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 08 December 2021

Environmental authority holder(s)

Name(s)	Registered address
FITZROY (CQ) PTY LTD	Comalco Place Level 14 12 Creek St BRISBANE CITY QLD 4000 Australia
Nebo Central Coal Pty Ltd	Level 11 100 Creek 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

<u>Environmentally relevant activities</u>

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.

ABN 46 640 294 485

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.

Juliana McCosker
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

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Date issued: 08 December 2021

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.
A3	This environmental authority authorises the extraction rate of up to six (6) million tonnes per annum (mtpa) of run-of-mine (ROM) coal.
A4	The holder of this environmental authority must: a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority; b) maintain such measures, plant and equipment in a proper and efficient condition; c) operate such measures, plant and equipment in a proper and efficient manner; and d) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.
A5	All monitoring records or reports required by this environmental authority must be kept for a period of not less than **five (5) years**.
A6	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.
A7	**Estimated Rehabilitation Cost (ERC)** The holder must not carry out, or allow the carrying out of the activity under this authority unless: a) an ERC decision is in effect for the activity when the activity is carried out; b) the holder has paid a contribution to the scheme fund or given a surety for the authority under the *Mineral and Energy Resources (Financial Provisioning) Act 2018*; and c) the holder has complied with the requirements under the *Mineral and Energy Resources (Financial Provisioning) Act 2018* for paying a contribution to the scheme fund, or giving a surety for the authority, as required from time to time.

A8	**New ERC decision before expiry** When an ERC decision is in force for this environment authority, the environmental authority holder must apply, under section 298 of the *Environmental Protection Act 1994*, for a new ERC decision, at least **three (3) months** before the ERC period to which the decision relates ends.
A9	**When holder must re-apply for ERC decision** When an ERC decision is in force for this environmental authority, the environmental authority holder must re-apply within **ten (10) business days** under section 298 of the *Environmental Protection Act 1994* for an ERC decision when: a) there is an increase in the likely maximum amount of disturbance to the environment as a result of the holder carrying out the resource activity; or b) there is a change relating to the carrying out of the resource activity that may result in an increase in the ERC for the resource activity.
A10	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.
A11	The holder of this environmental authority must notify the administering authority, in writing, within **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.
A12	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.
A13	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.
A14	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.
A15	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.
A16	**Exploration Activities** The Environmental Authority holder is authorised to conduct exploration activities on the Mining Lease. The environmental authority holder must comply with each of the standard conditions contained in the *Eligibility criteria and standard conditions for exploration and mineral development projects – version 2 (ESR/2016/1985)* or the most recent version.
Agency interest: Air	
Condition number	**Condition**
B1	**Point source releases to air (On Site Gas Fired Power Station)** Discharges of contaminants to air from the power station, other than dust and particulate matter addressed by condition B6, must be in accordance with Tables B1—Power station release points (air) and B2— Power station contaminant limits (air) and condition B3.

Table B1—Power station release points (air)

Release point	Release point description	Source description	Minimum release height (metres above ground)	Minimum exit gas temperature (ºC)	Minimum efflux velocity (m/s)
RP1	TBC	TBC	TBC	TBC	TBC
RP2	TBC	TBC	TBC	TBC	TBC

B2	The release of point source emissions from the power station must not cause the concentrations of the contaminants listed in B2— Power station contaminant limits (air), when measured at a sensitive place.

Table B2—Power station contaminant limits (air)

Contaminant	Release point	Limit type	Release limit	Release limit units	Minimum monitoring frequency
TBC	TBC	TBC	TBC	TBC	TBC

B3	The environmental authority holder must ensure that dust and particulate matter emissions generated by the power station do not cause exceedances of the following levels when measured at any sensitive or commercial place: a) A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres (PM2.5) suspended in the atmosphere of 25 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.10 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM (sub) 2.5(/sub) low volume sampler—Gravimetric method.
B4	Values for Tables B1—Power station release points (air) and B2—Power station contaminant limits (air) must be submitted to the administering authority through an amendment application at least **three (3) months** prior to commissioning of the onsite power station.
B5	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: a) 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. b) 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 **24-hour** averaging time, for no more than five exceedances recorded each year, when monitored in accordance with the most recent version of either: 1. Australian Standard AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 high volume

	sampler with size-selective inlet – Gravimetric method, or 2. Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 low volume sampler—Gravimetric method. c) 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.
B6	**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.
B7	**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 *Odour Impact Assessment from Developments* (2013), at any sensitive or commercial place.
B8	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.
B9	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: Water	

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 *Waste Reduction and Recycling Act 2011*. 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 Project Surface Infrastructure, Sewage treatment plant and effluent disposal. 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 ≤ (CV - AV): Noise limit = bg + AV

(ii) if (CV - AV) < bg ≤ 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

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.

