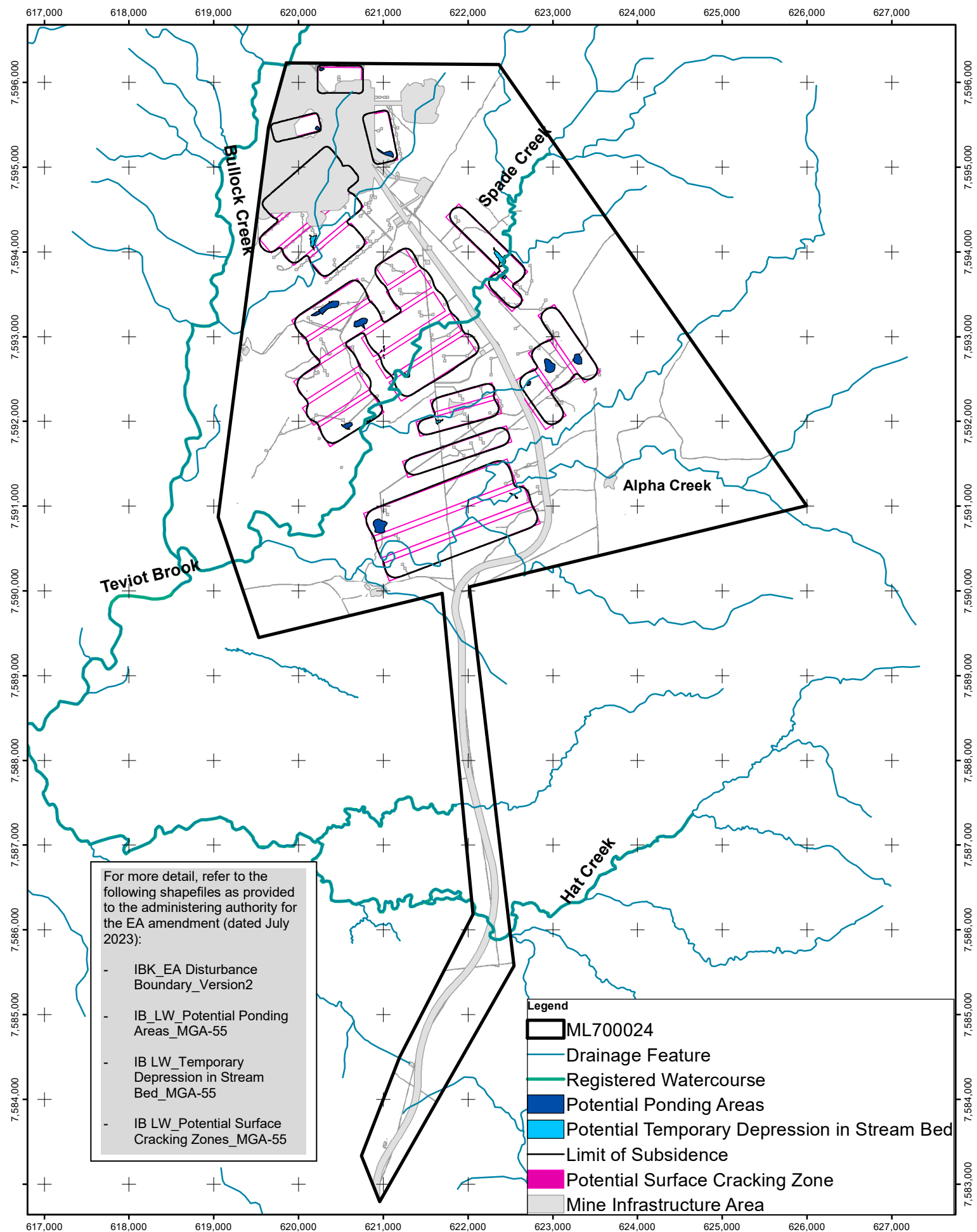


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Drawn By: slloyd

