Permit

Environmental Protection Act 1994

Environmental Authority EPML00987013 – Grosvenor Coal Mine

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

Environmental authority number: EPML00987013

Environmental authority takes effect on 14 April 2026.

Environmental authority holder(s)

Name(s)	Registered address
Moranbah North Coal Pty Ltd	Level 11 201 Charlotte Street BRISBANE QLD 4000
Mitsui Moranbah North Investment Pty Ltd	Level 24 480 Queen Street BRISBANE QLD 4000
Jfema Moranbah North Pty Ltd	Suite 3B Level 33 52 Martin Place SYDNEY NSW 2000
Shinsho Moranbah Coal Pty Ltd	Level 12 124 Walker Street NORTH SYDNEY NSW 2060
NS Coal (Moranbah North) Pty Ltd	Level 9 10 Market Street BRISBANE QLD 4000
NS Moranbah North Pty Ltd	Level 5 20 Hunter St SYDNEY NSW 2000 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 08: A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	ML70378, PFL28
Schedule 3 13: Mining black coal	
Ancillary 08 - Chemical Storage 1: Storing a total of 50t or more of chemicals of dangerous goods class 1 or class 2, division 2.3 under subsection (1)(a)	
Ancillary 8 – Chemical storage 3: Storing more than 500m3 of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	
Ancillary 10 - Gas Producing Manufacturing, processing or reforming 200t or more of hydrocarbon gas in a year	
Ancillary 33 - Crushing, milling, grinding or screening Crushing, grinding, milling or screening more than 5000t of material in a year	

Environmentally relevant activity/activities	Location(s)
Ancillary 53 – Organic material processing, processing more than 200t of organic material in a year, (a) by composting the organic material	
Ancillary 54 – Mechanical waste reprocessing 1: operating a facility for receiving and mechanically reprocessing, in a year, more than 5,000t of inert, non-putrescible waste or green waste only	
Ancillary 54 – Mechanical waste reprocessing 2: operating a facility for receiving and mechanically reprocessing, in a year, the following quantity of general waste, (c) more than 10,000t	
Ancillary 54 – Mechanical waste reprocessing 3: operating a facility for receiving and mechanically reprocessing, in a year, the following quantity of category 2 regulated waste, (c) more than 10,000t	
Ancillary 54 – Mechanical waste reprocessing 4: operating a facility for receiving and mechanically reprocessing, in a year, the following quantity of category 1 regulated waste, (c) more than 10,000t	
Ancillary 55 – Other waste reprocessing or treatment 1: operating a facility for receiving and either reprocessing or treating, in a year, the following quantity of general waste, (c) more than 10,000t	
Ancillary 55 – Other waste reprocessing or treatment 2: operating a facility for receiving and either reprocessing or treating, in a year, the following quantity of category 2 regulated waste, (c) more than 10,000t	
Ancillary 55 – Other waste reprocessing or treatment 3: operating a facility for receiving and either reprocessing or treating, in a year, the following quantity of category 1 regulated waste, (c) more than 10,000t	
Ancillary 60 – Waste disposal 1: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(a), (d) more than 200,000t	
Ancillary 62 – Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing (b) general waste	
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (c) category 2 regulated waste	
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (d) category 1 regulated waste	
Ancillary 63 - Sewage Treatment 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (b-ii) more than 100 but not more than 1500EP.	

Additional information for applicants

Environmentally relevant activities

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

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

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

Mobile and temporary activities

If you operate a mobile and ERA, other than regulated waste transport, you are required to maintain a work diary. You must:

- use the approved form for a work diary (ESR/2015/1696);
- keep the work diary records for 2 years after the last entry;
- inform the administering authority within 7 days of the work diary being lost or stolen;
- record the information required in the work diary for each location within 1 day of leaving the location.

Contaminated land

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

- the presence of, or happening of an event involving, a hazardous contaminant on the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- if the land is contaminated land – a change in the condition of the land that is causing, or is reasonably likely to cause, serious or material environmental harm (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 land (notice must be given within 20 business days).

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(1) 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, in accordance with section 200(2) of the EP Act, the day that the EA takes effect may not be before:

(a) if the authority is for a resource activity—the day the relevant tenure is granted to the applicant; or

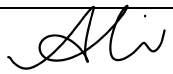
(b) if a development permit for a material change of use of premises under the *Planning Act 2016* is necessary for carrying out an activity that related to the authority—the day the development permit takes effect; or

(c) if an SDA Approval under the *State Development and Public Works Organisation Act 1971* is necessary for carrying out an activity that relates to the authority—the day the approval takes 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.

The anniversary day of this EA is the same day each year as the effective date. The payment of the annual fee will be due each year on this day.

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 EA.

	14 April 2026
Signature	Date

Alison Cummings

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

Enquiries:

Coal Business Centre
PO Box 3028, Emerald QLD 4720
Phone: (07)4987 9320
Email: CRMining@detsi.qld.gov.au

Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this EA, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to restore the environment (section 319C)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443).

Other permits required

This permit only provides an approval under the EP Act. In order to lawfully operate you may also require permits / approvals from your local government authority, other business units within the department, and other State and Federal Government agencies prior to commencing any activity at the site. For example, this may include permits / approvals with your local Council (for planning approval), the Department of Transport and Main Roads (to access State controlled roads), the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development (to clear vegetation), and the Department of Primary Industries (to clear marine plants or to obtain a quarry material allocation).

Obligations under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

Matters of national environmental significance (MNES) are regulated under the Commonwealth EPBC Act rather than under state legislation. You may need to submit a referral if your project potentially impacts any matters protected under the EPBC Act. For more information on self-assessments, and referral and assessment processes please visit the Australian Government Department of Climate Change, Energy, the Environment and Water's website at, www.dcceew.gov.au/environment/epbc/advice.

Obligations under the *Aboriginal Cultural Heritage Act 2003* and *Torres Strait Islander Cultural Heritage Act 2003* (the Cultural Heritage Acts)

The Cultural Heritage Acts require anyone who carries out a land-use activity to exercise a duty of care. This 'duty of care' means land users must take all reasonable and practicable measures to ensure their activity does not harm Aboriginal or Torres Strait Islander cultural heritage and applies to any activity where Aboriginal or Torres Strait Islander cultural heritage is located. For more information on your obligations under this legislation, please visit the Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism webpage at, www.dwatsipm.qld.gov.au/.

Conditions of environmental authority

The environmentally relevant activity(ies) conducted at the location as described above must be conducted in accordance with the following site-specific conditions of approval. This environmental authority consists of the following Schedules and Appendices:

Schedule A General

Schedule B Air

Schedule C Noise and vibration

Schedule D Waste

Schedule E Land

Schedule F Water

Schedule G Structures

Schedule H Sewage Treatment

Schedule I Groundwater

Schedule J Biodiversity

Schedule K Stimulation Activities Definitions

Attachments

Schedule A: General	
Condition number	**Condition**
A1	This environmental authority authorises environmental harm referred to in the conditions. Where no condition exists or this environmental authority is silent on matter, the lack of a condition or silence does not authorise environmental harm.
A2	**Prevent and /or minimise likelihood of environmental harm** In carrying out the environmentally relevant activities, the environmental authority holder must take all reasonable and practicable measures to prevent and/or to minimise the likelihood of environmental harm being caused. Any environmentally relevant activity, that, if carried out incompetently, or negligently, may cause environmental harm, in a manner that could have been prevented, shall be carried out in a proper manner in accordance with the conditions of this environmental authority.
A3	**Storage and handling of chemicals and flammable or combustible liquids** All chemicals and flammable or combustible liquids must be stored and handled in accordance with the most recent version of an Australian Standard where such is applicable. Where no relevant Australian Standard exists, store such materials within an effective on-site containment system.
A4	**Authorised disturbance** Disturbance is authorised as shown in **Figure 1 (Authorised Disturbance Areas)**, including: a) Surface Disturbance within areas marked as “Approved Surface Disturbance”; ‘; and b) Underground Mining Disturbance within areas marked as “Approved Underground Mining Disturbance”.
A5	Any disturbance outside of the areas marked in **Figure 1 (Authorised Disturbance Areas):** a) Is only authorised to the extent reasonably necessary for exploration and activities ancillary to the mining activity conducted under EPML00987013, including but not limited to roads, fences, underground services, telecommunications facilities, pipelines, electrical infrastructure, storage depots, laydown or shutdown pads, monitoring stations and bores, vent shafts and gas drainage, and disturbance for rehabilitation activities; and b) Must not result in significant residual impact to prescribed environmental matters not authorised under Schedule J of this environmental authority.
A6	**Coal Extraction** The environmental authority holder is approved for a coal extraction rate of up to **10.5 million tonnes per annum (mtpa)** of run-of-mine (ROM) coal in accordance with this environmental authority.

A7	**Maintenance of measures, plant and equipment** The environmental authority holder must ensure: a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; b) that such measures, plant and equipment are maintained in a proper condition; c) that such measures, plant and equipment are operated in a proper manner; and d) that all instruments and devices, used for the measurement or monitoring of any parameter under any condition of this environmental authority, are properly calibrated.
A8	**Monitoring and records** Except where specified otherwise in another condition of this authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than **five (5) years**.
~~**A6**~~	~~Upon request from the administering authority, copies of monitoring records and reports must be made available and/or provided to the administering authority's nominated office within ten (10) business days or by an alternative timeframe agreed between the administering authority and the holder.~~
A9	Monitoring and determinations required under any condition of this environmental authority must be conducted by an appropriately qualified person(s).
A10	Upon request from the administering authority, copies of monitoring results, records, registers, management plans and reports required by the conditions of this environmental authority must be made available and provided to the administering authority within **twenty (20) business days** or an alternative timeframe agreed between the administering authority and the environmental authority holder.
A11	**Notification of emergencies, incidents and exceptions** The environmental authority holder must notify the administering authority by written notification within **twenty-four (24) hours** after 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 **twenty (20) business days** following the initial notification under condition **A11**, or the receipt of monitoring results associated with the notification made under condition **A11**, whichever is the latter, the environmental authority holder must provide further written advice to the administering authority, including: a) potential circumstances and actions that may have contributed to the emergency or incident; b) results and interpretation of any samples taken and analysed; c) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and d) proposed actions to prevent a recurrence of the emergency or incident and the timeframes to complete the actions.

A13	**Complaints** The environmental authority holder must record all environmental complaints received about the mining activities, including: a) complainant's name, address and contact number; b) time and date of complaint; c) reasons for the complaint; d) investigations undertaken; e) conclusions formed; f) actions taken to resolve the complaint, including the use of appropriate dispute resolution if required; g) any abatement measures implemented or proposed and the timeframes to implement the abatement measures; and h) person responsible for resolving the complaint.
A14	**Alternative arrangements** A register of alternative arrangements must be established and maintained by the environmental authority holder. The register must include: a) the location to which the alternative arrangement applies; b) the period of the alternative arrangement; c) details about the particular environmental nuisance impact/s the arrangement is for; and d) details about the mitigation measures, where relevant.
A15	**Monitoring on request** When requested by the administering authority, the environmental authority holder must investigate any nuisance, or contaminant release, or environmental harm, or complaint that is neither frivolous nor vexatious in the opinion of the authorised person, by: a) undertaking the monitoring specified by the administering authority; b) undertaking the monitoring in the timeframe nominated or agreed to by the administering authority; c) completing an analysis and interpretation of the monitoring results; and d) implementing abatement measures, where required.
A16	The results of the investigation undertaken in accordance with condition **A15** must be provided to the administering authority within **twenty (20) business days** of completion of the monitoring timeframe in accordance with condition **A15(b)**, or a longer timeframe agreed to by the administering authority.

A17	**Standards, policies and guidelines** Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority, the environmental authority holder must: a) comply with the amended or changed standard, policy or guidelines within **two (2) years** of the amendment or change being made, unless, i) a different period is specified in the amended standard or relevant legislation; or ii) the period specified in condition **G36**, where the amendment or change relates specifically to existing regulated structures; and b) until compliance with the amended or changed standard, policy or guidelines is achieved, continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.
A18	**Risk management** The environmental authority holder 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.
A19	**Third-party reporting** The environmental authority holder must: a) by **7 June 2023** and every **3 years** thereafter, obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority; and b) provide each report to the administering authority within **90 days** of its completion.

Schedule B: Air	
Condition number	**Condition**
B1	**Odour nuisance** The release of noxious or offensive odour or any other noxious or offensive airborne contaminant resulting from the mining activities must not cause an environmental nuisance, at any sensitive place or commercial place.
B2	If the administering authority determines odour released from the mining activities to constitute an environmental nuisance, the environmental authority holder must immediately implement abatement measures so that emissions from the mining activities do not result in further environmental nuisance.
B3	**Air quality objective** Dust and/or particulate matter resulting from the mining activities must not cause an Air Quality Exceedance at a sensitive place or commercial place. An Air Quality Exceedance occurs when monitoring in accordance with condition **A15** or **B7** indicates exceedance of the air quality objective stated in **Table B1 Air Quality Monitoring Requirements**. *NOTE: Exceedances due to events that cannot be managed by the environmental authority holder, such as bushfires, fuel reduction burning for fire management purposes or dust storms, would not be considered to be in breach of condition **B3** if the environmental authority holder can demonstrate that the exceedance was caused by such events.*
B4	If an Air Quality Exceedance occurs at a sensitive place or commercial place, the environmental authority holder must: a) notify the administering authority in accordance with condition **A11**; and b) provide further written advice to the administering authority in accordance with condition **A12**, including: i) the air quality and meteorological data, collected in accordance with condition **A15** or **B7**, relevant to the time of the exceedance; ii) if available, any air quality and meteorological data collected upwind of the mining activities; iii) measures taken to reduce dust and/or particulate matter generated by the mining activities; and iv) the contribution of the mining activities to the PM_{10} concentration at the sensitive or commercial lace.

Schedule B: Air	
Condition number	**Condition**
B5	**Air Emissions Management Plan** An Air Emissions Management Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activity. The Air Emissions Management Plan must incorporate a program for continuous improvement for the management of dust and particulate matter resulting from the mining activities with respect to, but not limited to: a) when required in accordance with condition **A15**, the collection of air quality and meteorological data using the monitoring methods described in **Table B1 Air Quality Monitoring Requirements**; b) a system to identify adverse meteorological conditions likely to produce elevated levels of dust in exceedance of the Air Quality Objective identified in **Table B1 Air Quality Monitoring Requirements** at a sensitive place or commercial place due to the mining activities; and c) a dust and particulate matter control strategy which activates a timely implementation of management control actions.
B6	The Air Emissions Management Plan required by condition **B5** must be reviewed by **30 September 2028** and every **2 years** by an appropriately qualified person and any recommendations incorporated into the Air Emissions Management Plan.
B7	**Air quality monitoring** The environmental authority holder must undertake air quality monitoring: a) at the locations specified in **Table B2 Air quality monitoring locations**; and b) at the monitoring frequency and using the monitoring methods specified in **Table B1 Air quality monitoring requirements**.
B8	**Transitional arrangements** The Air Emissions Management Plan required by condition **B5** must be developed by **30 September 2026**.

Table B1 Air Quality Monitoring Requirements

Parameter	Monitoring Frequency	Air Quality Objective	Monitoring Method
PM10	Continuous[A]	50µg/m^3 (24-hour average)	AS/NZS 3580.9.6:2015 AS/NZS 3580.9.7:2009 AS 3580.9.8:2022 AS 3580.9.9:2017 AS/NZS 3580.9.11:2022
TSP	Continuous[A]	90µg/m^3 (annual average)	AS/NZS 3580.9.3:2015 An alternative method of monitoring TSP agreed to by the administering authority.
Dust deposition – Insoluble Solids	Monthly	120mg/m^2/day	AS/NZS 3580.10.1:2003
Wind speed and direction, Temperature, Precipitation, Relative Humidity	Continuous	N/A	AS/NZS 3850.14:2014

NOTES: [A] Monitoring conducted using AS/NZS 3580.9.3:2015 or AS/NZS 3580.9.6:2015 is carried out for one 24-hour period each week.