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 a suitably 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 3 – Groundwater Monitoring Bores, for quality characteristics identified in Table E2: Groundwater quality triggers and limits.

Table E1 – Groundwater monitoring locations and frequency

Bore ID	Easting[1]	Northing[1]	Target Aquifer	Reduced Ground Level (m AHD[2])	Steel Casing Height (mAGL[3])	Screen Interval (mBGL[4])	Total Depth (mBGL)	Frequency	Purpose
EFGW1S	619385.435	7590563.507	Alluvial	283.15	0.39	8.7 – 11.7	11.7	Quarterly	Observation
EFGW2S	623613.769	7591555.761	Alluvial	308.85	0.6	1.9 – 4.9	4.9	Quarterly	Observation
EFGW2D	623611.542	7591545.579	Triassic	308.80	0.6	23 – 25.6	28.6	Quarterly	Observation
EFGW3S	622286.073	7593810.964	Alluvial	306.58	0.54	1.2 – 4.2	4.2	Quarterly	Observation
EFGW3D	622278.103	7593805.687	Triassic	306.59	0.4	27.4 – 30.4	30.4	Quarterly	Observation
EFGW4S	619867.774	7593745.168	Alluvial	300.16	0.63	1.5 – 4.5	4.5	Quarterly	Observation
EFGW4D	619882.457	7593745.742	Triassic	300.22	0.42	37.5 – 40.5	40.5	Quarterly	Observation
EFGW5D	620845.499	7595277.687	Triassic	320.75	0.41	56 – 59	59.1	Quarterly	Observation
PT1	620939.367	7595819.709	Permian Coal	329.68	0.32	124 – 138	138	Quarterly	Observation
IBGWR1	623563.168	7594831.434	Triassic	326.53	0.68	41 – 47	50	Quarterly	Observation
IBGWR2	622529.349	7586319.219	Alluvial	304.47	0.78	15 – 24	30	Quarterly	Observation

Legend:
[1] Coordinates: GDA 94 Zone 55.
[2] mAHD – metres Australian Height Datum
[3] mAGL – metres above ground level
[4] mBGL – metres below ground level

Table E2 - Groundwater quality triggers and limits

Parameter	Unit	Trigger Levels		Limit type
		Alluvium	Shallow Overburden	
pH	pH Units	7.4 - 7.9	6.9 - 7.7	Minimum/Maximum
Carbonate	mg/L	1	1	Maximum
Bi-carbonate	mg/L	780	452	Maximum
Electrical Conductivity	µS/cm	5,964	31,040	Maximum
Sulphate	mg/L	79	715	Maximum
Aluminium	mg/L	TBA	TBA	TBA
Arsenic	mg/L	0.003	0.003	Maximum
Calcium	mg/L	91	642	Maximum
Chloride	mg/L	1,558	9,094	Maximum
Iron	mg/L	0.69	4.53	Maximum
Magnesium	mg/L	111	643	Maximum
Potassium	mg/L	6.4	9	Maximum
Zinc	mg/L	0.05	0.03	Maximum
Total Petroleum Hydrocarbons C6-C9	µg/L	20	20	Maximum
Total Petroleum Hydrocarbons C10-C36	µg/L	50	220	Maximum
Sodium	mg/L	Interpretive purposes only		
Total Alkalinity	mg/L			
Turbidity	NTU			
Lead	mg/L			
Manganese	mg/L			