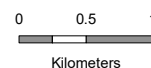
Date: 5/03/2024





IRONBARK NO.1 COAL MINE

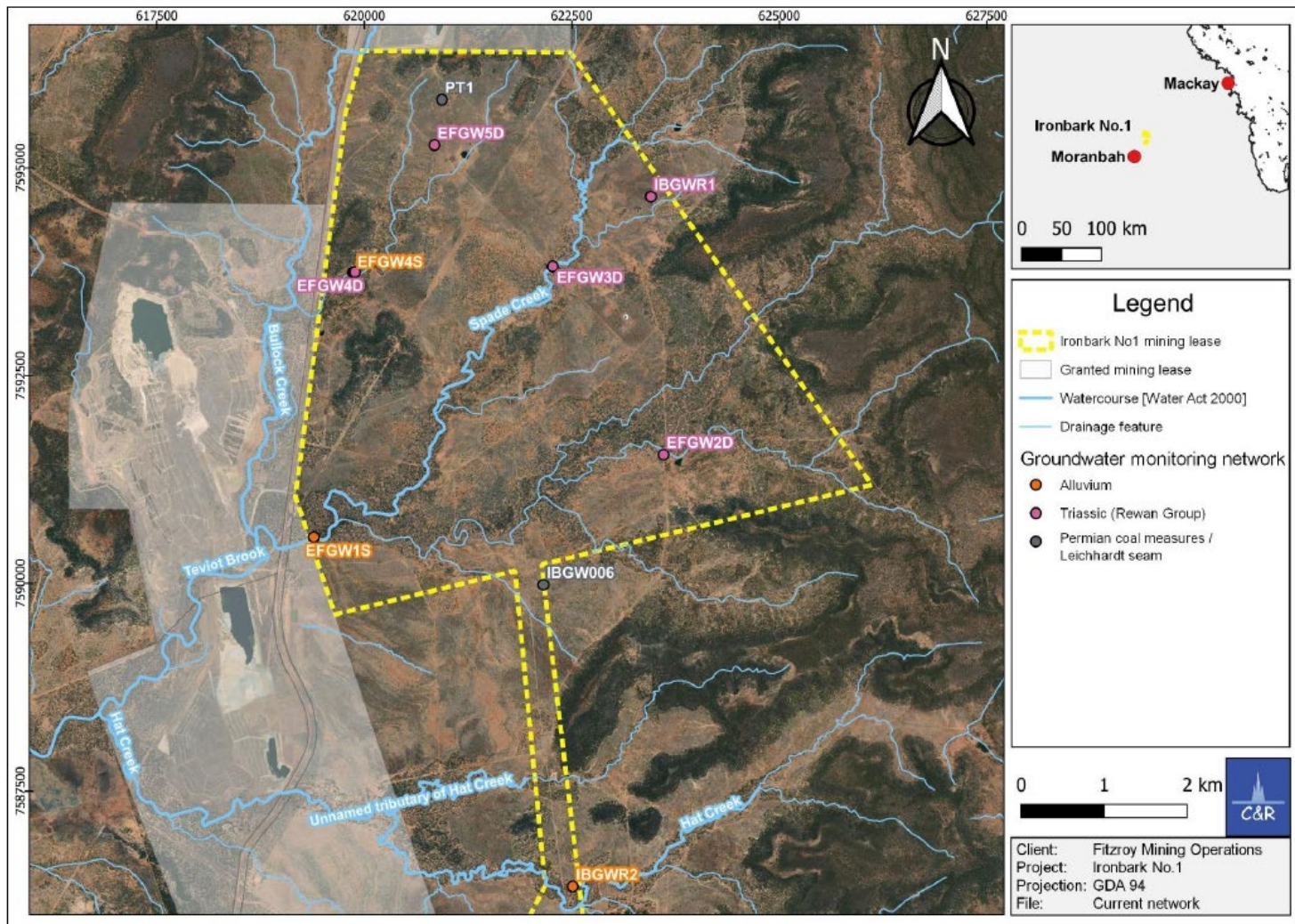