Table B2 Air Quality Monitoring Locations

Monitoring Point	Parameters	Approximate Monitoring Point Location	
		Latitude (GDA2020)	Longitude (GDA2020)
GDD04 – Golf Course	PM10	-21.99096171	148.04695015
GDD01 – Dyno Nobel Camp	Dust Deposition	-21.95839736	147.98012314
GDD02 – Arrow Camp	Dust Deposition	-21.97464007	148.00439501
GDD03 – Golf Course	Dust Deposition	-21.99096171	148.04695015
Weather Station	Met data	-21.96368085	148.00815642

Schedule C: Noise and Vibration	
Condition number	**Condition**
C1	**Noise limits** Noise from the mining activities must not exceed the limits in **Table C1 Noise Limits,** at any sensitive place or commercial place.
C2	**Noise monitoring** Noise monitoring, undertaken in accordance with condition **A15**, must: a) comply with the most recent version of the administering authority's *Noise Measurement Manual* (ESR/2016/2195), the relevant Australian Standard, and the *Environmental Protection Regulation 2019* (Chapter 5, Part 4); and b) be undertaken using a class 1 sound level meter as classified under *Australian Standard AS IEC 61672*; and c) assess compliance with the conditions of this environmental authority.
C3	If monitoring, undertaken in accordance with condition **C2**, indicates exceedance of the relevant limits in **Table C1 Noise Limits**, the environmental authority holder must immediately implement abatement measures so that emissions from the mining activities do not result in further environmental nuisance.

Table C1: Noise Limits

Noise Level dB(A)	Monday to Sunday		
	7am - 6pm	**6pm - 10pm**	**10pm - 7am**
	Noise measured at a 'Noise sensitive place'		
LAeq, adj, 1 hr	B/g + 3	B/g + 3	B/g + 3
LAmax, 1 hr	N/A	N/A	52 dBA
	Noise measured at a 'Commercial place'		
LAeq, adj, 1 hr	50 dBA	45 dBA	40 dBA

Note:
"B/g" means background noise level measured in the absence of the noise under investigation.
"LAeq adj,T" means the equivalent continuous A-weighted sound pressure level, adjusted for noise character, measured in the presence of the noise under investigation over a time period of 60 minutes, using Fast response.

C4	**Vibration limits** Vibration from the mining activities must not exceed the limits in **Table C2 Vibration Limits**, at any sensitive place or commercial place.
C5	**Airblast overpressure limits** Airblast overpressure from the mining activities must not exceed the limits specified in **Table C3 Airblast Overpressure Limits**, at any sensitive place or commercial place.
C6	**Vibration and/or airblast overpressure monitoring** Vibration and/or airblast overpressure monitoring, undertaken in accordance with condition **A15**, must comply with the most recent version of the administering authority's *Noise Measurement Manual*, and must include the following descriptors, characteristics and conditions: a) location of the blast(s) within the mining area (including which bench level); b) atmospheric conditions including temperature, relative humidity and wind speed and direction; and c) location, date and time of recording.
C7	If monitoring, undertaken in accordance with condition **C6**, indicates exceedance of the relevant limits in **Table C2 Vibration Limits** or **Table C3 Airblast Overpressure Limits**, the environmental authority holder must immediately implement abatement measures so that emissions from the mining activities do not result in further environmental nuisance.

Table C2 Vibration Limits

Location	Vibration Measured
Sensitive place or commercial place	5 mm/s peak particle velocity for nine (9) out of ten (10) consecutive blasts and not greater than 10 mm/s peak particle velocity at any time.

Table C3 Airblast Overpressure Limits

Location	Airblast Overpressure Measured
Sensitive place or commercial place	115 dB (Linear peak) for nine (9) out of ten (10) consecutive blasts and not greater than 120 dB (Linear peak) at any time.

Schedule D: Waste	
Condition number	**Condition**
D1	**Waste management** A Waste Management Plan must be developed by an appropriately qualified person and implemented for all mining activities. The Waste Management Plan must include, but is not limited to: a) a description of the mining activities that may generate waste; b) the location/s of where all waste activities are, or have been, carried out, including: i) the type of waste disposed of, treated, or reprocessed; and ii) the expected maximum volume of waste disposed of, treated, or reprocessed; c) identification of the potential risks to the environment from all waste activities carried out; d) control measures to be implemented to minimise the potential for environmental harm associated with carrying out of the waste activities, including but not limited to: i) segregation of the wastes; ii) storage of the wastes; iii) transport of the wastes; iv) disposal of waste including leachate management; and v) monitoring and reporting matters concerning the wastes; e) how the waste will be managed in accordance with the waste management hierarchy (that is, avoid, reuse, recycling, energy recovery, disposal); f) the hazardous characteristics of the wastes generated including disposal procedures for hazardous wastes; g) procedures for reprocessing waste in accordance with condition **D4**; h) procedures for managing accidents, spills and other incidents; i) the indicators or other criteria on which the performance of the waste management plan will be assessed; j) staff training; k) a system for regular review; and l) be updated at intervals no greater than **5 years**.
D2	The environmental authority holder must review and update the Waste Management Plan required by condition **D1** and submit to the administering authority prior to commencing a new process, or varying an existing process, for reprocessing any waste and/or at intervals of no greater than **5 years**.

Schedule D: Waste	
Condition number	**Condition**
D3	**Waste receipt** The only waste permitted to be received is: a) the types of waste specified in conditions **D4** to **D7** (inclusive); and b) sewage and sludge for treatment in accordance with **Schedule H: Sewage Treatment**; and c) any waste specified in **D3 (a)** and **(b)** from an Anglo American site in Queensland.
D4	**Waste reprocessing** The only waste permitted to be reprocessed is: a) spoil; b) vegetation; c) water or sediment containing hydrocarbons; d) fuels, oils, lubricants and coolants; e) bulk rubber; f) inert waste; g) poly-pipe and other plastic; h) fibreglass; i) treated and untreated timber; and j) asphalt.
D5	**Waste disposal** Unless otherwise specified in conditions **D6** to **D7** (inclusive), waste, other than spoil or overburden or vegetation removed as part of the mining activity, must not be disposed of within the mining leases listed on this environmental authority and must be taken to a facility that is lawfully allowed to accept such waste under the provisions of the *Environmental Protection Act 1994*.
D6	**Mineral waste disposal** Rejects and water or sediment containing hydrocarbons are permitted to be disposed of within underground stopes

Schedule D: Waste	
Condition number	**Condition**
D7	**Non-mineral waste disposal** The following types of waste are permitted to be disposed of within the mining leases listed on this environmental authority: a) bulk rubber; b) inert waste; c) poly-pipe and other plastic; d) fibreglass; e) treated and untreated timber; f) asphalt; g) asbestos; and h) underground mining waste. These types of waste may be disposed of: a) in underground mine workings; c) in spoil emplacements; d) underground stopes; e) shafts; and b) left in situ below ground level.

Schedule E: Land	
Condition number	**Condition**
E1	**Topsoil** Topsoil must be strategically stripped ahead of mining in accordance with a Topsoil Management Plan.
E2	Topsoil and subsoils must be managed to ensure stability and minimise the release contaminants. Measures must include: a) vegetating stockpiles; b) minimising the height of stockpiles; and c) re-using stockpiles as soon as possible.
E3	A topsoil inventory that identifies the topsoil requirements for the Grosvenor Coal Mine and availability of suitable topsoil on site, must be developed and: a) maintained for all stages of the mining activities carried out under this environmental authority; and b) provided to the administering authority upon request.
E4	**Preventing contaminant release to land** Contaminants must not be released to land in manner, which constitutes nuisance, material or serious environmental harm.
E5	**Subsidence** A Subsidence Management Plan must be developed by an appropriately qualified person and implemented by the environmental authority holder prior to the commencement of activities that result in subsidence.

Schedule E: Land	
Condition number	**Condition**
E6	The Subsidence Management Plan must: (a) provide for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity and to ensure compliance with the conditions of this environmental authority; (b) be developed in accordance with **Appendix A: Watercourse Subsidence** attached to this environmental authority; (c) detail the proposed impacts of subsidence on any land, watercourse and floodplain including but not limited to: i) physical condition of surface drainage: 1. erosion; 2. areas susceptible to higher levels of erosion such as watercourse confluences; 3. incision processes; 4. stream widening; 5. tension cracking; 6. lowering of bed and banks; 7. creation of instream waterholes; 8. changes to local drainage patterns; ii) overland flow; 1. capture of overland flow by subsided long-wall panels; 2. increased overbank flows due to lowering of high bank of watercourses; 3. the portion of local and large scale catchment likely to be captured by subsided long- wall panels and the associated impacts on downstream users; iii) water quality: 1. surface water; 2. groundwater; 3. overland flow water detained in subsided long-wall panels; iv) land condition: current land condition to be impacted by subsidence; v) infrastructure: detail of existing infrastructure (pipelines, railway, powerlines and haul roads) should be identified where there is a potential impact from effects of land subsidence; (d) proposed options for mitigating any impacts associated with subsidence and how these mitigation methods will be implemented; (e) cumulative impacts on watercourses or catchments; (f) impacts on groundwater; (g) contingency procedures for emergencies; and (h) a program for monitoring and review of the effectiveness of the Subsidence Management Plan.

Schedule E: Land	
Condition number	**Condition**
E7	The Subsidence Management Plan must be reviewed each calendar year and a report prepared by an appropriately qualified person. The report must: a) assess the plan against the requirements under condition **E6**; b) include recommended actions to ensure actual and potential environmental impacts are effectively managed for the coming year; and c) identify any amendments made to the Subsidence Management Plan following the review.
E8	The environmental authority holder must attach to the review report required by condition **E7,** a written response to the report and recommended actions, detailing the actions taken or to be taken by the environmental authority on stated dates: a) to ensure compliance with this environmental authority; and b) to prevent a recurrence of any non-compliance issues identified.
E9	The review report required by condition **E7** and the written response to the review report required by condition **E8** must be submitted to the administering authority by the **1 April** following each report.
E10	Areas impacted by subsidence, or proposed to be impacted by subsidence, in the coming year must be provided with each written response required by condition **E8**.
E11	The environmental authority holder must not commence subsidence of a longwall panel that will result in the subsidence of a watercourse or adjoining floodplain unless: a) the environmental authority holder has submitted **one electronic copy** of the Subsidence Management Plan to the administering authority of the detailing the subsidence activities for the watercourse or adjoining floodplain together with certification of a suitable qualified and experienced person that the plan is compliant in all respects with this environmental authority and in accordance with engineering best practice; and b) at least **28 days** has passed since the submission of the subsidence management plan. Note: Due consideration must be given to any comments made by the administering authority about the Subsidence Management Plan and subsequent implementation of the plan.
E12	The environmental authority holder must arrange for each subsided longwall panel to be inspected annually by a suitably qualified and experienced person, in accordance with conditions **E13** to **E27.**
E13	The annual inspection required under condition **E12** must be conducted between **1 April** and **1 November** each year.

Schedule E: Land	
Condition number	**Condition**
E14	At each annual inspection, the condition of each subsided longwall panel must be assessed, including the structural, geotechnical and hydraulic adequacy of the subsided longwall panel and the adequacy of the works with respect to the Subsidence Management Plan.
E15	A report, by the suitably qualified and experienced person, must be prepared for each annual inspection conducted in accordance with condition **E14**, including any recommendations to ensure the integrity of each subsided longwall panel.
E16	The environmental authority holder must attach to the inspection report required by condition **E15**, a written response to the report and recommended actions, detailing the actions taken or to be taken by the environmental authority on stated dates: a) to ensure compliance with this environmental authority; and b) to prevent a recurrence of any non-compliance issues identified.
E17	The report required by condition **E15** and the written response required by condition **E16** to the inspection report must be submitted to the administering authority by **1 April** following each annual inspection**.**

Schedule F: Water	
Condition number	**Condition**
F1	**Contaminant Release** Contaminants that will or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the mining activities, except as permitted under the conditions of this environmental authority.
F2	Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to waters must only occur from the release points specified in **Table F1 Mine Affected Water Release Points** and as depicted in **Figure 2: Water Release Points and Monitoring Points**.
F3	The release of mine affected water to internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with condition **F26** and **F27** is permitted.

Table F1 Mine Affected Water Release Points

Release Point (RP)	Latitude (GDA2020)	Longitude (GDA2020)	Mine Affected Water Source and Location	Monitoring Point	Receiving Waters Description
RP1	-21.957289	148.024906	Worked Water Dam	End of pipe	Isaac River

F4	The release of mine affected water to waters in accordance with condition **F2** must not exceed the release limits stated in **Table F2 Mine Affected Water Release Limits** when measured at the monitoring points specified in **Table F1 Mine Affected Water Release Points** for each quality characteristic.

Table F2 Mine Affected Water Release Limits

Quality Characteristic	Release Limit	Monitoring Frequency
Electrical Conductivity (µS/cm)	<10,000	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH units)	6.5 (minimum) 9.0 (maximum)	
Turbidity (NTU)	Current limit or limit derived from suspended solids limit and demonstrated correlation between turbidity to suspended solids historical monitoring data for dam water*	
Suspended Solids (mg/L)	550*	
Sulfate (SO42-) (mg/L)	<5,000	

*Suspended solids limit to be revised when sufficient reference data is available to derive site-specific limits

F5	The release of mine affected water to waters from the release points must be monitored at the locations specified in **Table F1 Mine Affected Water Release Points** for each quality characteristics and at the frequency specified in **Table F2 Mine Affected Water Release Limits** and **Table F3 Release Contaminant Trigger Investigation Levels**. *NOTE: the administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition F5 is contravened due to a temporary lack of safe or practical access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.*

F6	If quality characteristics of the release exceed any of the trigger levels specified in **Table F3 Release Contaminant Trigger Investigation Levels** during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in **Table F3 Release Contaminant Trigger Investigation Levels** and: (a) where the trigger values are not exceeded then no action is to be taken; or (b) where the downstream results exceed the trigger values specified **Table F3 Release Contaminant Trigger Investigation Levels** for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and; (i) if the result is less than the background monitoring site data, then no action is to be taken; or (ii) if the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority within **28 days**, outlining: 1. details of the investigations carried out; and 2. actions taken to prevent environmental harm. *Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with condition **F6(b)(ii)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*
F7	If an exceedance in accordance with condition **F6(b)(ii)** is identified, the environmental authority holder must notify the administering authority within **14 days** of receiving the result.

Table F3 Release Contaminant Trigger Investigation Levels

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	55	*For aquatic ecosystem protection, based on SMD guideline*	Commencement of release and thereafter weekly during release when safe to do so and access permits
Arsenic	13	*For aquatic ecosystem protection, based on SMD guideline*	
Cadmium	0.2	*For aquatic ecosystem protection, based on SMD guideline*	
Chromium	1	*For aquatic ecosystem protection, based on SMD guideline*	
Copper	2	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Iron	300	*For aquatic ecosystem protection, based on low reliability guideline*	
Lead	4	*For aquatic ecosystem protection, based on SMD guideline*	
Mercury	0.2	*For aquatic ecosystem protection, based on LOR for CV FIMS*	
Nickel	11	*For aquatic ecosystem protection, based on SMD guideline*	
Zinc	8	*For aquatic ecosystem protection, based on SMD guideline*	
Boron	370	*For aquatic ecosystem protection, based on SMD guideline*	
Cobalt	90	*For aquatic ecosystem protection, based on low reliability guideline*	
Manganese	1900	*For aquatic ecosystem protection, based on SMD guideline*	
Molybdenum	34	*For aquatic ecosystem protection, based on low reliability guideline*	
Selenium	10	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Silver	1	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Uranium	1	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Vanadium	10	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Ammonia	900	*For aquatic ecosystem protection, based on SMD guideline*	
Nitrate	1100	*For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN*	
TRH (C6-C9)	20	*For aquatic ecosystem protection, based on LOR for GCMS*	
TRH (C10- C36)	100	*For aquatic ecosystem protection, based on LOR for GCMS*	
Fluoride (total)	2000	*Protection of livestock and short-term irrigation guideline*	

NOTE:

1. *All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.*
2. *The quality characteristics required to be monitored as per Table F3 can be reviewed once the results of **two (2) years** monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk, and it may be determined that a reduced monitoring frequency is appropriate or that certain quality characteristics can be removed from **Table F3 Release Contaminant Trigger Investigation Levels** by amendment.*
3. *SMD – slightly moderately disturbed level of protection; guideline refers ANZECC & ARMCANZ (2000).*
4. *LOR – typical reporting for method stated. ICPMS/CV FIMS/GCMS – analytical method required to achieve LOR.*

Schedule F: Water	
Condition number	**Condition**
F8	**Mine Affected Water Release Events** The environmental authority holder must ensure a stream flow gauging station(s) is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in **Table F4 Mine Affected Water Release During Flow Events**.
F9	Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with condition **F2** must only take place during periods of natural flow events in accordance with the receiving water flow criteria for discharge specified in **Table F4 Mine Affected Water Release During Flow Events** for the release point(s) specified in **Table F1 Mine Affected Water Release Points**.
F10	The daily quantity of mine affected water released from each release point must be measured and recorded at the monitoring points in **Table F1 Mine Affected Water Release Points**.
F11	Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters or cause a material build-up of sediment in such waters.