E4	**Monitoring and reporting** A Groundwater Management and Monitoring Program for all stages of the authorised mining activity on site must be implemented to detect any change in groundwater quality values and levels due to activities that are part of the authorised mining activities.
E5	The groundwater monitoring data must be reviewed on an annual basis. The review must include the assessment of groundwater levels and quality data, and the suitability of the monitoring network. The assessment must be submitted to the administering authority via WaTERS by **1 July** each year.
E6	Groundwater contaminant trigger levels as per Table E2: Groundwater quality triggers limits must be reviewed by **30 June 2022** to: a) Evaluate whether the groundwater monitoring network is fit for purpose; b) Adequately determine water quality characteristics and trigger values for inclusion in this environmental authority; c) Identify and interpret any trends in the groundwater network monitoring data; d) Provide recommendations for the future development of the groundwater management and monitoring program required by condition E4; and e) Be in a report submitted to the administering authority by **30 June 2022**.
E7	Within **twenty (20) business** days of receiving comments from the administering authority, the report as required by Condition E6 must be updated to address the comments and submitted to the administering authority.
E8	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.
E9	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.
E10	**Exceedance Investigation** If quality characteristics of groundwater from bores identified for the purpose of compliance in Table E1: Groundwater monitoring locations and frequency, exceed any of the trigger levels defined in Table E2: Groundwater Investigation Trigger Levels, the holder of this environmental authority must compare the compliance monitoring bore results to the results of the reference bores defined in Table E1: Groundwater monitoring locations and frequency, and background monitoring program defined in condition E3 and complete an investigation within **fourteen (14) days** of detection to establish whether environmental harm has occurred or may occur.
E11	If the results of the investigation required by condition E10 identify that the exceedance(s) is/are a result of mining activities, the holder of the environmental authority must notify the administering authority via WaTERS and provide a copy of a report detailing the findings and outcomes of the investigation within **twenty-eight (28) days** of receiving the analysis results.
E12	In the event that groundwater fluctuations in excess of two (2) metres per year are detected at groundwater bores identified for the purpose of compliance in Table E1: Groundwater monitoring locations and frequency, an investigation must be undertaken within **fourteen (14) days** of detection to determine if the fluctuations are a result of: a) mining activities; b) pumping from licensed bores; or c) are within naturally occurring range of results (e.g. seasonal variation).

E13	In accordance with condition E11, the holder of the environmental authority must notify the administering authority via WaTERS and provide a copy of a report detailing the findings and outcomes of the investigation within **seven (7) days** of receiving the result.
E14	The holder of the environmental authority must amend Table E1: Groundwater monitoring locations and frequency, to include Compliance bores and Reference bores by **30 June 2022**.
E15	**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). Compliance and reference bores must be incorporated via an EA amendment by **30 June 2022**.

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	Easting (GDA94 – Zone 54)	Northing (GDA94 –Zone 54)	Monitoring location	Frequency of monitoring
MIA Sediment Dam	620,791 620,791 620,819 620,819	7,595,858 7,595,930 7,595,930 7,595,858	Spillway Inlet	Quarterly
ROM stockpile Sediment DAM	619,702 619,718 619,709 619,684 619,659 619,673	7,594,922 7,594,881 7,594,849 7,594,817 7,594,857 7,594,913	Spillway Inlet	Quarterly
Waste Dump Sediment Dam	620,380 620,360 620,304 620,266	7,594,598 7,594,563 7,594,530 7,594,556	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	20,4000
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 & ARMCANZ (2000) stock water quality guidelines.
(2) Page 4.2-4.15 of ANZECC & ARMCANZ (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.
F11	Mine affected water used for dust suppression must meet the contaminant limits defined in Table F2: Onsite Water Storage Contaminant Limits.

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-I13, must be rehabilitated to a grazing post-mining land-use in accordance with Appendix 6: 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-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 plan of operations.
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 6- 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 6 – 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.
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 *Environmental Offsets Act 2014* 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 *Environmental Protection and Biodiversity (EPBC) Act 1999* (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 Environmental Offsets Act 2014 and Queensland Environmental Offsets Policy, as amended from time to time, must be undertaken for the maximum extent of impact to each prescribed environmental matter authorised in Table 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 *Environmental Offsets Act 2014* 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 *Environmental Offsets Act 2014* (Qld)**
Habitat for an animal that is vulnerable wildlife – Squatter Pigeon – Geophaps scripta scripta	Not applicable.	83	No – Offsets for a significant residual impact will be provided under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
Habitat for an animal that is vulnerable wildlife – Yakka Skink – Egernia rugosa	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.
Regulated Vegetation that is Of Concern – Regional Ecosystem (RE) 11.3.4	Appendix 4 – Residual MSES: RE 11.3.4 Eucalyptus tereticornis and/or	7.0	Yes
	Eucalyptus spp. Woodland on Alluvial Plains – Of Concern		

Regulated Vegetation within a defined distance of a watercourse – RE 11.3.25	Appendix 5 – 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 – RE 11.5.9	Appendix 5 – 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.
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.
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.
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.

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 Spade Creek within ML700024, as depicted in Appendix 1: Approved Project Layout. This subsidence is authorised to occur as a result of underground longwall mining activities.