APPENDIX 3 - MAXIMUM DISTURBANCE AREA



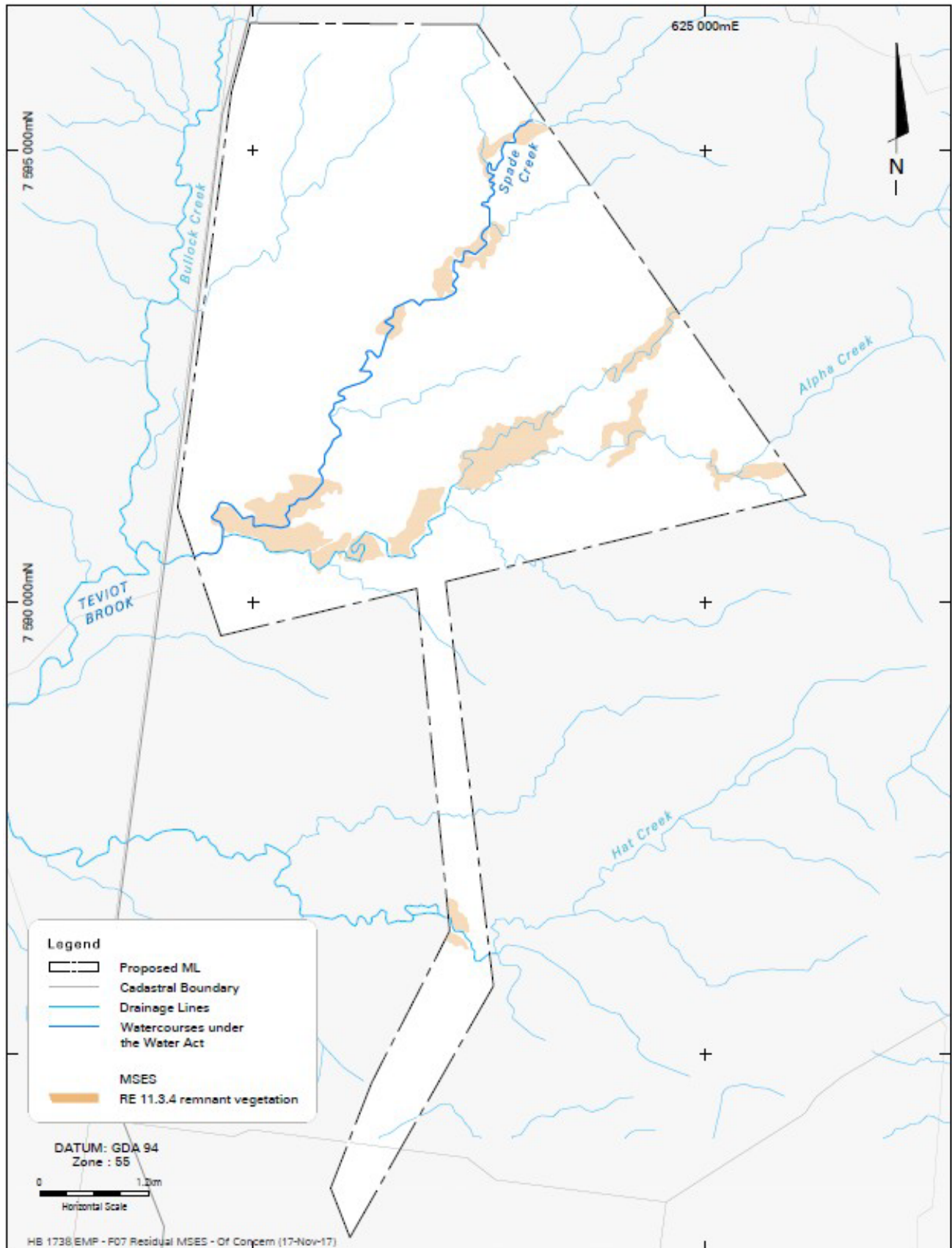
Datum: Australian 1984 Coordinate System: AGD 1984 AMG Zone 55