Table F4 Mine Affected Water Release During Flow Events

Receiving waters	Release Point (RP)	Gauging Station	Gauging Station Latitude (GDA2020)	Gauging Station Longitude (GDA2020)	Receiving Water Flow Criteria for discharge (m3/s)	Receiving Water Flow Recording Frequency
Isaac River	RP1	Gauging point 1 (Moranbah North Downstream Monitoring station Site No.331100)	-21.92202	148.016118	2[A]	Continuous (minimum daily)

*NOTES: [A] When the downstream flow gauge falls below the minimum flow trigger, the 6-week tail flow period commences. Tail flow restricted by trigger limits in receiving waters (**Table F5**).*

Schedule F: Water	
Condition number	**Condition**
F12	**Notification of release event** The environmental authority holder must notify the administering authority via WaTERS as soon as practicable and no later than **24 hours** after commencing to release mine affected water to the receiving environment. The release commencement notification must include the submission of written advice to the administering authority of the following information: a) release commencement date and time; b) expected release cessation date and time; c) release point(s); d) release rate; e) receiving water(s) including the natural flow rate; and f) any details (including available data) regarding likely impacts on the receiving water(s).
F13	The environmental authority holder must notify the administering authority via WaTERS as soon as practicable and no later than **24 hours** after cessation of a release event notified under condition **F12**. The release cessation notification must include the submission of written advice to the administering authority of the following information: a) release cessation date and time; b) receiving water(s) including the natural flow rate; c) volume of water released; and d) all in situ water quality monitoring results. NOTE: Successive or intermittent releases occurring within **24 hours** of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with conditions **F12** and **F13** and **F14** and **F15** and **F16**, provided the relevant details of the release are included within the notification provided in accordance with conditions **F12** and **F13** and **F14** and **F15** and **F16**.
F14	Within **28 days** of notification under condition **F13**, the environmental authority holder must provide the administrating authority via WaTERS the following information in writing: a) all laboratory results from water quality monitoring; b) details regarding the compliance of the release with the conditions of **Schedule F: Water** of this environmental authority (i.e. contamination limits, natural flow, discharge volume); and c) any other matter(s) pertinent to the water release event.
F15	**Notification of release event exceedance** If the release limits defined in **Table F2 Mine Affected Water Release Limits** are exceeded, the environmental authority holder must notify the administering authority within **24 hours** of receiving the results.

Schedule F: Water	
Condition number	**Condition**
F16	The environmental authority holder must, within **28 days** of the notification provided in accordance with condition **F15**, provide a report to the administering authority via WaTERS detailing: a) the reason for the release; b) the location of the release; c) the total volume of the release and which (if any) part of this volume was non-compliant; d) the total duration of the release and which (if any) part of this period was non-compliant; e) all water quality monitoring results; f) any general observations; g) all calculations; and h) any other matters pertinent to the water release event.
F17	**Receiving Environment Monitoring and Contaminant Trigger Levels** The quality of the receiving waters must be monitored at the locations specified in **Table F6 Receiving Water Upstream Background and Downstream Monitoring Points** for each quality characteristic and at the monitoring frequency stated in **Table F5 Receiving Waters Contaminant Trigger Levels** and **Table F3 Release Contaminant Trigger Investigation Levels**.
F18	If quality characteristic(s) of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in **Table F5 Receiving Waters Contaminant Trigger Levels** during a release event the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and: (1) where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or (2) where the downstream results exceed the upstream results, complete an investigation into the potential for environmental harm and provide a written report to the administering authority within **28 days**, outlining: (a) details of the investigations carried out; and (a) actions taken to prevent environmental harm. *NOTE: Where an exceedance of a trigger level has occurred and is being investigated in accordance with **F18(2**) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*

Table F5: Receiving Waters Contaminant Trigger Levels

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 – 8.5	Daily during the release
Electrical Conductivity (µS/cm)	2,000	
Suspended solids (mg/L)	1,000	
Sulfate (SO_4^{2-}) (mg/L)	250 (Protection of drinking water Environmental Value)	

Table F6 (Receiving Waters Upstream Background and Downstream Monitoring Points)

Monitoring Point (MP)	Receiving Waters Location Description	Latitude (GDA2020)	Longitude (GDA2020)
Upstream Background Monitoring Points			
Monitoring point 1	Isaac River 2500 metres upstream of RP01 (MNC downstream)	-21.937839	148.021865
Downstream Monitoring Points			
Monitoring point 2	Isaac River 2500 metres downstream of RP01 (Rail Bridge)	-21.964142	148.045247

Schedule C: Water	
Condition number	**Condition**
F19	**Receiving Environment Monitoring Program (REMP)** The environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site. For the purposes of the REMP, the receiving environment is the waters of the Isaac River. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

Schedule C: Water	
Condition number	**Condition**
F20	The REMP must: a) assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality); b) be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected; c) include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in **Table F6 Receiving Water Upstream Background and Downstream Monitoring Points**); d) specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the *Queensland Water Quality Guidelines 2009*. This should include monitoring during periods of natural flow irrespective of mine or other discharges; e) include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in **Table F2 Mine Affected Water Release Limits** and **Table F3 Release Contaminant Trigger Investigation Levels**; f) include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS 5667.1 Guidance on Sampling of Bottom Sediments); g) include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology, h) apply procedures and/or guidelines from ANZG 2018 and other relevant guideline documents; i) describe sampling and analysis methods and quality assurance and control; and j) incorporate stream flow and hydrological information in the interpretations of water quality and biological data.
F21	A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with conditions **F19** and **F20** must be prepared annually. This report must include the following: a) an assessment of background reference water quality; b) the condition of downstream water quality compared against water quality objectives; and c) the suitability of current discharge limits to protect downstream environmental values.

Schedule C: Water	
Condition number	**Condition**
F22	**Water reuse** Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party (with the written consent of the third party with agreed water quality limits).
F23	**Water general** All determinations of water quality and biological monitoring must be: a) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements; b) made in accordance with methods prescribed in the latest edition of the administering authority's *Monitoring and Sampling Manual*; c) collected from the monitoring locations identified within this environmental authority, within ten hours of each other where possible; d) carried out on representative samples; and e) analysed at a laboratory accredited (e.g. NATA) for the method of analysis being used. *Note: Condition **F24** requires the Monitoring and Sampling Manual to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.*
F24	The release of any contaminants as permitted by this environmental authority, directly or indirectly to waters, other than internal water management infrastructure that is installed and operated in accordance with a Water Management Plan that complies with conditions **F26** to **F27** inclusive: a) must not produce any visible discolouration of receiving waters; and b) must not produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.

Schedule C: Water	
Condition number	**Condition**
F25	**Annual water monitoring reporting** The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format with each annual return: a) the date on which the sample was taken; b) the time at which the sample was taken; c) the monitoring point at which the sample was taken; d) the measured or estimated daily quantity of mine affected water released from all release points; e) the release flow rate at the time of sampling for each release point; f) the results of all monitoring and details of any exceedances of the conditions of this environmental authority; and g) water quality monitoring data must be provided to the administering authority via WaTERS in the specified electronic format.
F26	**Water Management Plan** A Water Management Plan must be developed and implemented for all mining activities. The Water Management Plan must address, as a minimum, the following: a) provide for effective management of actual and potential environmental impacts resulting from water management associated with the mining activity carried out under this environmental authority; and b) be developed in accordance with administering authority's guideline Application requirements for activities with impacts to water (ESR/2016/3111) and 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 emergencies; and vii. a program for monitoring and review of the effectiveness of the Water Management Plan.
F27	The Water Management Plan must be reviewed each calendar year by an appropriately qualified person(s).

Schedule C: Water	
Condition number	**Condition**
F28	**Temporary interference with waterways** Destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with the latest version of the Department of Regional Development, Manufacturing and Water's (or its successor's) Guideline – *Riverine protection permit exemption requirements* (WSS/2013/726).
F29	**Saline drainage** The environmental authority holder must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline drainage.
F30	**Acid rock drainage** The environmental authority holder must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of acid rock drainage.
F31	**Stormwater and water sediment controls** An Erosion and Sediment Control Plan must be developed and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters, and contamination of stormwater.
F32	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 **F31**; and b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with conditions **F26** to **F27** inclusive, for the purpose of ensuring water does not become mine affected water.
RR1	Conditions **F19** to **F21** do not apply if the environmental authority holder is a participant of the FRREMP.
RR2	The environmental authority holder must notify the administering authority in a written statement within **20 business days** of ceasing to be a participant of the FRREMP. The written statement must detail how the environmental authority holder is going to fulfil the requirements of conditions **F19** to **F21**.

Schedule G: Structures	
Condition number	**Condition**
G1	**Assessment of consequence category** The consequence category of any structure must be assessed by a suitably qualified and experienced person, in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)*, at the following times: a) prior to the design and construction of the structure, if it is not an existing structure; or b) prior to any change in its purpose or the nature of its stored contents.
G2	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.
G3	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)*.
G4	**Design and construction of a regulated structure** Conditions **G5** to **G9** inclusive do not apply to existing structures. *NOTE: Construction of a dam includes modification of an existing dam – see definitions.*
G5	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.*
G6	Construction of a regulated structure is prohibited unless the environmental authority holder has submitted to the administering authority: a) a consequence category assessment report, design and design plan that has been certified by a suitably qualified and experienced person; and b) operational plans for the structure.
G7	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.

Schedule G: Structures	
Condition number	**Condition**
G8	Regulated structures must: (a) be designed and constructed in accordance with and conform to the requirements of 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; ii) wall failure due to erosion by floodwaters arising from any watercourse or drainage line; and (c) for dams that are associated with a failure to contain – seepage: 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.
G9	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.

Schedule G: Structures	
Condition number	**Condition**
G10	**Operation of a regulated structure** Operation of a regulated structure, except for an existing structure, is prohibited unless the environmental authority holder has submitted to the administering authority: a) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition **G6**; b) a set of 'as constructed' drawings and specifications; c) certification of those 'as constructed drawings and specifications' in accordance with condition **G9**; d) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan; e) the requirements of this environmental authority relating to the construction of the regulated structure have been met; f) the environmental authority holder has entered the details, required under this environmental authority, into the Register of Regulated Structures; and g) there is a current operational plan for the regulated structures.
G11	For existing structures that are regulated structures: (a) where the existing structure that is a regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the environmental authority holder must submit to the administering authority within **12 months** of the commencement of this condition a copy of the certified system design plan including that structure; and (b) there must be a current operational plan for the existing structures.
G12	Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in a manner that is consistent with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.
G13	**Mandatory Reporting Level** Conditions **G14** to **G17** inclusive only apply to regulated structures which have not been certified as low consequence category for 'failure to contain – overtopping'.

Schedule G: Structures	
Condition number	**Condition**
G14	The Mandatory Reporting Level (MRL) must be marked on a regulated dam in such a way that, during routine inspections of that dam, it is clearly observable.
G15	The environmental authority holder must, as soon as practical and within **48 hours** of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.
G16	The environmental authority must immediately upon becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.
G17	The environmental authority holder must record any changes to the MRL in the Register of Regulated Structures.
G18	**Design Storage Allowance** The environmental authority 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.
G19	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).
G20	The environmental authority holder must notify the administering authority as soon as possible and within **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.
G21	The environmental authority holder must immediately upon 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.
G22	**Annual inspection report** Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.

Schedule G: Structures	
Condition number	**Condition**
G23	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 recommended actions to ensure the integrity of the regulated structure.
G24	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)*.
G25	The environmental authority holder must: a) within **20 business days** of receipt of the annual inspection report, provide to the administering authority: i. the recommendations section of the annual inspection report; and ii. if applicable, any actions being taken in response to those recommendations; and b) if, following receipt of the recommendations and (if applicable) actions, the administering authority requests a full copy of the annual inspection report from the environmental authority holder, provide this to the administering authority within **10 business days** of receipt of the request.
G26	**Transfer arrangements** The environmental authority holder must provide a copy of any reports, documentation and certifications prepared under this environmental 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.
G29	**Register of Regulated Structures** A Register of Regulated Structures must be established and maintained by the environmental authority holder for each regulated structure.
G30	The environmental authority 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.

Schedule G: Structures	
Condition number	**Condition**
G31	The environmental authority holder must make a final entry of the required information in the Register of Regulated Structures once compliance with condition **G10** and **G11** has been achieved.
G32	The environmental authority holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
G33	All entries in the Register of Regulated Structures must be approved by the chief executive officer for the environmental authority holder, or their delegate, as being accurate and correct.
G34	The environmental authority 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.
G35	**Notification of affected persons** All affected persons must be provided with a copy of the emergency action plan in place: a) for any new regulated structure constructed after **22 June 2016**, prior to the operation of the new regulated structure; and b) for any existing structures that are regulated structures, if the emergency action plan is amended, within **five (5) business days** of it being amended.
G36	**Transitional arrangements** If new structures are acquired or constructed that have not been assessed in accordance with the 'Manual for Assessing Consequence Categories and Hydraulic Performance of Structures' (ESR/2016/1933) or the former Manual for Assessing Hazard Categories and Hydraulic Performance of Dams, the structure must be assessed and certified in accordance with the 'Manual for Assessing Consequence Categories and Hydraulic Performance of Structures' (ESR/2016/1933) within 6 months of acquisition or construction.
G37	All existing structures must subsequently comply with the timetable for any further assessments in accordance with the Manual specified in **Table G1 Transitional Requirements for Existing Structures**, depending on the consequence category for each existing structure assessed in the most recent previous certification for that structure.

Schedule G: Structures	
Condition number	**Condition**
G38	**Table G1 Transitional Requirements for Existing Structures** ceases to apply for a structure once any of the following events has occurred: a) it has been brought into compliance with the hydraulic performance criteria applicable to the structure under the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (ESR/2016/1933); or b) it has been decommissioned; or **c)** it has been certified as no longer being assessed as a regulated structure.
G39	Certification of the transitional assessment required by **G36** and **G37** (as applicable) must be provided to the administering authority upon request.

Table G1: Transitional Requirements for Existing Structures

Transition period required for existing structures to achieve the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (ESR/2016/1933)* **Compliance with criteria**	**High**	**Significant**	**Low**
90% and a history of good compliance performance in last 5 years	No transition required	No transition required	No transitional conditions apply. Review consequence assessment every 7 years.
>70%-≤90%	Within 7 years, unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Within 10 years, unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	No transitional conditions apply. Review consequence assessment every 7 years.
>50-≤70%	Within 5 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Within 7 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Review consequence assessment every 7 years.
≤50%	Within 5 years or as per compliance requirements (e.g. TEP timing)	Within 5 years or as per compliance requirements (e.g. TEP timing)	Review consequence assessment every 5 years.