I2	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 watercourse (including baseline assessment); 2) The objectives and outcomes of the Subsidence Management Plan; 3) A risk assessment that identifies all potential impacts on the watercourse and associated floodplain resulting from subsidence of the watercourse including but not limited to: a) physical condition of surface drainage: i. erosion; ii. areas susceptible to higher levels of erosion such as watercourse 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; 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 Spade Creek including: 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 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 **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 **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 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 watercourse; 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, 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 **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 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 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 watercourse (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 watercourse is located, as far as practicable. c) attain the hydraulic characteristics of the watercourse that are equivalent to other local watercourses, and are suitable for the subsided areas of Spade Creek, without using artificial structures that require on-going maintenance, as far as practicable. d) attain sediment transport and water quality regimes that allow the watercourse 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 watercourse.
I13	Rehabilitation of the subsided areas of Spade Creek must be undertaken progressively in accordance with the Subsidence Management Plan.

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.

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

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

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

(c) by agreement with the administering authority.

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

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

Holder for a mining tenement, means a holder of the tenement under the *Mineral Resources Act 1989*, and the holder of the associated environmental authority under the *Environmental Protection Act 1994*.

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.

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 is—

(a) an activity that is an authorised activity for a mining tenement under the Mineral Resources Act; or

(b) another activity that is authorised under an approval under the Mineral Resources Act that grants rights over land.

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.

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 GDA94) within five metres at any point from the outside of the dam including its storage area

  (iii) Dam crest volume (megalitres);

  (iv) Spillway crest level (metres AHD).

  (v) Maximum operating level (metres AHD);

  (vi) Storage rating table of stored volume versus level (metres AHD);

(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 form 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 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

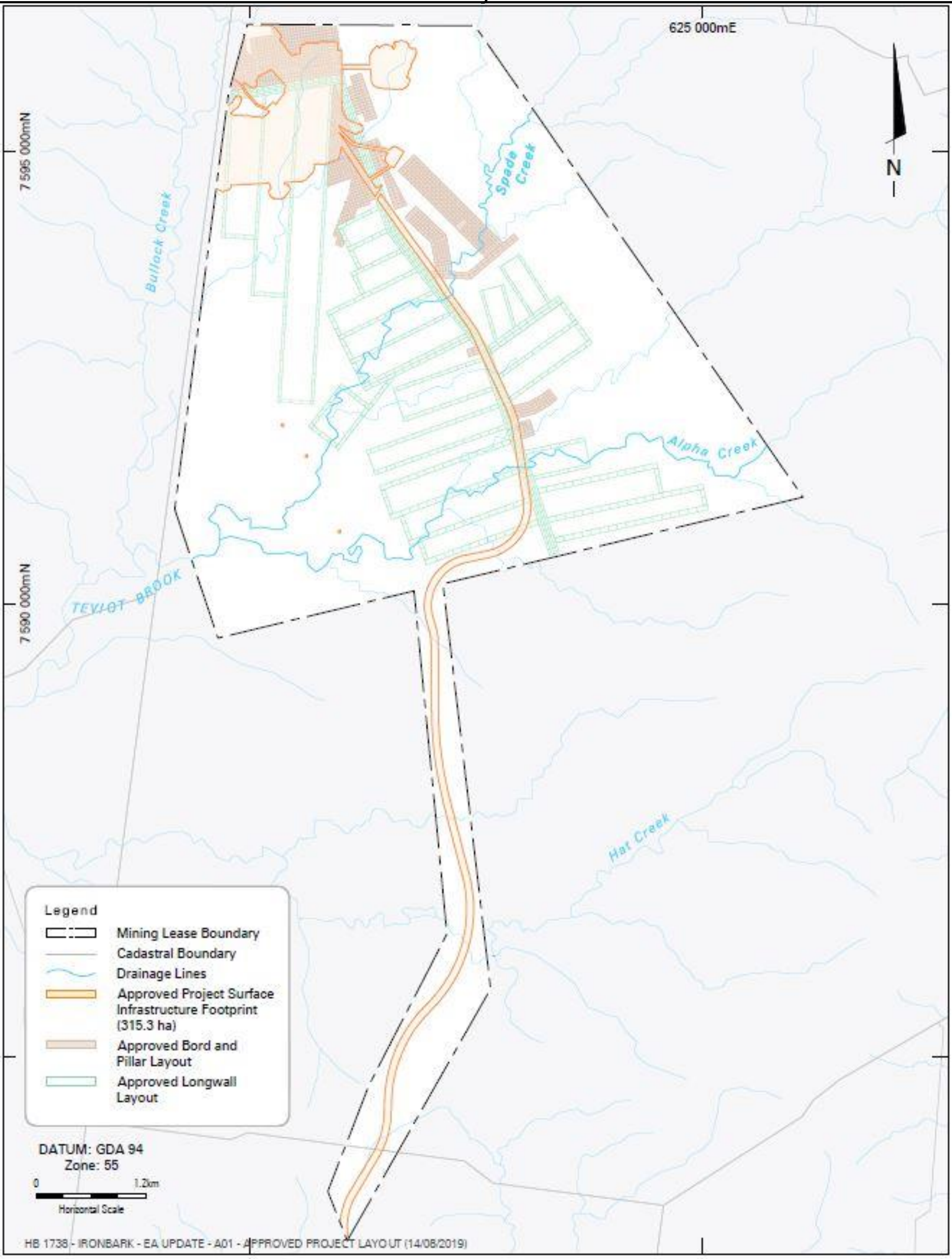
  (ii) in an artificial channel that has changed the course of the watercourse.