Drawn By: SBereyney Date: 28/07/2023





Groundwater monitoring bores
APPENDIX 4

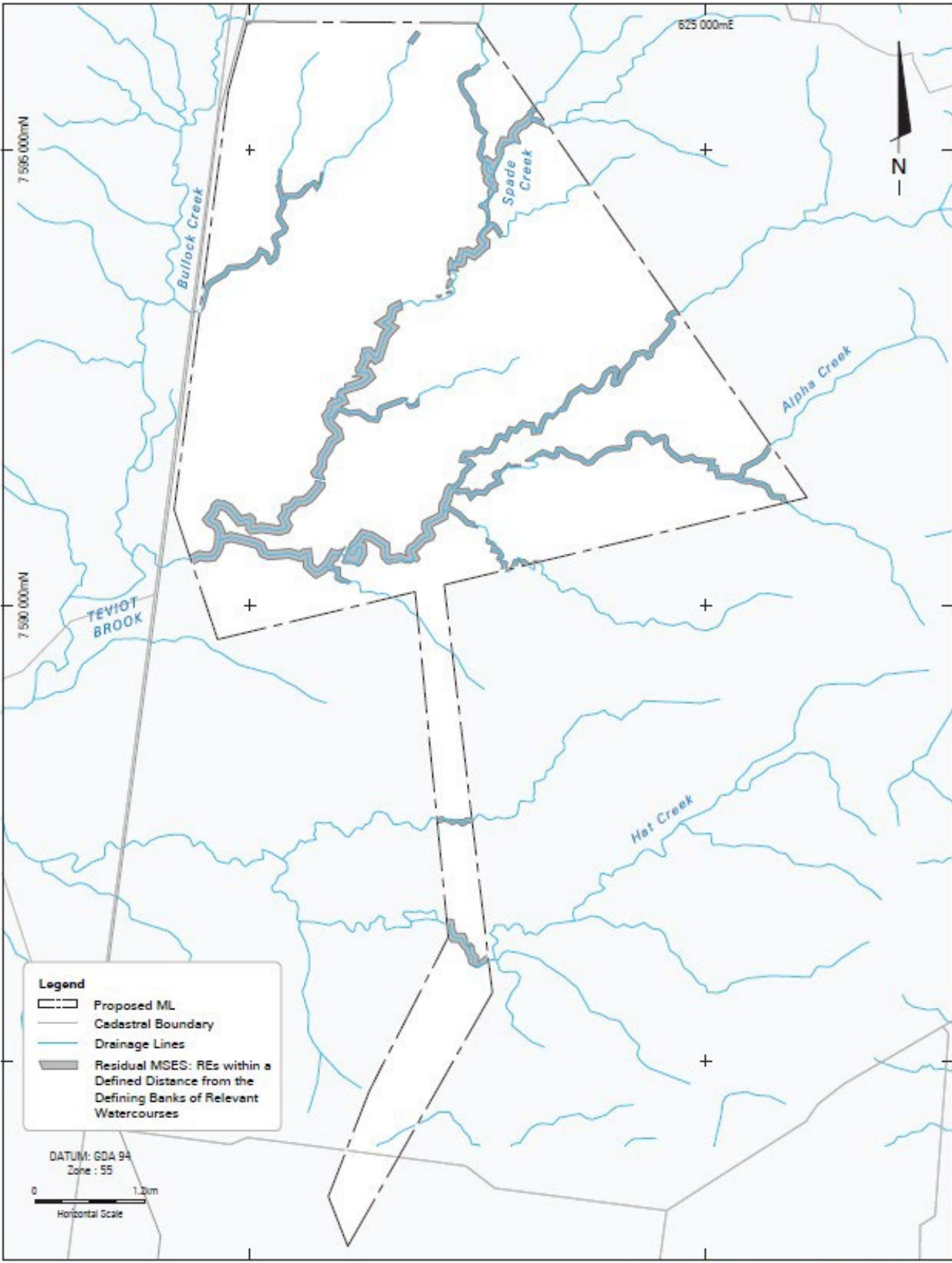


IRONBARK NO.1 COAL PROJECT

Residual MSES: RE 11.3.4 *Eucalyptus tereticornis* and/or *Eucalyptus* spp. woodland on alluvial plains – Of Concern