Schedule H: Sewage Treatment	
Condition number	**Condition**
H1	**Treated sewage effluent** The cumulative total daily peak design capacity of the sewage treatment plant/s must not exceed 1500 equivalent persons (EP). Small package plants and/or septic systems, each with a daily peak design capacity less than 21EP, are not included in the cumulative total daily peak design capacity.
H2	Treated sewage effluent must not be directly released from the sewage treatment plant/s to any waters. Note: waters' does not include structures associated with the mine affected water management system.
H3	Treated sewage effluent may be: a) released to the mine affected water management system for mixing with other mine affected water; b) released to land via a sub-surface infiltration trench; c) irrigated; d) sprayed for dust suppression or firefighting or evaporation; or e) removed as waste.
H4	Treated sewage effluent that is released in accordance with condition **H3(a)** and has mixed with other mine affected water must be managed as mine affected water in accordance with the conditions of this environmental authority.
H5	Treated sewage effluent that is released in accordance with condition **H3(b)** or **H3(c)** must: a) not damage vegetation; b) not result in surface ponding of effluent; c) not result in run-off of treated sewage effluent to waters; and d) for any sewage treatment plant that has a daily peak design capacity of greater than 21EP, must not occur outside the area indicated in **Table H1 STP Sub-Surface Infiltration and Irrigation Areas** and **Figure 3: Effluent Irrigation Area**.

H6	Treated sewage effluent released in accordance with condition **H3(a)** or **H3(b)** or **H3(c)** or **H3(d)** from any sewage treatment plant that has a daily peak design capacity of greater than 21EP must be monitored: a) from the sewage treatment plant/s; b) for the quality characteristics specified in **Table H2 Treated Sewage Effluent Monitoring Requirements**; and c) at the frequency specified in **Table H2 Treated Sewage Effluent Monitoring Requirements**.

Table H1 STP Sub-Surface Infiltration and Irrigation Areas

Authorised Discharge Points	Location	Latitude (GDA2020)	Longitude (GDA2020)
Effluent Discharge Point 1	Effluent irrigation area	-21.970454	148.003714

H7	If treated sewage effluent is being released in accordance with condition **H3(b)** and/or **H3(c)**: a) the results of monitoring in accordance with condition **H6** must not exceed the release limits specified in **Table H3 Treated Sewage Effluent Contaminant Release Limits**; and b) the release must not cause spray drift or over spray to any sensitive place or commercial place; and c) the daily volume of treated effluent irrigated must be measured and records kept.
H8	If the release limits specified in **Table H3 Treated Sewage Effluent Contaminant Release Limits** are exceeded in accordance with condition **H7(a)**, the environmental authority holder must notify the administering authority in accordance with conditions **A11** and **A12**.

Table H2 Treated Sewage Effluent Monitoring Requirements

Quality Characteristic	Units	Monitoring Frequency
5-day Biochemical Oxygen Demand (uninhibited)	mg/L	Monthly
pH	pH units	Monthly
Thermotolerant coliforms	Colonies per 100mL	Monthly
Total nitrogen	mg/L	Monthly
Total phosphorous	mg/L	Monthly

Table H3 Treated Sewage Effluent Contaminant Release Limits

Quality Characteristic	Release Limit	Units	Limit Type
5-day Biochemical Oxygen Demand (uninhibited)	20	mg/L	Maximum
pH	6.0 to 9.0	pH units	Range
Thermotolerant coliforms, based on the average of a minimum number of five samples collected	1000	Colonies per 100mL	Maximum
Total nitrogen	30	mg/L	Maximum
Total phosphorus	15	mg/L	Maximum
Total suspended solids	30	mg/L	Maximum

Schedule I: Groundwater	
Condition number	**Condition**
I1	The environmental authority holder must not release contaminants to groundwater.
I2	**Groundwater Monitoring and Management Program** On or before **1 May 2024**, a Groundwater Monitoring and Management Program (GMMP) must be developed and implemented by the environmental authority holder for all mining activities.
I3	The GMMP required by condition **I2** must: (a) provide a hydrogeological conceptual groundwater model in accordance with the most recent version of the 'Australian Groundwater Modelling Guidelines' (2012); (b) include all hydrogeological units potentially impacted by the activities authorised under this environmental authority; (c) identify all potential sources of contamination to groundwater from the activities; (d) identify all environmental values that may be impacted; (e) describe the groundwater monitoring and data analysis that will be undertaken to achieve the following objectives: (i) detect impacts to groundwater quality and standing water level (SWL) due to the activities authorised under this environmental authority; and (ii) determine trends in groundwater quality and SWL; (f) document groundwater management and monitoring methodologies undertaken for the duration of all the activities authorised under this environmental authority; (g) provide an appropriate quality assurance and quality control program; and (h) include a review process to identify improvements to the program that includes addressing any comments provided by the administering authority.

Schedule I: Groundwater	
Condition number	**Condition**
I4	A review report for the GMMP required by **condition I2** must be produced by **1 May 2026** and every **2 subsequent years** and include: (a) an analysis of the all the groundwater quality and SWL monitoring data for all groundwater bores listed within **Table I1 Groundwater monitoring locations and frequencies**; (b) an assessment of groundwater quality and SWL trends for all monitoring data from all groundwater bores listed in **Table I1 Groundwater monitoring locations and frequencies**; (c) an assessment of the adequacy of the conceptual groundwater model to accurately determine contaminant transport and changes to SWL; (d) an assessment of any impacts on groundwater quality and SWL due to the mining activities; (e) an assessment of any interactions with, or impacts to, surface water resulting from changes to groundwater quality and SWL due to the mining activities; (f) recommendations, if any, for the environmental authority holder to complete to address any inadequacy or impacts identified by **(a)** through **(e)** of this condition.
I5	Within **28 days** of producing or receiving the review report under condition **I4**, the environmental authority holder must provide to the administering authority: (a) the review report; (b) if applicable, details of any actions being taken by the environmental authority holder to address the recommendations of the review report; and (c) if action is not being taken to address a recommendation, the environmental authority holder must provide justification for not taking action.
I6	**Groundwater monitoring** Groundwater must be monitored at the location and frequencies defined in **Table I1 - Groundwater monitoring locations and frequencies** and as depicted in **Figure 4: Groundwater Monitoring Locations** for the quality characteristics specified in in **Table I2 – Groundwater quality triggers** and SWLs stated in **Table I3 – Groundwater standing water level trigger threshold** and shown in **Figure 2: Groundwater Monitoring Locations**.
I7	Monitoring results from groundwater bores identified in **Table I1 Groundwater monitoring locations and frequencies** must not exceed any of the trigger levels stated in **Table I2 Groundwater quality triggers** on **3 consecutive monitoring occasions** as per the frequencies defined in **Table I1 Groundwater monitoring locations and frequencies.**

Schedule I: Groundwater	
Condition number	**Condition**
I8	**Exceedance investigation - groundwater quality** If monitoring undertaken in accordance with condition **I7** shows exceedance of quality triggers in **Table I2 Groundwater quality triggers** on **3 consecutive monitoring occasions**, the environmental authority holder, after receiving results, must; (a) notify the administering authority via WaTERS within **24 hours;** (b) complete an investigation within **14 days** to determine if the exceedance is the result of mining activities; (c) provide a report of the investigation to the administering authority via WaTERS within **14 days** of completion of the investigation; and (d) if the investigation determines that the mining activities are a potential cause or contributor to the exceedance, then; (i) determine whether environmental harm has occurred; (ii) any action is required to mitigate the environmental harm; and (iii) submit the water quality results to the administering authority via WaTERS.

Table I1 Groundwater monitoring locations and frequencies

Monitoring Points	Latitude (decimal degree, GDA2020)	Longitude (decimal degree, GDA2020)	Frequency	Screen depth (mTOC)†
Tertiary Basalt and Basal Sands Hydrogeological Unit				
RDG066	-21.960154	148.028020	Quarterly	56.65m-80.6m
RDG093MB*	-21.931245	147.980410	Quarterly	102.4m-140.4m
GRO_02*	-21.932831	147.992719	Quarterly	106.8m-115.8m
GRO_05R*‡	-21.969007	148.013227	Quarterly	64.9m-70.9m
GRO_06‡	-21.969081	148.013266	Quarterly	13.5m-19.5m
GRO_08‡	-21.976925	148.017169	Quarterly	95m -101m
GR0 03B	-21.940361	148.021266	Quarterly	30.4m – 39.3m
Alluvium Hydrogeological Unit				
GRO_07‡	-21.976109	148.067065	Quarterly	9.4m-12.4m
GRO_01A	-21.930814	148.019561	Quarterly	11.4m – 17.3m
Fort Cooper coal measures				
GRO_01B	-21.930724	148.019541	Quarterly	52.2m – 61.2m
Moranbah Coal Measures				
GRO_09[A]	TBD	TBD	Monthly from installation until trigger values are established	TBD
GRO_10[A]	TBD	TBD		TBD

Table I1 Notes:

** Borehole subject to investigation as per Condition I11.*

† mTOC means the distance in metres (m) from the top of the bore casing (TOC).

‡ Bores are to be monitored more frequently than quarterly where necessary to meet the minimum of 18 sampling events per bore as required under Condition I10.

*[A] Bores to be installed at a minimum of 1**2 months** prior to the commencement of longwall mining in the G200s series*

Table I2: Groundwater quality triggers

Parameter	Units	Limit Type	Monitoring Points						
			RDG066	RDG093MB[BE]	GRO_02[E]	GRO_05R[E]	GRO_06	GRO_07	GRO_08
pH	pH units	Minimum/ Maximum	6.5 – 8.5[A]						
Electrical Conductivity	µS/cm	Maximum	3,767	6,400	6,860	18,000	7,463[AD]	7,463[AD]	13,000[A]
Total Dissolved Solids	mg/L	Maximum	2,014	4,100	4,065	12,600[D]	5,000[AD]	5,000[AD]	8,815
Sulfate	mg/L	Maximum	114	120	150	114[D]	318[D]	318[D]	12
Arsenic[C]	mg/L	Maximum	0.013[A]						
Aluminium[C]	mg/L	Maximum	0.055[AD]						
Iron[C]	mg/L	Maximum	0.739[D]	0.355	0.0888	0.836[D]	0.7[AD]	0.7[AD]	0.7[A]
Molybdenum[C]	mg/L	Maximum	0.034[A]						
Selenium[C]	mg/L	Maximum	0.011[A]						
TRH C6 – C9	µg/L	Maximum	20						
TRH C10 – C36	µg/L	Maximum	100						
Chloride[C]	µg/L	Interpretation Purposes Only	No trigger limit						
Sodium[C]	mg/L								
Magnesium[C]	mg/L								
Calcium[C]	mg/L								
Potassium[C]	mg/L								
Bicarbonate Alkalinity	mg/L								

Table I2 Notes:

[A] Limit is sourced from the "Australian & New Zealand Guidelines for Fresh and Marine Water Quality" (ANZG, 2018) for Aquatic ecosystem.

[B] Borehole blocked with monitoring equipment

[C] All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered).

[D] interim trigger until the groundwater quality limit review required by condition I9 - I10 is complete.

[E] Borehole subject to investigation as per Condition I11.

Table I3: Groundwater standing water level trigger threshold

Monitoring Points	Latitude (decimal degree, GDA2020)	Longitude (decimal degree GDA2020)	Pre-mining Surface RL (m)	Standing Water Level Trigger (m)
Tertiary Basalt and Basal Sands Hydrogeological Unit				
RDG066	-21.960154	148.028020	224.1	154.18
RDG093MB*	-21.931245	147.980410	263.2	TBD
GRO_02*	-21.932831	147.992719	244.32	TBD
GRO_05R*	-21.969007	148.013227	229.01	TBD
GRO 03B	-21.940348	148.021273	227.29	198.4
GRO_08	-21.976925	148.017169	235.20	172.6
Alluvium Hydrogeological Unit				
GRO_01A	-21.930814	148.019561	227.48	214.93
Fort Cooper coal measures				
GRO_01B	21.930724	148.019541	227.48	176.9
Moranbah Coal Measures				
GRO_09[A]	TBD	TBD	TBD	TBD
GRO_10[A]	TBD	TBD	TBD	TBD

Table I3 Notes:

** Borehole subject to investigation as per Condition I11*

[A] Bores to be installed at a minimum of 12 months prior to the commencement of longwall mining in the G200s series

I9	**Groundwater Quality Trigger Review** The environmental authority holder must complete a review of all quality limits specified in **Table I2 Groundwater quality triggers** and on or before **1 November 2025,** and by **1 May 2026** provide as part of an environmental authority amendment application to the administering authority: (a) the review report; and (b) all the raw data relied on to complete the review**.**

I10	The review under **condition I9** must: (a) calculate revised quality limits: (i) in accordance with the latest version of the administering authority's (or its successor's) guideline 'Using monitoring data to assess groundwater quality and potential environmental impacts'; (ii) using all available groundwater quality monitoring data collected under condition I**8;** (iii) without limiting (ii), be based on a statistically robust data set including a minimum of **18** sampling events for each monitoring bore identified in **Table I1 Groundwater monitoring locations and frequencies**; and (b) be provided to the administering authority as a report, including the quality limits calculated under **(a)** of this condition and the monitoring data collected under condition **I6.**
I11	**Review of groundwater monitoring network** By **30 June 2026**, the environmental authority holder must provide the administering authority with a report that: (a) demonstrates that bores RDG093MB, GRO_02 and GRO_5R can provide water level and water quality data representative of the aquifer they are monitoring, or proposes replacement groundwater bores for each of the targeted aquifers; and (b) proposes **2** new groundwater monitoring bores that monitor the Goonyella Coal seam of the Moranbah Coal Measures to be installed by **31 December 2026.**
I12	**Groundwater SWL** Monitoring results from groundwater bores identified in **Table I1 Groundwater monitoring locations and frequencies** must not exceed any of SWL trigger levels stated in **Table I3 Groundwater standing water level trigger threshold.**

I13	**Exceedance investigation- SWL** If monitoring undertaken in accordance with condition **I12** shows exceedance of the thresholds in **Table I3 Groundwater standing water level trigger threshold**, the environmental authority holder, after receiving results must: (a) notify the administering authority via WaTERS within **24 hours;** (b) complete an investigation into the cause of the exceedance within **14 business days;** (c) provide a report of the investigation to the administering authority via WaTERS within **14 days** of completion of the investigation; (d) if the investigation determines that the mining activities are a potential cause or contributor to the exceedance (i) notify the administering authority via WaTERS within **24 hours** of making the determination; (ii) identify any impacts to environmental values and/or water users as a result of the exceedance; and (iii) take immediate actions to mitigate any identified impacts and notify the administering authority of when action has been completed.
I14	**Groundwater sampling** 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; (d) the standing water level; and (e) the results of all monitoring.
I15	The monitoring and sampling must be carried out in accordance with the requirements of the latest version of the following documents unless otherwise approved by the administering authority: (a) '*Monitoring and Sampling Manual: Environmental Protection (Water) Policy',* Department of Environment and Science, 2018*;* (b) *'Groundwater Sampling and Analysis – A Field Guide'* (2009:27 GeoCat#6890.0); and (c) Australian Standard AS/NZS 5667.11:1998 Water quality – Sampling – Part 11: Guidance on sampling of groundwaters.
I16	**Bore construction and maintenance and decommissioning** The construction, maintenance, management and decommissioning of groundwater bores (including groundwater monitoring bores) must be undertaken in a manner that: (a) prevents contaminants entering the groundwater; (b) ensures the integrity of the bores to obtain representative samples from the target hydrogeological unit; and (c) maintains the hydrogeological environment within the hydrogeological unit.

I17	A bore report must be kept for each new monitoring bore which includes: (a) a unique identification reference number and geographic coordinate location; and (b) construction information including but not limited to the depth of bore, depth and length of casing, depth and length of screening and bore sealing details; and (c) stratigraphy and target hydrogeological unit of the bore; and (d) depth at which groundwater was intercepted and the final standing water level (SWL) after bore development.
I18	The groundwater quality and SWL data for all groundwater bores listed within **Table I1 Groundwater monitoring locations and frequency** must be submitted annually on **1 April** to the administering authority via WaTERs.