(b) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

Watercourse is defined in the *Water Act 2000.*

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.



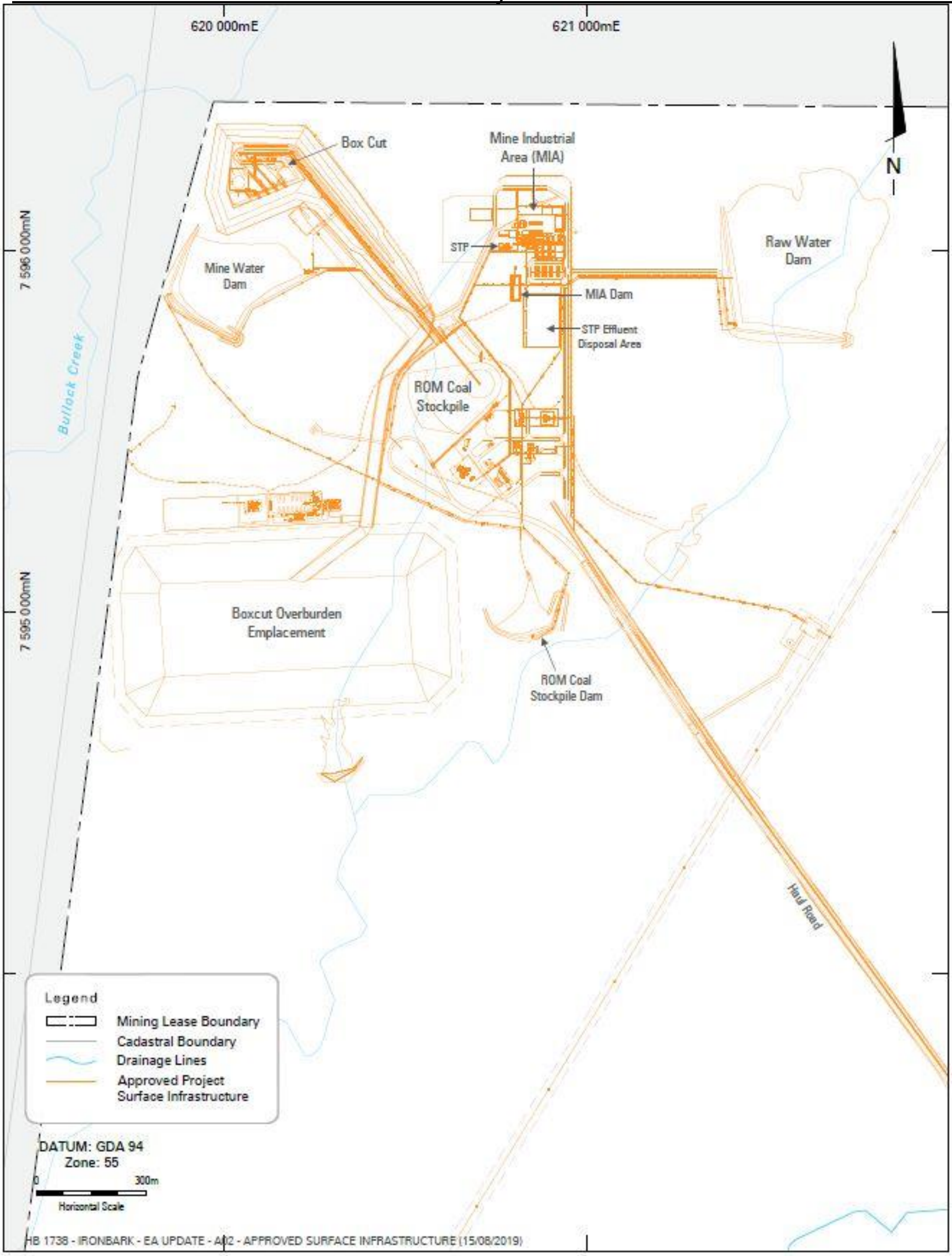
IRONBARK NO.1 COAL PROJECT

fitzroy australia resources

Hansen Bailey ENVIRONMENTAL CONSULTANTS

Approved Project Layout

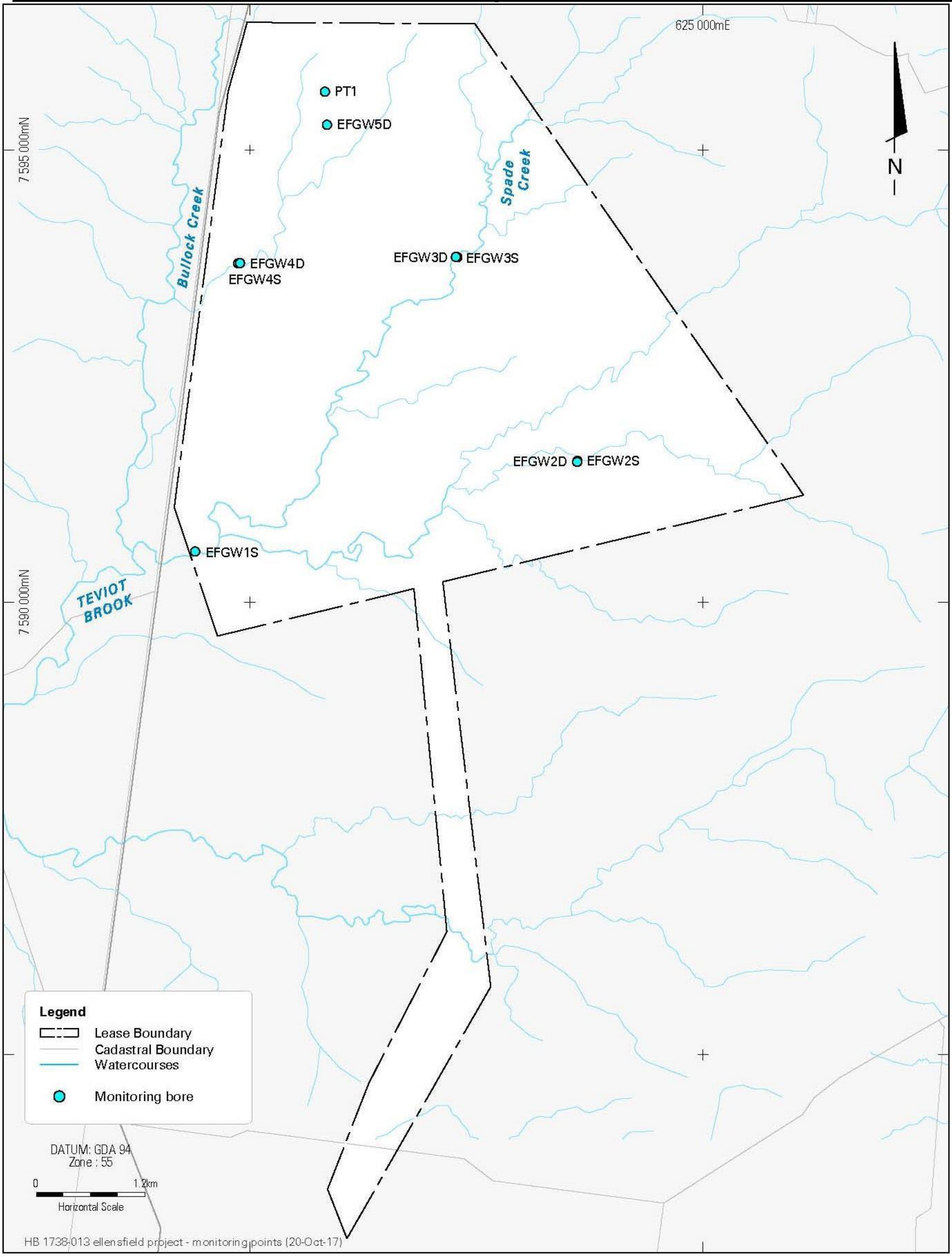
APPENDIX 1



IRONBARK NO.1 COAL PROJECT

Approved Surface Infrastructure

APPENDIX 2

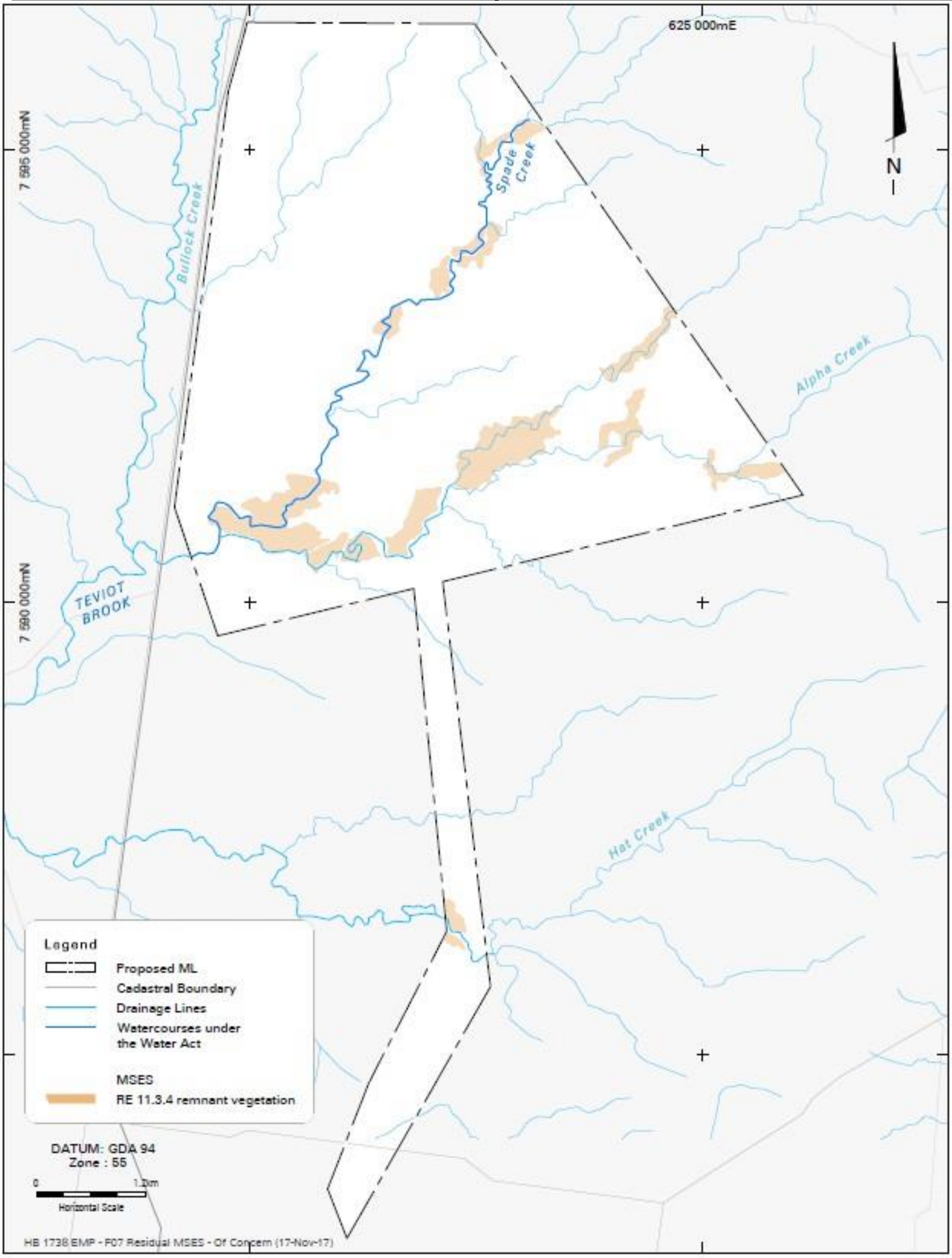


IRONBARK NO.1 COAL PROJECT

fitzroy australia resources