APPENDIX 5

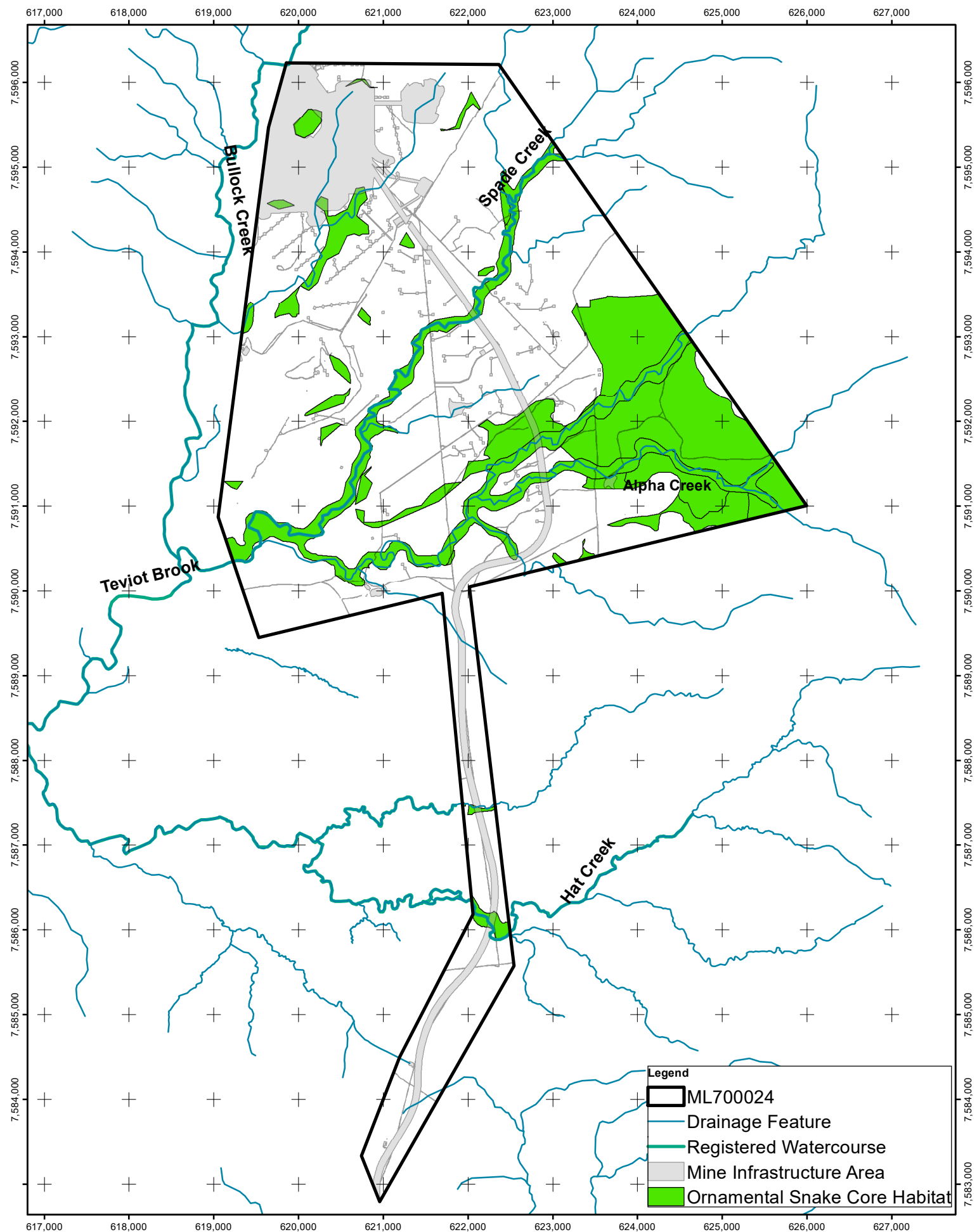


IRONBARK NO.1 COAL PROJECT

Residual MSES: REs within a Defined Distance from the Defining Banks of Relevant Watercourses



APPENDIX 6



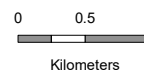
IRONBARK NO.1 COAL MINE

APPENDIX 7 - ORNAMENTAL SNAKE CORE HABITAT (MSES - ESSENTIAL HABITAT)



Datum: Australian 1984 Coordinate System: AGD 1984 AMG Zone 55

Drawn By: SBereyney Date: 28/07/2023



APPENDIX 8: Rehabilitation criteria

MINE DOMAIN	REHABILITATION GOAL	REHABILITATION OBJECTIVES	INDICATORS	COMPLETION CRITERIA
Domain 1 – Mine Infrastructure Areas: • Mine Industrial Area • Access roads and haul roads • Mine water dams • Gas drainage infrastructure above underground mining area • Exploration activities	Long-term safety	Rehabilitation or conversion of exploration drill holes and groundwater monitoring bores	All exploration drill holes and all monitoring bores established on the Mining Lease have been rehabilitated or converted to water bores	Certification of the following by an appropriately qualified person: • All exploration drill holes or monitoring bores not converted to water bores have been rehabilitated in accordance with the applicable Australian Standard or guideline. • All aquifers have been isolated where exploration drill holes or monitoring bores have intersected more than one water bearing strata, in accordance with the <i>'Minimum Construction Requirements for Water Bores in Australia'</i> (Australian Government, February 2012) or latest edition. • All exploration drill holes or monitoring bores converted to a water bore have been converted in accordance with the <i>'Minimum Construction Requirements for Water Bores in Australia'</i> (Australian Government, February 2012) or latest edition.