Schedule J: Biodiversity	
Condition number	**Condition number**
J1	**Biodiversity offsets – Queensland Biodiversity Offset Policy** The environmental authority holder must provide an offset for impacts on 17.7ha of applicable state significant biodiversity values, in accordance with the *Queensland Biodiversity Offset Policy 2011*. The biodiversity offset must be consistent with the requirements for an offset as identified in the Biodiversity Offset Strategy (as per condition **J4**) and must be provided: (a) prior to impacting on state significant biodiversity values; or (b) where a land based offset is to be provided, within the later of either of the following: i) by **29 May 2016**; or ii) the relevant stage identified in the Biodiversity Offset Strategy submitted under condition **J1**; or (c) where an offset payment is to be provided, within the later of either of the following: i) by **29 May 2016**; or ii) the relevant stage identified in the Biodiversity Offset Strategy submitted under condition **J1**.
J2	A Biodiversity Offset Strategy, only for the 17.7ha identified within condition **J1**, must be developed and submitted to the administering authority within either **30 days**, or a lesser period agreed to by the administering authority, prior to impacting on the applicable state significant biodiversity values.
J3	**Biodiversity offsets – Environmental Offset Strategy** Conditions **J4** to **J11** are exclusive of the **17.7ha** identified within condition **J1.**
J4	Significant residual impacts to prescribed environmental matters, other than if the impacts were authorised by an existing authority issued before the commencement of the *Environmental Offsets Act 2014*, are not authorised under this environmental authority or the *Environmental Offsets Act 2014* unless the impacts are specified in **Table J1 Significant residual impacts to prescribed environmental matters**, as developed using Queensland Regional Ecosystem mapping (version 13.1).
J5	Records demonstrating that each impact to a prescribed environmental matter not listed in **Table J1 Significant residual impacts to prescribed environmental matters** did not, or is not likely to, result in a significant residual impact to that matter and must be: (a) completed by an appropriately qualified person; and (b) kept for the life of the environmental authority.

Schedule J: Biodiversity	
Condition number	**Condition number**
J6	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 J1 Significant residual impacts to prescribed environmental matters**, unless: (a) a lesser extent of the impact has been approved in accordance with condition **J9**; or (b) the same or substantially the same impact has been assessed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

Table J1 Significant residual impacts to prescribed environmental matters

Prescribed environmental matter		Location of impact	Maximum extent of impact (hectares)	Environmental Offset required
REGULATED VEGETATION				
Endangered regional ecosystem	RE 11.3.1 (Endangered)	ML70378	0.37	Yes
	RE 11.4.9 (Endangered)	ML70378	5.6	Yes
	RE 11.4.8 (Endangered) – Brigalow TEC[a]	ML70378	10.4	Yes[a]
	RE 11.4.9 (Endangered) – Brigalow TEC[a]	ML70378	5.4	Yes[a]
	RE 11.9.1 (Endangered) – Brigalow TEC[a]	ML70378	1.1	Yes[a]
Of concern regional ecosystem (not within an urban area)	RE 11.3.4 (Of concern)[b]	ML70378	7.75	Yes
	RE 11.3.2 (Of concern)[b]	ML70378	56.07	Yes
Regional ecosystems (not within an urban area) that intersect a wetland on the vegetation management wetlands map				
	RE 11.3.27 (Least concern)	ML70378	1.17	Yes
	RE 11.5.3 (Least concern)	ML70378	0.38	Yes
	RE 11.5.3b (Least concern) – Palustrine wetland	ML70378	1.11	Yes
Regional ecosystems (not within an urban area) within the defined distance from the defining banks of a relevant watercourse on the vegetation management watercourse map	RE 11.3.25 (Least concern)[b] – Riverine wetland / fringing riverine wetland	ML70378	23.97	Yes
	RE 11.3.2 (Of concern) – Palustrine wetland	ML70378	2.01	Yes
	RE 11.3.4 (Of concern)[b] – Floodplain (other than floodplain wetlands)	ML70378	2.62	Yes
	RE 11.5.3 (Least concern)	ML70378	1.51	Yes
	RE 11.3.7 (Least concern)	ML70378	0.24	Yes
	RE 11.4.8 (Endangered)	ML70378	0.07	Yes
	~~RE 11.3.7 (Least concern)~~	~~ML70378~~	~~0.08~~	~~Yes~~
	RE 11.4.9 (Endangered)	ML70378	0.18	Yes
	RE 11.5.12 (Least concern)	ML70378	0.02	
CONNECTIVITY AREAS				
Connectivity area that is a regional ecosystem (not in an urban area)		ML70378	264.9	Yes
PROTECTED WILDLIFE HABITAT				
Tachyglossus aculeatus	Short-beaked Echidna	ML70378	4.81	No**
Geophaps scripta	Squatter Pigeon[a]	ML70378	164.9[c] 43.7[b]	Yes[a]

Prescribed environmental matter		Location of impact	Maximum extent of impact (hectares)	Environmental Offset required
Phascolarctos cinereus	Koala[a]	ML70378	264.4[c] 137.3[b]	Yes[a]
Petauroides volan	Greater Glider[a]	ML70378	264.4[c] 17.2[b]	Yes[a]
Denisonia maculata	Ornamental Snake[a]	ML70378	131.7[c] 3.9[b]	Yes[a]
Rostratula australis	Australian Painted Snipe[a]	ML70378	35.3[c]	Yes[a]
THREATENED ECOLOGICAL COMMUNITIES (TEC)				
Brigalow TEC[a]		ML70378	1.12[c] 18.1[b]	Yes[a]
Polar Box TEC[a]		ML70378	79.8[c]	Yes[a]

Notes to Table J1:

[a] These prescribed environmental matters are also matters of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act). These matters will be offset under the EPBC Act.

[b] Includes provision for G200 series offsets as per the Major EA amendment approved 15th May 2017, and EPBC Approval no. 2016/7796.

** impacts to short-beaked Echidna associated with the 2024 re-entry program on ML70378

[c] as per EPBC Approval no. 2007/3785 for the G100 series.

Schedule J: Biodiversity	
Condition number	**Condition**
J7	**Staged impacts** The significant residual impacts to prescribed environmental matter authorised in condition **J6** for which an environmental offset is required by condition **J8** may be carried out in stages. An environmental offset can be delivered for each stage of the impacts to prescribed environmental matters.
J8	Prior to the commencement of each stage, a report that includes an analysis of the following must be provided to the administering authority: (a) for the forthcoming stage – the estimated significant residual impact to each prescribed environmental matter; and (b) for the previous stage, if applicable – the actual significant residual impact to each prescribed environmental matter, to date.
J9	The report required by condition **J8** must be approved by the administering authority before a notice of election for the forthcoming stage, if applicable, is given to the administering authority
J10	A notice of election for the staged environmental offset referred to in condition **J11**, if applicable, must be provided to the administering authority no less than **3 months** before the proposed commencement of that stage, unless a lesser timeframe has been agreed to by the administering authority.
J11	Within **six (6) months** from the completion of the final stage of the project, a report that includes the following matters must be provided to the administering authority: (a) an analysis of the actual impacts on prescribed environmental matters resulting from the final stage; and (b) if applicable, a notice of election to address any outstanding offset debits for the authorised impacts.
J12	**Impacts to Prescribed Environmental Matters from Residual Subsidence Ponds** Impacts to prescribed environmental matters as a result of existing and predicted residual ponded areas is authorised at the locations depicted in **Figure 6: Existing (as at August 2025) and Predicted Residual Ponded Areas and Matters of State Environment Significance** and detailed in: **Table J2 Maximum impacts to prescribed environmental matters from Residual Subsidence Ponds**.

Schedule J: Biodiversity	
Condition number	**Condition**
J13	**Assessment of Significant Residual Impacts to Prescribed Environmental Matters – Existing Ponds (as at August 2025)** By **31 March 2026,** the environmental authority holder must provide to the administering authority: (a) a significant residual impact assessment[1] of existing ponded areas on prescribed environmental matters; and (b) a notice of election proposing an offset for significant residual impacts that remain after all reasonable avoidance and mitigation options have been considered. [1] the significant residual impact assessment relates to the cumulative impacts of the entire project.
J14	**Assessment of Significant Residual Impacts to Prescribed Environmental Matters – Predicted Ponds** Significant residual impacts[1] to prescribed environmental matters from predicted ponded areas will be assessed in accordance with conditions **J3-J14** of this environmental authority. [1] the significant residual impact assessment relates to the cumulative impacts of the entire project.

Table J2 Maximum impacts to prescribed environmental matters from Residual Subsidence Ponds

Prescribed environmental matter		Maximum extent of impact (hectares)
REGULATED VEGETATION		
Endangered regional ecosystem	RE 11.3.1 (Endangered)	0.19
	RE 11.4.8 (Endangered)	10.47
	RE 11.4.9 (Endangered)	22.21
Of concern regional ecosystem (not within an urban area)	RE 11.3.4 (Of concern)	3.58
	RE 11.3.2 (Of concern)	4.22
Regional ecosystems (not within an urban area) that intersect a wetland on the vegetation management wetlands map	RE 11.5.12 (Least concern)	0.08
	RE 11.5.3 (Least concern)	2.51
Regional ecosystems (not within an urban area) within the defined distance from the defining banks of a relevant watercourse on the vegetation management watercourse map	RE 11.5.3 (Least concern)	1.65
	RE 11.5.9 (Least concern)	0.05
	RE 11.4.8 (Endangered)	1.16
	RE 11.4.9 (Endangered)	2.86
CONNECTIVITY AREAS		
Connectivity area that is a regional ecosystem (not in an urban area)		94.85

Schedule K: Stimulation Activities	
Condition number	**Condition**
K1	Stimulation activities must not cause the connection of the target gas producing formation and another aquifer.
K2	Practices and procedures must be in place to detect, as soon as practicable, any fractures that cause the connection of a target gas producing formation and another aquifer.
K3	The use of restricted stimulation fluids is prohibited.
K4	Polycyclic aromatic hydrocarbons or products that contain polycyclic aromatic hydrocarbons must not be used in stimulation fluids in concentrations above the reporting limit.
K5	Stimulation activities must not negatively affect water quality, other than that within the stimulation impact zone of the target gas producing formation.
K6	The internal and external mechanical integrity of the well system prior to and during stimulation must be ensured such that there is: (a) no significant leakage in the casing, tubing, or packer; and (b) there is no significant fluid movement into another aquifer through vertical channels adjacent to the well bore hole.
K7	**Stimulation Risk Assessment** Prior to undertaking stimulation activities, a risk assessment must be developed to ensure that stimulation activities are managed to prevent environmental harm.
K8	The stimulation risk assessment must be carried out for every well to be stimulated prior to stimulation being carried out at that well and address issues at a relevant geospatial scale such that changes to features and attributes are adequately described and must include, but not necessarily be limited to: (a) a process description of the stimulation activity to be applied, including equipment and a comparison to best international practice; (b) provide details of where, when and how often stimulation is to be undertaken on the tenures covered by this environmental authority; (c) a geological model of the field to be stimulated including geological names, descriptions and depths of the target gas producing formation(s); (d) naturally occurring geological faults; (e) seismic history of the region (e.g. earth tremors, earthquakes); (f) proximity of overlying and underlying aquifers; (g) description of the depths that aquifers with environmental values occur, both above and

Schedule K: Stimulation Activities	
Condition number	**Condition**
	below the target gas producing formation; (h) identification and proximity of landholder' active groundwater bores in the area where stimulation activities are to be carried out; (i) the environmental values of groundwater in the area; (j) an assessment of the appropriate limits of reporting for all water quality indicators relevant to stimulation monitoring in order to accurately assess the risks to environmental values of groundwater; (k) description of overlying and underlying formations in respect of porosity, permeability, hydraulic conductivity, faulting and fracture propensity; (l) consideration of barriers or known direct connections between the target gas producing formation and the overlying and underlying aquifers; (m) a description of the well mechanical integrity testing program; (n) process control and assessment techniques to be applied for determining extent of stimulation activities (e.g. microseismic measurements, modelling etc.); (o) practices and procedures to ensure that the stimulation activities are designed to be contained within the target gas producing formation; (p) groundwater transmissivity, flow rate, hydraulic conductivity and direction(s) of flow; (q) a description of the chemical compounds used in stimulation activities (including estimated total mass, estimated composition, chemical abstract service numbers and properties), their mixtures and the resultant compounds that are formed after stimulation; (r) a mass balance estimating the concentrations and absolute masses of chemical compounds that will be reacted, returned to the surface or left in the target gas producing formation subsequent to stimulation; (s) an environmental hazard assessment of the chemicals used to include their mixtures and the resultant chemicals that are formed after stimulation including: (i) toxicological and ecotoxicological information of chemical compounds used; (ii) information on the persistence and bioaccumulation potential of the chemical compounds used; and (iii) identification of the chemicals of potential concern in stimulation fluids derived from the risk assessment. (t) an environmental hazard assessment of use, formation of, and detection of polycyclic aromatic hydrocarbons in stimulation activities; (u) identification and an environmental hazard assessment of using radioactive tracer beads in stimulation activities; (v) an environmental hazard assessment of leaving chemical compounds in stimulation fluids in the target gas producing formation for extended periods subsequent to stimulation; (w) human health exposure pathways to operators and the regional population;

Schedule K: Stimulation Activities	
Condition number	**Condition**
	(x) risk characterisation of environmental impacts based on the environmental hazard assessment; (y) potential impacts to landholder bores as a result of stimulation activities; (z) an assessment of cumulative underground impacts, spatially and temporally of the stimulation activities to be carried out on the tenures covered by this environmental authority; (aa) potential environmental or health impacts which may result from stimulation activities including but not limited to water quality, air quality (including suppression of dust and other airborne contaminants), noise and vibration; and (bb) Ensure there is a sufficient groundwater monitoring network available for the purposes of background monitoring as per condition **K9**.
K9	**Water quality baseline monitoring** Prior to undertaking any stimulation activity, a baseline bore assessment must be undertaken of the water quality of: (a) all landholder's active groundwater bores (subject to access being permitted by the landholder) that are spatially located within a **2 kilometre horizontal radius** from the location of the stimulation initiation point within the target gas producing formation; and (b) all landholders' active groundwater bores (subject to access being permitted by the landholder) in any aquifer that is within **200 metres** above or below the target gas producing formation and is spatially located with a **2 kilometre radius** from the location of the stimulation initiation point; (c) all monitoring bores listed in **Table I1 Groundwater Monitoring Locations and Frequencies**; and (d) any other bore that could potentially be adversely impacted by the stimulation activities in accordance with the findings of the risk assessment required by conditions **J7** and **J8**.
K10	Prior to undertaking stimulation activities at a well, there must be sufficient water quality data to accurately represent the water quality in the well to be stimulated. The data must include as a minimum the results of analyses for the parameters in condition **K11**.
K11	Baseline bore assessments required by condition **K9** and well assessments required by condition **K10** must include relevant analytes and physico-chemical parameters to be monitored in order to establish baseline water quality and must include, but not necessarily be limited to: (a) pH; (b) electrical conductivity [µS/m]; (c) turbidity [NTU]; (d) total dissolved solids [mg/L]; (e) temperature [ºC]; (f) dissolved oxygen [mg/L];

Schedule K: Stimulation Activities	
Condition number	**Condition**
	(g) dissolved gases (methane, chlorine, carbon dioxide, hydrogen sulphide) [mg/L]; (h) alkalinity (bicarbonate, carbonate, hydroxide and total as CaCO3) [mg/L]; (i) sodium adsorption ratio (SAR); (j) anions (bicarbonate, carbonate, hydroxide, chloride, sulfate) [mg/L]; (k) cations (aluminium, calcium, magnesium, potassium, sodium) [mg/L]; (l) dissolved and total metals and metalloids (including but not necessarily being limited to aluminium, arsenic, barium, borate (boron), cadmium, total chromium, copper, iron, fluoride, lead, manganese, mercury, nickel, selenium, silver, strontium, tin and zinc) [µg/L]; (m) total petroleum hydrocarbons [µg/L]; (n) BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para- and meta-xylene, and total xylene) [µg/L]; (o) polycyclic aromatic hydrocarbons (including but not necessarily being limited to naphthalene, phenanthrene, benzo[a]pyrene) [µg/L]; (p) sodium hypochlorite [mg/L]; (q) sodium hydroxide [mg/L]; (r) formaldehyde [mg/L]; (s) ethanol [mg/L]; and (t) gross alpha + gross beta or radionuclides by gamma spectroscopy [Bq/L].
K12	**Stimulation Impact Monitoring Program** A Stimulation Impact Monitoring Program must be developed prior to the carrying out of stimulation activities which must be able to detect adverse impacts to water quality from stimulation activities and must consider the findings of the risk assessment required by conditions **K7** and **K8** that relate to stimulation activities and must include, as a minimum, monitoring of: (a) the stimulation fluids to be used in stimulation activities at sufficient frequency and which sufficiently represents the quantity and quality of the fluids used; (b) flow back waters from stimulation activities at sufficient frequency and which sufficiently represents the quality of that flow back water; (c) flow back waters from stimulation activities at sufficient frequency and accuracy to demonstrate that: (i) 150% of the volume used in stimulation activities has been extracted from the stimulated well; or (ii) all additives used in stimulation activities have been removed; and (d) all bores in accordance with condition **K9**.