Groundwater Monitoring Bores

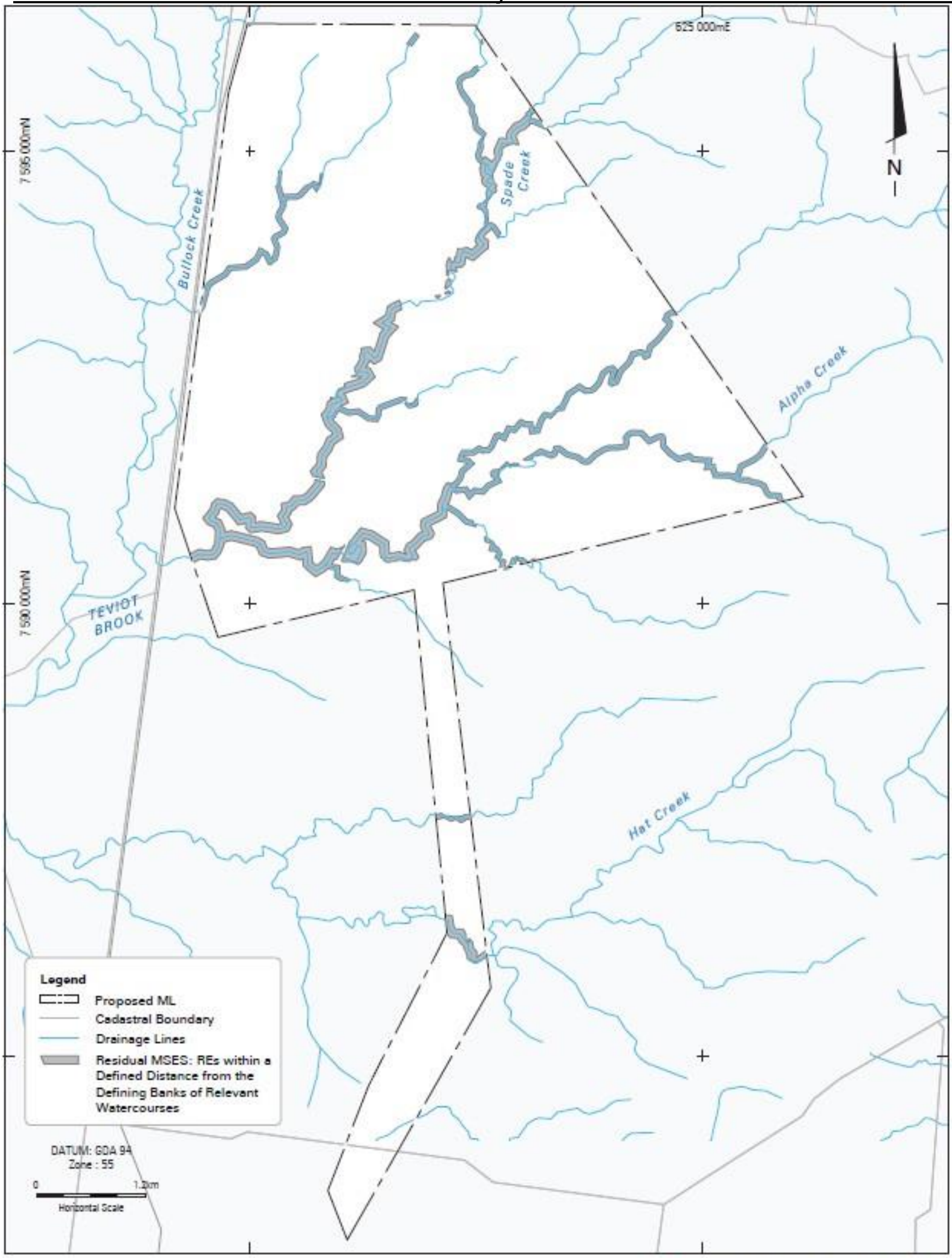
APPENDIX 3



IRONBARK NO.1 COAL PROJECT

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

APPENDIX 4



IRONBARK NO.1 COAL PROJECT

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

APPENDIX 5

Appendix 6: 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	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 *'Minimum Construction Requirements for Water Bores in Australia' (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 *'Minimum Construction Requirements for Water Bores in Australia' (Australian Government, February 2012)* or latest edition.

		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 m^2 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	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.
			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 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 measureable 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

				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 m^2 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	Land is suitable for 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 Density of key plant species Composition 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.
			Abundance of declared plants (weeds) identified through inspection Abundance of exotic grasses Actions taken to eradicate plants declared under local or State legislation	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.
		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.

			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	

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