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		Site is safe for humans and animals	Appropriate decommissioning of infrastructure	A risk assessment is to be undertaken by an appropriately qualified person at closure to ensure the site is safe and all infrastructure has been decommissioned appropriately and in accordance with any conditions of the environmental authority
			Remediate contaminated land	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that all areas contaminated by hydrocarbons or other chemicals used during the life of the mine have been excavated and disposed of appropriately.
	Non-polluting	No contamination of surface water and groundwater resources	Downstream surface water quality	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that surface water monitoring demonstrates the quality of water in the receiving environment meets relevant water quality objectives.
				Regulated Structures are certified to be decommissioned in accordance with the administering authorities' requirements and the conditions of the environmental authority
			Groundwater quality	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that groundwater monitoring demonstrates that the

				groundwater quality is within the contaminant trigger levels specified in the EA.
	Stable landform	Landform achieves appropriate erosion rates for the agreed post mining land use.	Slope angle and length	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that rehabilitated surfaces match the slope of surrounding land surfaces.
			Engineered structures to control water flow	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that required contour banks, channel linings, surface armour, engineered drop structures or any other engineered structures are in place and functioning.
			Erosion control	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that rehabilitated surfaces are stable and not actively eroding.
		Appropriate vegetation cover	Vegetation type and density	Evidence in the Rehabilitation Report that the vegetation type and density of species in rehabilitated areas are suited to the soil composition, slope, aspect, climate and agreed post mining land use.
			Foliage Cover	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that: • Minimum of 70% ground cover is

				present (or 50% if rocks, logs or other features of cover are present). - No bare surfaces >20 m² in area or >10 m in length down slope. - Foliage and ground cover is comparable to reference sites.
	Sustainable land use	Soil properties support the desired land use	Topsoil and subsoil support the proposed vegetation and land use	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that: Soil properties (e.g. pH, salinity, nutrient content, sodium content) reflect the soil properties prior to construction of mine infrastructure.
		Agricultural cattle grazing	Land is suitable for cattle grazing Plant regeneration Presence of key grazing species Composition of key grazing species Actions taken to eradicate plants declared under local or state legislation Landform stable when grazed	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that rehabilitated areas, at a minimum, meet the comparable reference sites suitability classification for cattle grazing as defined by the Guideline for Agricultural Land Evaluation in Queensland (State Department of Queensland 2013), or any subsequent version, and will continue to sustain the suitability classification for the foreseeable future. Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that land

				maintenance requirements are comparable to reference sites. Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that the rehabilitated landform is safe for stock and for undertaking management activities associated with stock.
			Stock access to water sources	Stock only allowed access to water sources that meet stock water requirements defined in ANZECC 2000 guidelines
Domain 2 – Subsidence Area: Areas within the limit of measurable subsidence	Long-term safety	Ensure site is safe for humans and animals	Rehabilitation of subsidence impacts	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that rehabilitation of subsidence impacts has been undertaken in accordance with the Subsidence Management Plan and environmental authority conditions.
	Non-polluting	No contamination of surface water and groundwater resources	Downstream surface water quality	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that surface water monitoring demonstrates the quality of water in the receiving environment meets relevant water quality objectives.
			Groundwater quality	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that groundwater monitoring demonstrates that the groundwater quality is within the contaminant

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				trigger levels specified in the EA.
	Stable landform	Surface water drainage	Stabilise subsided drainage lines	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that subsided sections of drainage lines will be maintained in a stable condition post-subsidence.
		Landform achieves appropriate erosion rates	Tension cracks rehabilitated	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that tension cracks have been rehabilitated in accordance with the Subsidence Management Plan and are stable and not actively eroding. Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that rehabilitated tension cracks have been successfully

				revegetated, by comparison to reference sites.
		Appropriate vegetation cover	Vegetation type and density	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that the vegetation type and density of species in rehabilitated areas are suited to the soil composition, slope, aspect, climate and agreed post mining land use.
			Foliage Cover	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that: • Minimum of 70% ground cover is present (or 50% if rocks, logs or other features of cover are present). • No bare surfaces >20 m² in area or >10 m in length down slope. Foliage and ground cover is comparable to reference sites.
	Sustainable land use	Soil properties support the desired land use	Topsoil and subsoil support the proposed vegetation and land use	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that: • Soil properties (e.g. pH, salinity, nutrient content, sodium content) reflect the soil properties prior to subsidence.
			Agricultural cattle grazing	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that
			Plant regeneration	