Schedule K: Stimulation Activities	
Condition number	**Condition**
K13	The Stimulation Impact Monitoring Program must provide for monitoring of: (a) analytes and physico-chemical parameters relevant to baseline bore and well assessments to enable data referencing and comparison including, but not necessarily being limited to the analytes and physicochemical parameters in condition **K11**; and (b) any other analyte or physico-chemical parameters that will enable detection of adverse water quality impacts and the inter-connection with a non-target aquifer as a result of stimulation activities including chemical compounds that are actually or potentially formed by chemical reactions with each other or coal seam materials during stimulation activities.
K14	The Stimulation Impact Monitoring Program must provide for monitoring of the bores in condition **K12 d)** at the following minimum frequency: (a) monthly for the first **6 months** subsequent to stimulation activities being undertaken; then; (b) annually for the first **5 years** subsequent to stimulation being undertaken or until analytes and physico-chemical parameters listed in conditions **K11 a)** to **K11 t)** inclusive, are not detected in concentrations above baseline bore monitoring data on **2 consecutive monitoring occasions**, or up until the stimulation well is mined through due to longwall activities and is no longer accessible.
K15	The results of the Stimulation Impact Monitoring Program must be made available to any potentially affected landholder upon request by that landholder.
K16	In addition to the requirements under Chapter 7, Part 1, Division 2 of the *Environmental Protection Act 1994,* the administering authority must be notified through the Pollution Hotline and in writing, as soon as possible, but within **48 hours** of becoming aware of any of the following events: (a) unauthorised releases of volumes of contaminants, in any mixture, to land greater than: (i) 200 L of stimulation additives; or (ii) 500 L of stimulation fluids. (b) the use of restricted stimulation fluids; and (c) groundwater monitoring results from a landholder's active groundwater bore monitored under the Stimulation Impact Monitoring Program which is a 10% or greater increase from a previous baseline value for that bore and which renders the water unfit for its intended use.

Definitions

Key terms and/or phrases used in this document are defined in this section. Where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

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

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

acid 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 as a result of mining activities.

administering authority means the administering authority of the *Environmental Protection Act 1994*.

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

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

alternative arrangement in relation to a sensitive place or a commercial place, means:

a) A written agreement:
i. between the environmental authority holder and a third party;
ii. that identifies a particular type(s) of environmental nuisance;
iii. about the way in which the particular environmental nuisance impact(s) will be dealt with;
iv. at a particular location; and
v. for a defined period of time.
b) An alternative arrangement must make clear to the third party that by entering in to the agreement that:
i. their place will be excluded as a sensitive place or commercial place; and
ii. the consequences of exclusion as a sensitive place or commercial place.

Note: An alternative arrangement may include, but is not limited to, details of the nuisance abatement measures to be implemented, provision of alternative accommodation, or agreement between the parties that the location will not be considered a sensitive place or commercial place for the purposes of the Environmental Authority, for the duration of the alternative arrangement. The written agreement may be in any form, with some examples being a lease, or an agistment, or a conduct and compensation agreement under the *Mineral Resources Act 1989*.

Anglo American site in Queensland means any tenure for coal under section 6D of the *Mineral Resources Act 1989* that is held by one or more of the environmental authority holders, or a related company.

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 relative to the subject matter using the relevant protocols, standards, methods or literature.

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

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

a) against recommendations contained in previous annual inspections reports;
b) against recognised dam safety deficiency indicators;
c) for changes in circumstances potentially leading to a change in consequence category;
d) for conformance with the conditions of this authority;
e) for conformance with the 'as constructed' drawings;
f) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems).

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

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.

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

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

a) of benefit to that owner in that it adds real value to their business or to the general community;

b) in accordance with relevant provisions of the *Environmental Protection Act 1994;*
c) sustainable by virtue of written undertakings given by that owner to maintain that dam; and
d) the transfer and use have been approved or authorised under any relevant legislation.

biosolids means the treated and stabilised solids from sewage.

blasting means the use of explosive materials to fracture-

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

bulk rubber means tyres, conveyor belt, and other similar rubber waste.

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)).

certified or certification in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding dams means, a Statutory Declaration by a suitably qualified person or suitably qualified third party accompanying the written document stating:

a) the person's qualifications and experience relevant to the function;
b) that the person has not knowingly included false, misleading or incomplete information in the document;
c) that the person has not knowingly failed to reveal any relevant information or document to the administering authority;
d) that the document addresses the relevant matters for the function and is factually correct; and that the opinions expressed in the document are honestly and reasonably held**.**

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
c) approved by the Australian Transport Council; or
d) a lead hazardous substance within the meaning of the Workplace Health and Safety Regulation 2008; or
e) 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
f) any substance used as, or intended for use as:
    i) a pesticide, insecticide, fungicide, herbicide, rodenticide, nematicide, miticide, fumigant or related product; or
    ii) a surface active agent, including, for example, soap or related detergent; or
    iii) a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or
    iv) a fertiliser for agricultural, horticultural or garden use; or
    v) a substance used for, or intended for use for –
    vi) mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or
    vii) manufacture of plastic or synthetic rubber.

commercial place means:

a) A work place that is used as:

i. an office; or
ii. a place of business; or
iii. a place used for commercial purposes.

b) Despite paragraph (a), the following places are not commercial places:
i. subject to paragraph (c), a place that is the subject of an alternative arrangement; or
ii. places that are part of the mining activity; or
iii. employees accommodation or public roads; or
iv. a property owned or leased by one or more of the environmental authority holders, or a related company, whether or not it is subject to an alternative arrangement.

A place that is the subject of a current alternative arrangement in relation to a particular type(s) of environmental nuisance, is not a commercial place for the purposes of that type(s) of environmental nuisance, however, remains a commercial place for the purpose of other types of environmental nuisances.

contaminate means to render impure by contact or mixture.

contaminated means the substance has come into contact with a contaminant

contaminant can be

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

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

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.

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).

dam means a land-based structure or a void that is designed to contain, diverts or control flowable substances and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works.

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).

declared pest and **declared pest plant species** has the meaning of a prohibited or restricted matter in the Biosecurity Act 2014 and is a live animal or plant declared to be a declared pest under section 29 (Declaring Pests by Regulation) or section 31 (Chief executive may make emergency prohibited matter declaration) of that Act and includes reproductive material of the animal or plant.

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.

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

disturbance of land includes:

f) compacting, removing, covering, exposing or stockpiling of earth;
a) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion;
b) carrying out mining within a watercourse, waterway, wetland or lake;
c) the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls;
d) temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc.) which is to be removed after the mining activity has ceased; or
e) releasing of contaminants into the soil, or underlying geological strata.

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

a) areas off lease (e.g. roads or tracks which provide access to the mining lease);
b) areas previously disturbed which have achieved the rehabilitation outcomes;
c) by agreement with the administering authority, areas previously disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);
d) areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc.) which is to be left by agreement with the landowner; or
e) disturbance that pre-existed the grant of the tenure.

dwelling means any of the following structures or vehicles that is principally used as a residence:

a) a house, unit, motel, nursing home or other building or part of a building; or
b) a caravan, mobile home or other vehicle or structure on land; or
c) a water craft in a marina.

EC means electrical conductivity.

effluent treated wastewater discharged from sewage treatment plants.

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

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

environmental authority holder means the holder of this environmental authority.

environmental monitoring for the purpose of Condition E23 means installation of water quality monitoring stations, as well as installation of air quality, noise and vibration monitoring equipment.

EPBC means the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

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

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

existing structure means a structure that was in existence prior to 20 November 2015.

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

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

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

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

FRREMP means a Fitzroy Basin Receiving Environment Monitoring Program for the region in which the EA is located, that has been endorsed in writing by the administering authority

general waste means waste other than regulated waste.

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

hydraulic performance means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933).

inert waste means bricks, pavers, ceramics, concrete, glass, steel, or similar waste that does not biodegrade or decompose.

infrastructure means water storage dams, roads and tracks, buildings and other structures built for the purpose of mining activities but does not include other facilities required for the long term management of mining impacts or the protection of potential resources. Such other facilities include dams, waste rock dumps, voids, or ore stockpiles and buildings as well as other structures whose ownership can be transferred and which have a residual beneficial use for the next owner of the operational land or the background landowner.

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

$L_{A1, adj, 15\ mins}$ means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 15 minute measurement period, using Fast response.

lake includes:

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

land in the land schedule of this document means land excluding waters and the atmosphere, that is, the term has a different meaning from the term as defined in the *Environmental Protection Act 1994*. For the purposes of the *Acts*

Interpretation Act 1954, it is expressly noted that the term 'land; in this environmental authority relates to physical land and not to interests in land.

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

landholder's active groundwater bore means bores that are able to continue to provide a reasonable yield of water in terms of quantity for the bores authorised purpose or use. This term does not include monitoring bores owned by the administering authority of the *Water Act 2000*.

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

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

mandatory reporting level or **MRL** means a warning and reporting level determined in accordance with the criteria in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933) published by the administering authority.

manual means the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933) published by the administering authority, as amended from time to time.

matters of state environmental significance or **MSES** has the meaning in schedule 2 of the *Environmental Offsets Regulation 2014*.

mbgl means metres below ground level.

mg/L means milligrams per litre.

maximum extent of impact means the total, cumulative 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.

mechanically reprocessing waste includes mechanically crushing, milling, grinding, shredding or sorting waste, whether or not for the purpose of recycling the waste.

mine affected water means the following types of water:

a) pit water, tailings dam water, processing plant water; or
b) 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; or
c) 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 runoff containing sediment only, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water; or
d) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated; or
e) groundwater from the mine's dewatering activities; or
f) a mix of mine affected water (under any of paragraphs a)-e)) and other water; or

g) underground water brought to the surface of the earth, or moved underground in connection with exploring for, or producing coal seam gas; or
h) water used in stimulation activities including but not limited to stimulation flow back water.

mineral means a substance which normally occurs naturally as part of the earth's crust or is dissolved or suspended in water within or upon the earth's crust and includes a substance which may be extracted from such a substance, and includes:

a) clay if mined for use for its ceramic properties, kaolin and bentonite;
b) foundry sand;
c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil there from;
d) limestone if mined for use for its chemical properties;
e) marble;
f) mineral oil or gas extracted or produced from shale or coal by in situ processes;
g) peat;
h) salt including brine;
i) shale from which mineral oil may be extracted or produced;
j) silica, including silica sand, if mined for use for its chemical properties; or
k) rock mined in block or slab form for building or monumental purposes;

But does not include:

a) living matter;
b) petroleum within the meaning of the *Petroleum Act 1923*;
c) soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form; or
d) water.

minimise is to reduce to the smallest possible amount or degree.

mining activity(ies) means:

a) an activity that is an authorised activity for a mining tenement under the *Mineral Resources Act 1989*; or
b) another activity that is authorised under the *Mineral Resources Act 1989* that grants rights over land.

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

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

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

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

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

operational plan includes:

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

b) contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure.

participant of the FRREMP means an environmental authority holder that is identified as a current participant by the organisation carrying out the Fitzroy Regional REMP.

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

potentially affected stakeholders includes (but should not be limited to):

a) the administering authority; and
b) a local landholder whose property is riparian, downstream of the release point specified in Table F1 of the environmental authority and is determined by the environmental authority holder to be potentially impacted by mine affected water releases; and
c) other party nominated by the administering authority; and
d) the relevant local government authority; and
e) a Resource Operations Licence (ROL) holder or other water entitlement holder under the *Water Act 2000* located between the nearest compliance point listed in Table 1 of the operational policy and the release point specified in Table F1 of the environmental authority; and
f) does not include a landholder or other party who by written agreement with the environment authority holder has declined to be notified for the purpose of this condition.

predominant (plant) species has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means a species that contributes most to the overall above-ground biomass of a particular stratum.

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

protected area means:

a) a protected area under the *Nature Conservation Act 1992*;
b) a marine park under the *Marine Parks Act 2004*; or
c) a World Heritage Area.

~~**receiving environment** means all groundwater, surface water, land and sediments that are not disturbed areas authorised by this environmental authority~~.

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

a) a watercourse;
b) groundwater;
c) land; and
d) sediments.

receiving waters means all groundwater and surface water that are not disturbed areas authorised by this environmental authority.

reference site means an area of land which contains values and characteristics representative of an area to be rehabilitated prior to disturbance. Such values must encompass:

a) land use;

b) topographic aspects;
c) the chemical and physical characteristics of the soil;
d) vegetation community attributes including species types and diversity;
e) fire regime; and
f) other ecological characteristics.

Reference sites can be the pre-disturbed site of interest where significant surveying effort has been undertaken to establish benchmark parameters.

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 dam 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 dam means any dam in the significant or high consequence category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (Version 4, 10 April 2014) (EM635)* published by the administering authority.

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 the strength and structural integrity of that tank or container; or
b) a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of frilling and well completion activities; or
c) a flare pit.

regulated waste is defined in the *Environmental Protection Regulation 2008*.

rehabilitation means the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.

rejects means:

(a) breaker rejects; or
(b) coarse rejects; or
(c) mid/fine size rejects; or
(d) tailings that have been dewatered; or
(e) any combination of rejects (under any of paragraphs a to d).

release event means a surface water discharge from mine affected water storages or contaminated areas on the licenced place.

reporting limit means the lowest concentration that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes, the reporting limit is selected as the lowest non-zero standard in the calibration curve. Results that fall below the reporting limit will be reported as “less than” the value of the reporting limit. The reporting limit is also referred to as the practical quantitation limit or the limit of quantitation. For polycyclic aromatic hydrocarbons, the reporting limit must be based on super-ultratrace methods and, depending on the specific polycyclic aromatic hydrocarbon, will range between 0.005 ug/L–0.02 ug/L.

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.

reprocessing includes:

a) recycling; or
b) mechanical treatment; or
c) thermal treatment; or
d) biological treatment; or
e) chemical treatment.

residual ponded areas means a subsidence pond where long term water balance simulation indicates a continuous presence of ponded water for 90 or more consecutive days per year and for 50% or more modelled years after the completion of mitigation measures. Additional qualification of residual ponded areas includes:

(a) A minimum water ponding depth of 200mm; and
(b) Minimum pond capacity and footprint of 2ML and 1ha respectively with the minimum footprint equivalent to the water surface area at the maximum volume.

restricted stimulation fluids has the meaning in section 206 of the Environmental Protection Act 1994 and means fluids used for the purpose of stimulation, including fracturing, that contain the following chemicals in more than the maximum amount prescribed under a regulation—

a) petroleum hydrocarbons containing benzene, ethylbenzene, toluene or xylene;
b) chemicals that produce, or are likely to produce, benzene, ethylbenzene, toluene or xylene as the chemical breaks down in the environment.

resource activity is an activity that involves

a) a geothermal activity; or
b) a GHG storage activity; or
c) a mining activity; or
d) a petroleum activity.

riparian areas/corridor is defined as:
any land which adjoins, directly influences, or is influenced by a body of water. This includes:

a) the land immediately alongside small creeks and river, including the riverbank itself;
b) gullies and dips which sometimes run with surface water;
c) areas surrounding lakes; and
d) wetlands on river flood plains which interact with the river in times of flood.

riverine includes the creek/riverbed and its associated adjoining riparian zone.
RL means reduced level, relative to mean sea level as distinct from depths to water.
saline drainage the movement of waters, contaminated with salt(s), as a result of the mining activity.
self-sustaining means an area of land which has been rehabilitated and has maintained the required acceptance criteria without human intervention for a period nominated by the administering authority.
sensitive place means:

a) Any of the following:
   i. a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
   ii. a motel, hotel or hostel; or
   iii. an educational institution; or
   iv. a medical centre or hospital; or
   v. a protected area; or
   vi. a public park or gardens.

(b) Despite paragraph (a), the following places are not sensitive places:
   i. subject to paragraph (c), a place that is the subject of an alternative arrangement; or
   ii. 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), 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 environmental authority holders for the mining project, or a related company; or
   iii. a property owned or leased by one or more of the environmental authority holders, or a related company, whether or not it is subject to an alternative arrangement.

c) A place that is the subject of a current alternative arrangement in relation to a particular type(s) of environmental nuisance, is not a sensitive place for the purposes of that type(s) of environmental nuisance, however, remains a sensitive place for the purpose of other types of environmental nuisances.

sewage means the used water of persons to be treated at a sewage treatment plant.

significant residual impact has the meaning in section 8 of the *Environmental Offsets Act 2014*.

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

stable in relation to land, means landform dimensions are or will be stable within tolerable limits now and in the foreseeable future. Stability includes consideration of geotechnical stability, settlement and consolidation allowances, bearing capacity (trafficability), erosion resistance and geochemical stability with respect to seepage, leachate and related contaminant generation.

stimulation means a technique used to increase the permeability of natural underground reservoir that is undertaken above the formation pressure and involves the addition of chemicals. It includes hydraulic fracturing/ hydrofracking, fracture acidizing and the use of proppant treatments.

Explanatory note: This definition is restricted from that in the Petroleum and Gas (Production and Safety) Act 2004 in order to only capture the types of stimulation activities that pose a risk to environmental values of water quality in aquifers.

stimulation fluid means the fluid injected underground to increase the permeability of natural underground reservoir that is undertaken above the. For clarity, the term stimulation fluid only applies to fluid injected down well post-perforation.

stimulation impact zone means a 100m maximum radial distance from the stimulation target location within a gas producing formation pressure and involves the addition of chemicals. .

stimulation initiation point means the geographical location of stimulation within the stimulation bore hole.

stormwater means all surface water runoff from rainfall.

structure means dam or levee.

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

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

surface disturbance is any disturbance of the land but does not include Underground Mining Disturbance.

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

The Act means the *Environmental Protection Act 1994*.

underground mining disturbance is the subsidence of the land associated with underground mining and includes surface disturbance from any ancillary activity associated with underground mining including but not limited to gas drainage.

underground mining waste means materials associated with structural support, gas management, water management and ventilation, including but not limited to unsalvageable equipment and material, pipes, roof mesh, roof bolts and resin for strata consolation and seals.

µg/L means micrograms per litre

µS/cm means microsiemens per centimetre

void means any constructed, open excavation in the ground.

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

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

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

waters includes 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 and any part thereof.

well integrity the ability of a well to contain the substances flowing through it.

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.

Figure 1: Authorised Disturbance Areas

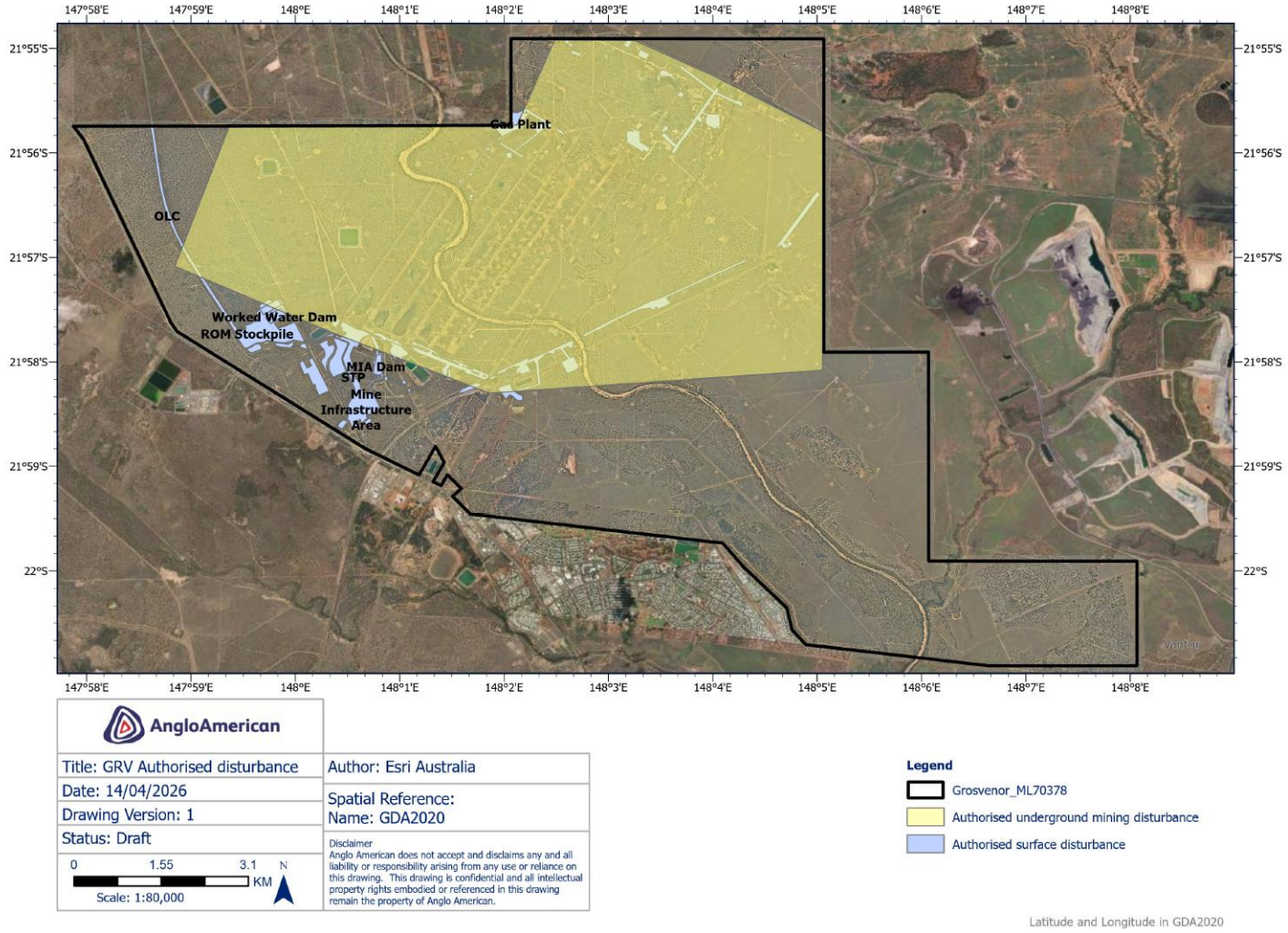


Figure 2: Water Release Points and Monitoring Points

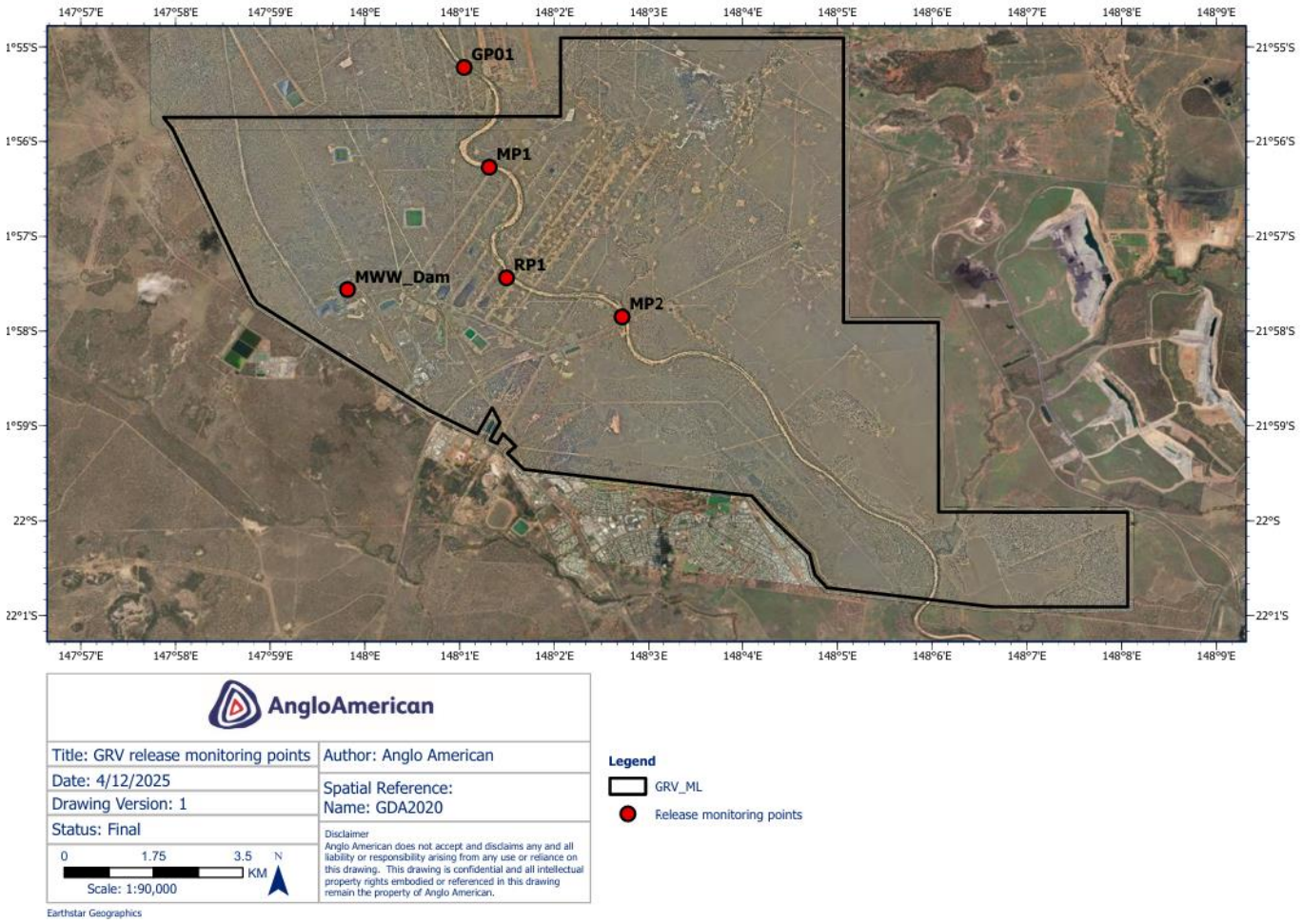


Figure 4: Groundwater Monitoring Locations

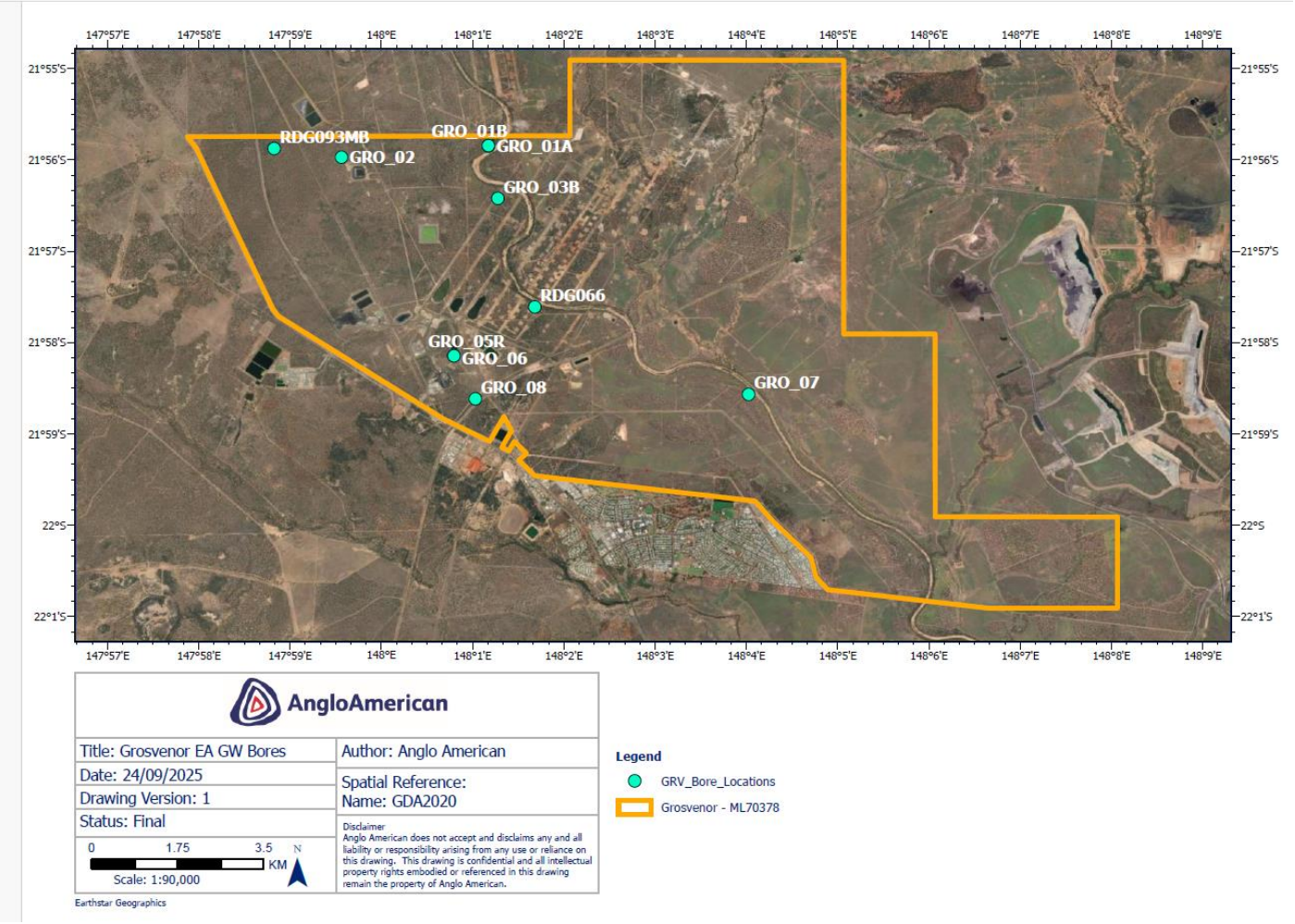
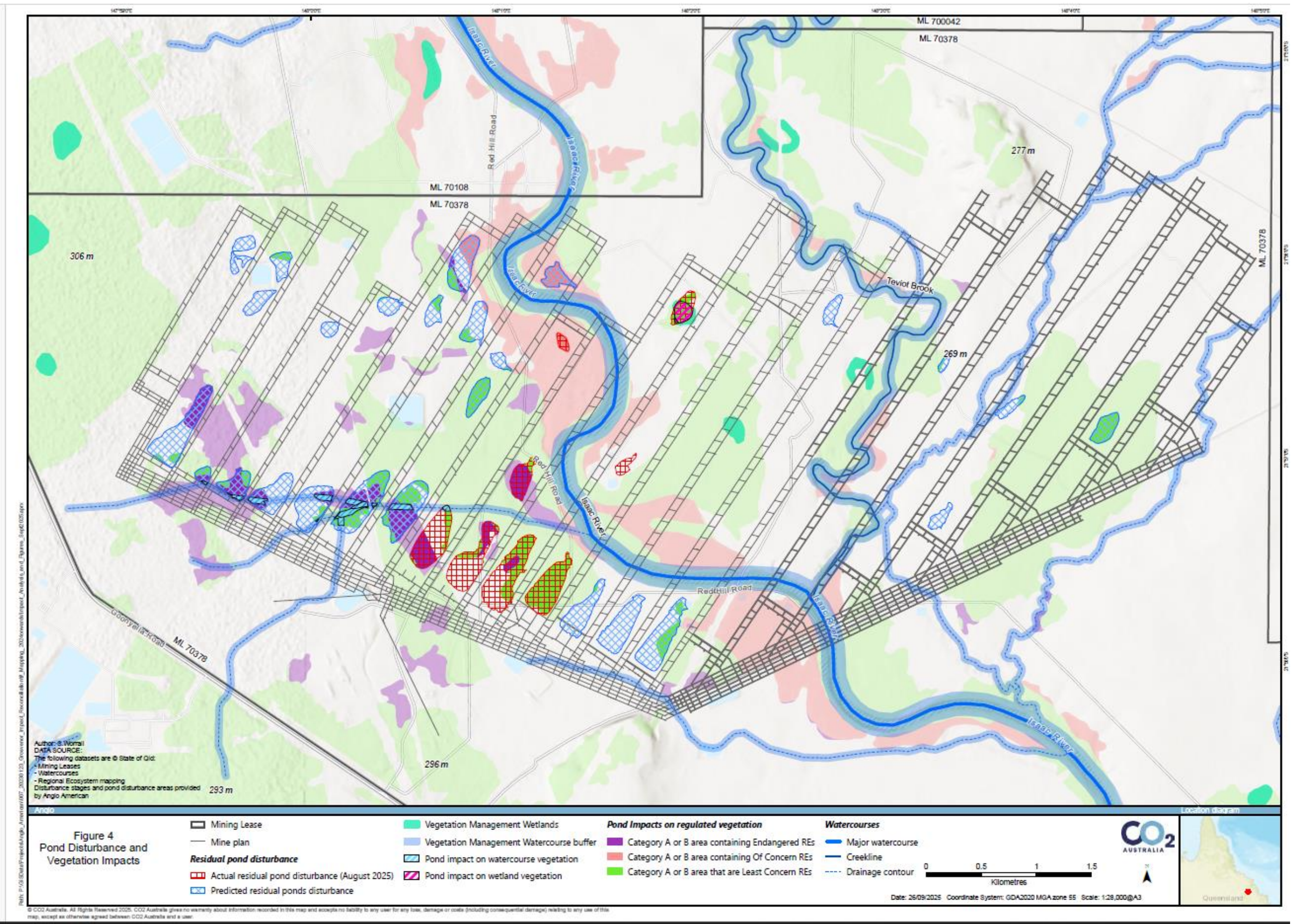