			Presence of key grazing species	rehabilitated areas, at a minimum, meet the comparable reference sites suitability classification for cattle
			Composition of key grazing species	grazing as defined by the Guideline for Agricultural Land Evaluation in Queensland (State Department of
			Actions taken to eradicate plants declared under local or state legislation	Queensland 2013), or any subsequent version, and will continue to sustain the suitability classification for the foreseeable future.
			Landform stable when grazed	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that land maintenance requirements are comparable to reference sites.
				Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that the rehabilitated landform is safe for stock and for undertaking management activities associated with stock.
			Stock access to water sources	Stock only allowed access to water sources that meet stock water requirements defined in ANZECC 2000 guidelines.
Domain 3 – Waste Emplacement Area	Long-term safety	Structurally safe with no hazardous materials	Safety assessment of landform stability (geotechnical issues)	Certification by an appropriately qualified and experienced person, in the Rehabilitation Report, that rehabilitated slopes are stable, including:

				• Confirmation that slopes are constructed to maximum slope requirements; • Evidence of revegetation success; • Confirmation that drainage has been appropriately established and that there is no active erosion; • Confirmation that erosion and sediment control measures have been installed and are operating as designed; and • That land is safe for the post-mining land use.
			Exposure to, and availability of heavy metals and other toxic materials	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, based on the results of progressive sampling and geochemical characterisation required by the EA, confirming the low potential for acid mine drainage from the rehabilitated landform.
	Non-polluting	No contamination of surface water and groundwater resources	Downstream surface water quality	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that surface water monitoring demonstrates the quality of water in the receiving environment meets relevant water quality objectives.
			Groundwater quality	Evidence in the Rehabilitation Report, certified by an

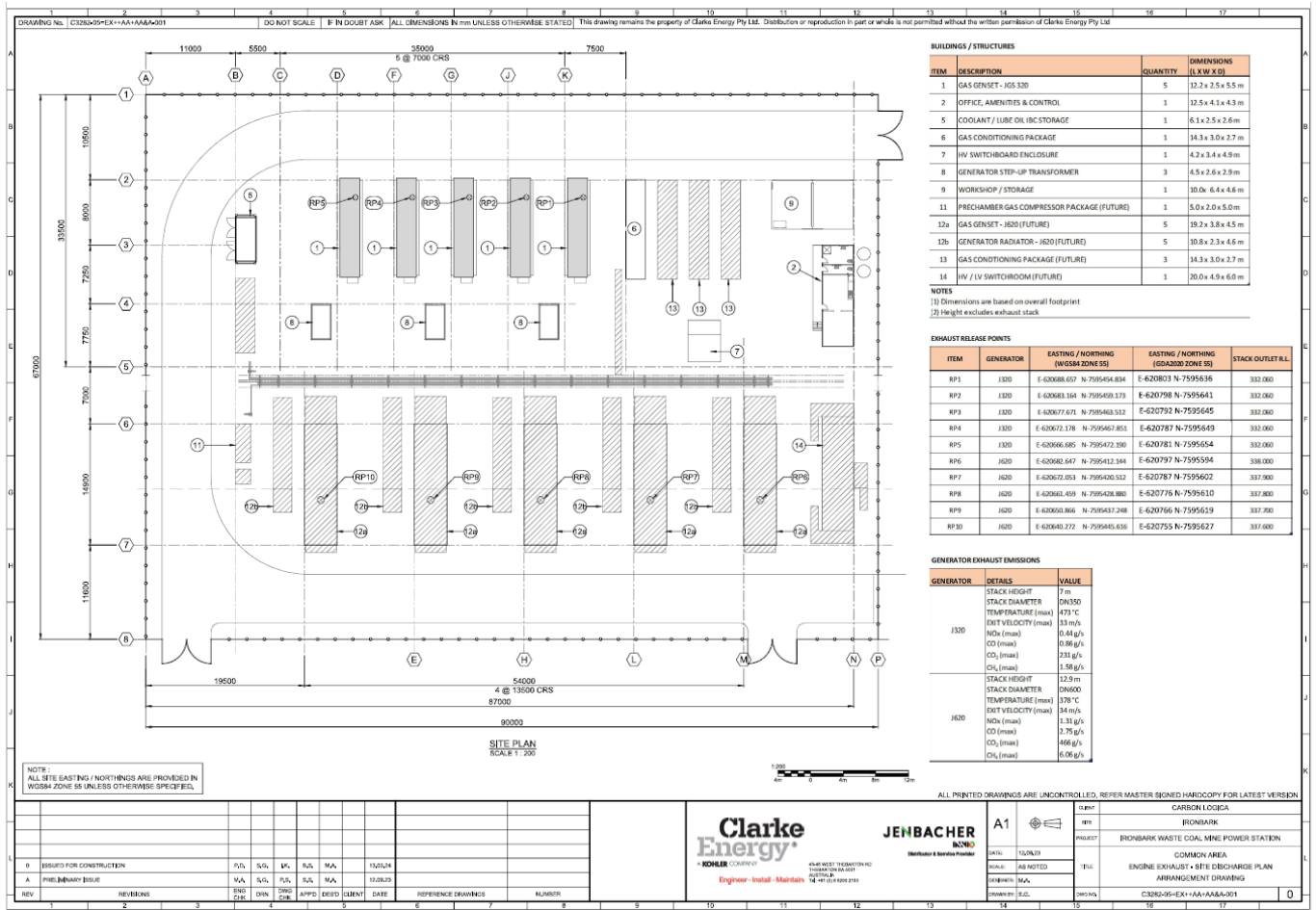
				appropriately qualified person, that groundwater monitoring demonstrates that the groundwater quality is within the contaminant trigger levels specified in the EA.
	Stable landform	Landform design achieves appropriate erosion rates	Safety assessment of landform stability (geotechnical issues)	Certification by an appropriately qualified and experienced person, in the Rehabilitation Report, that rehabilitated slopes are stable, including: • Confirmation that slopes are stable in the long term; • Confirmation that topsoil thickness is appropriate; • Evidence of revegetation success; • Confirmation that drainage has been appropriately established and that there is no active erosion; • Confirmation that erosion and sediment control measures have been installed and are operating as designed; and • Confirmation erosion rates are suitable for the agreed post mining land use.
	Sustainable land use	Soil properties support the desired land use	Topsoil and subsoil support the proposed vegetation and land use	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that soil properties (e.g. pH, salinity, nutrient content, sodium content) provide a suitable growth medium

				for relevant vegetation species. Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that topsoil has been re-spread to suitable depths.
		Establish self-sustaining natural vegetation or habitat	Plant regeneration	Evidence in the Rehabilitation Report certified by an appropriately qualified person, that species in rehabilitated areas show evidence of flowering, viable seed setting, germination and emergence, comparable to reference sites
			Presence of key plant species	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that the vegetation includes the presence of species appropriate for the agreed post mining land use.
			Density of key plant species	
			Composition of key plant species	
			Abundance of declared plants (weeds) identified through inspection	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that declared weeds and pest animals are adequately controlled on the site and abundance is no greater than reference sites.
			Abundance of exotic grasses	
			Actions taken to eradicate plants declared under local or State legislation	
		Agricultural cattle grazing on appropriate areas	Control of stocking rates on slopes not suitable or safe for cattle grazing	Evidence in the Rehabilitation Report that access to slopes not suitable for cattle grazing is controlled.

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			Stock access to water sources	Stock only allowed access to water sources that meet stock water requirements defined in ANZECC 2000 guidelines.
			Plant regeneration	Evidence in the Rehabilitation Report, certified by an appropriately qualified person, that rehabilitated areas, at a minimum, meet the comparable reference sites suitability classification for cattle grazing as defined by the Guideline for Agricultural Land Evaluation in Queensland (State Department of Queensland 2013), or any subsequent version, and will continue to sustain the suitability classification for the foreseeable future.
			Presence of key grazing species	
			Composition of key grazing species	
			Actions taken to eradicate plants declared under local or state legislation	

APPENDIX 9 – Power station infrastructure



END OF PERMIT