Figure 3: Effluent Irrigation Area



Figure 6: Existing (as at August 2025) and Predicted Residual Ponded Areas and Matters of State Environmental Significance



Appendix A: Watercourse Subsidence

When to use

This appendix is to be used by the Environmental Authority (EA) holders in the preparation of a Subsidence Management Plan (SMP) where a watercourse, as defined under the *Water Act 2000*, is to be impacted as a result of underground longwall mining. For a feature to be defined as a watercourse under Chapter 1, Part 2 of the *Water Act 2000,* the feature must possess particular characteristics. Watercourse determinations are regularly undertaken across Central Queensland by authorised departmental officers as it is the determining factor in the requirement for approvals under the *Water Act 2000*.

In addition, this appendix is to be used by the Department when providing advice and assessing Subsidence Management Plans submitted by EA holders or proposed EA holders.

Purpose

The purpose of this appendix is to detail the information to be provided in a SMP and the legislative basis of the requirement for approval. The SMP forms the major reference document regarding subsidence impacts on watercourses as a result of underground longwall mining and is required to accompany proposals for watercourse subsidence.

The objective of the SMP is to ensure that the impacts of subsidence are properly managed. Where surface subsidence intersects a watercourse, it is important for the situation to be managed effectively to ensure no long-term maintenance is required within the watercourse, and to ensure that naturally occurring processes are not impaired.

A SMP should include the following information:

- Location of proposed longwall panels and modelled subsidence effects on the watercourse;
- Pre-subsidence management of watercourses proposed to be subsided;
- Monitoring methods pre and post-subsidence to detect and document any impacts on watercourses;
- Post-subsidence management of impacted watercourses through remediation and rehabilitation;
- Agreed outcome for proposed future landscape between the Department and the proponent.

Governing legislation

Historically, subsidence on mining leases has been managed under two separate Government Departments; the Environmental Protection Agency (EPA) and Natural Resources and Water (NRW). Under the former EPA, subsidence within mining leases was conditional to the proponent's EA, however the impact on watercourses was not specifically addressed.

Now Departments are as one, regulation can be coordinated such as watercourse subsidence is authorised under specific conditions included in an EA issued under the *Environmental Protection Act 1994*. Works undertaken within the bed and banks of a watercourse aimed at mitigating or remediating any physical impacts pre or post-subsidence are also authorised under the conditions of the EA. This guideline has been developed to assist the Department and proponents in undertaking a single collaborative process in the assessment and authorisation of proposals regarding subsidence of watercourses.

Environmental impact associated with mining activities is regulated under the *Environmental Protection Act 1994*. While this legislation does not identify longwall mining as a specific mining activity, it provides a definition of a 'mining activity'

and 'environmental harm'. The process of longwall mining and resultant subsidence is governed by the legislation and authorised under a proponent's EA.

The holder or holders of a mining tenement issued under the *Mineral Resources Act 1989* must hold an EA for the mining activities to be carried out on the tenement. When applying for an EA, a number of environmental management documents must be in place describing the proposed project and the management of any environmental impacts.

An Environmental Management Plan (EM Plan) is a strategic document which provides information to support the application for an EA and proposes environmental protection commitments. It describes the project and surrounding environment, identifies relevant environmental values likely to be affected by the mining activities, outlines the potential adverse and beneficial impacts on environmental values and provides details on how the proposal will protect and enhance these values. Once an EA has been granted, a Plan of Operations is required.

A Plan of Operations describes the actions and programs required to achieve compliance with the conditions of an EA. It also describes the actions and programs required to achieve or implement the commitments contained in the relevant EM Plan. All activities carried out on a mining lease must be carried out in accordance with the submitted Plan of Operations. A Plan of Operations describes an action program for complying with the conditions of the associated EA and EM Plan, contains a plan showing where all activities are to be carried out on the land, and includes a rehabilitation program for land disturbed or proposed to be disturbed.

Whilst management of subsidence will be included in both the EM Plan and the Plan of Operations, the Subsidence Management Plan is a stand-alone document authorised under the conditions of the EA.

Background

Throughout the Bowen Basin, economically viable coal deposits frequently extend beneath watercourses. Consequently, underground mining operations targeting the associated coal seams often also extend beneath watercourses. Underground mining is not a new concept in the extraction of coal throughout the Bowen Basin. This form of mining is preferred when economical constraints reduce the feasibility of mining using open cut methods. Whilst coal deposits located beneath watercourses contribute to total extractable coal, more importantly, extraction of this coal facilitates underground mining activities to continue along a coal seam uninterrupted across both sides of a watercourse. This provides for a more cost effective extraction of coal that might otherwise be uneconomic to mine.

Technological improvements in underground mining methods have provided the ability to extract coal in areas previously inaccessible for mining. Modern day underground coal mining operations commonly utilise longwall mining techniques which allow extraction of more of the coal seam. Longwall mining allows access to the coal seam via a shaft, a decline or a highwall portal and system of underground workings, without the need to remove overburden. This technique is used to extract the coal seam via a series of "panels", which can be hundreds of metres wide and kilometres in length. As the coal shearer removes the coal in the seam along the length of a panel, the overlying strata is collapsed behind, filling the void (goaf) left by the extracted coal. The collapse and settlement of the overlying strata can extend to the land surface above, resulting in localised lowering of the surface profile, and depressions in the landscape (commonly referred to as subsidence troughs).

Where a watercourse is located above a longwall panel, extraction of the coal seam causes subsidence of the panel can have a number of impacts on the watercourse. Some of these impacts include:

- Lowering of bed and banks

- Creation of in-stream waterholes
- Changes to local drainage patterns
- Incision processes
- Stream widening
- Erosion
- Increased overbank flows due to lowering of the high banks
- Tension cracking through both shallow and deeper underlying strata (including aquifers)
- Root shear and loss of riparian vegetation
- Changes to water quality (surface water and groundwater).

The degree of subsidence is generally a function of thickness of coal extracted, depth of overburden, strata type and panel width. The point of maximum subsidence generally occurs along the centreline of an extracted panel, whilst the pillar zones located between panels remain at natural surface level. Experience gained through widespread adoption of longwall mining processes in the Bowen Basin has seen advancement in the modelling and ability to predict the likely impacts of a subsidence event. This technology has also facilitated improved design and implementation of mitigation measures (engineered structures and associated earthworks) and highlighted potential short and long term maintenance issues which may require specific management intervention.

Subsidence Management Plan

The objective of the SMP is to ensure that the impacts of subsidence are properly managed. Where surface subsidence intersects a watercourse, effective management is required to ensure no long-term maintenance is required within the watercourse, and to ensure that naturally occurring processes are not unduly impaired. Consideration must be given for potential impacts on erosion, groundwater and surface water as a result of a proposed subsidence event.

A Subsidence Management Plan must address the following issues:

1. *Description of Pre Subsidence Situation & Survey*

    i) A general description of the area pre subsidence including photographic record should be provided.

    ii) Survey of cross-section and longitudinal profiles should be undertaken on all watercourses with potential to be impacted through subsidence. Permanent transects should be detailed within the proposed Subsidence Management Plan. Surveys should include the confluence with any other watercourses in the impacted area as well as any infrastructure spanning the watercourse. Surface drainage patterns should be investigated to determine current paths of water movement through the landscape. This path of water movement should be maintained where possible post-subsidence.

2. *Predicted Subsidence*

    The degree of anticipated subsidence should be provided, including the length of a watercourse to be impacted and the average depth of subsidence across individual panels. The predicted subsidence should be modelled to indicate the change in surface elevations expected. The volumes of water expected to be captured within the bed of the watercourse due to creation of waterholes should be provided. Consequences of any lowering of the

high banks of the watercourse should be discussed, including impacts associated with greater floodplain interaction and potential for creation of new channels.

3. *Infrastructure*

   Prior to mining, the anticipated impacts from subsidence should be determined on all infrastructure located within or above the watercourse to be subsided along with measures to be implemented to mitigate any impacts. Priority should be given to infrastructure which provides services to external parties (other mines, towns, industry). Measures for dealing with any interruption to such services should be outlined. Relocation of infrastructure may be necessary should the proposed subsidence pose sufficient risk.

4. *Preventative Works*

   Where preventative measures are required to ensure the stability of the bed and banks of the watercourse (establishment of pile fields, exclusion of cattle, bentonite treatment) these should be discussed in the Subsidence Management Plan, including supporting evidence outlining the legitimacy of such works. These works may be required where self-repair by natural processes will not provide adequate remediation of impacted areas. Where there is potential for root shear to result in significant loss of riparian vegetation, mitigation measures may be required.

5. *Engineered Structures*

   Engineered works may be required to maintain the stability and function of a watercourse impacted by subsidence. These works are often constructed prior to subsidence occurring within the watercourse. Such works can include timber pile fields, rock revetment, reshaping of existing stream banks, and riverbed treatment to prevent increased ingress of surface water into underground aquifers. Where subsidence mitigation measures require engineered structures be installed, the design, monitoring and maintenance of these structures should be detailed in the Subsidence Management Plan. The plan should detail the purpose of each structure and any consequences should the structure fail to be installed. Appropriate design plans including the location of each structure will be required. As a minimum, fourth and fifth order watercourse will require the installation of engineered structures. Works undertaken within the bed and banks of a watercourse aimed at mitigating or remediating an y physical impacts pre or post-subsidence are authorised under the conditions of the Environmental Authority. Where a separate report has been produced for engineered structures, this should be included as an appendix to the Subsidence Management Plan.

6. *Erosion*

   The Subsidence Management Plan should detail the current watercourse condition to be impacted by subsidence. Identification of erosion zones which are likely to be exacerbated through tension cracking should be stabilised using appropriate methods. Such areas may include reaches with elevated rates of bed and bank erosion, access tracks and areas with poor quality, sparsely populated riparian vegetation. Sufficient riparian vegetation should be established prior to subsidence to assist with initial stabilisation of the bed and banks

   Removal of grazing animals to allow establishment or recovery of riparian vegetation may be required for an extended period prior to subsidence.

7. *Groundwater*

Where groundwater aquifers exist beneath the mine plan area, investigations should be undertaken regarding the potential for impacts on these aquifers as a result of subsidence. The Subsidence Management Plan should discuss these aquifers, any anticipated impacts on each aquifer and proposed measures for mitigating these impacts. Any anticipated movement of surface water into underlying aquifers should be discussed, as this can result in loss of surface water from the system and impacts on water quality in these aquifers. Geotechnical assessment across the bed and banks of the watercourse should be undertaken to provide an indication of potential permeability issues related to sub-surface cracking and interaction with local groundwater tables. Monitoring bores should be established in each aquifer prior to subsidence and monitored for a period of time sufficient for obtaining background water levels and trends. Monitoring of these bores should continue post-subsidence to aid the detection of impacted aquifers.

8. *Surface Water*

    i) *Baseline* Monitoring

    The Subsidence Management Plan should detail baseline condition monitoring of all watercourses likely to be impacted through subsidence. The preferred monitoring assessment technique for stream condition in the Bowen Basin is the Index of Diversion Condition. This methodology was established as a result of the Australian Coal Association Research Program (ACARP) Project C9068. Monitoring of watercourses should extend a minimum of 1km upstream and downstream of the proposed area to be impacted and should include a geomorphic assessment of the entire reach. Where a baseline monitoring assessment has been undertaken as part of an Environmental Impact Statement (EIS) process, this may be considered sufficient provided there has been no subsequent modification or interference to the watercourse. The condition of riparian vegetation should also be detailed.

    ii) *Cumulative Impacts on Watercourses*

    With an increasing number of mines being established in close proximity to watercourses, a proponent utilising longwall mining methods may be requested to investigate the cumulative impact of these activities on the watercourse.

Monitoring and Reporting Requirements

The following criteria have been developed to provide detailed direction regarding monitoring and reporting requirements associated with subsidence of watercourses.

These criteria are outlined in a four step approach:

- Monitoring
- Assessment
- Reporting
- Mitigation

<u>Monitoring</u>

- Representative sites need to be identified that allow the impacts of subsidence to be assessed in a particular watercourse with particular attention to the following:

  - Sites must be located at all pillar zones intersecting a watercourse or tributary.
  - Sites must include representative locations at the interface of natural ground level and observed changes in surface elevation from subsidence within a watercourse.

- Control sites beyond proposed mining extents should be established to verify pre-mining conditions. In watercourses, the sites should extend a minimum of 1km both upstream and downstream of the subsidence reach.
- Assessment of watercourse condition: Specific monitoring assessment techniques for watercourse condition should include but not be limited to the Index of Diversion Condition, as outlined in the ACARP Project C9068
- Vegetation and ecological condition assessments should form part of the baseline dataset.
- Rainfall monitoring should be undertaken within areas proposed to be impacted by subsidence. In addition, flow event monitoring should occur in watercourses proposed to be impacted by subsidence. The type of monitoring devices and locations to be installed should be detailed in the Subsidence Management Plan.
- Where preventative works are undertaken pre-subsidence, subsequent monitoring assessments should include the integrity and effectiveness of these works in reducing the impact of subsidence within the watercourse.
- Surveys must include cross-sectional area and bed slope throughout all monitored reaches of impacted watercourses.
- Annual aerial photography and Digital Terrain Mapping is required to verify predicted subsidence surface profiles, and to identify potential short and long term erosion issues resulting from subsidence of watercourses.
- Surveys pre-subsidence should quantify the following features within watercourses:
  - pool/riffle sequences
  - bed controls
  - entry points of other watercourses and localised tributaries
  - existing bed and bank scour points
  - infrastructure located within the watercourse.
- Surveys post-subsidence should quantify any changes to the pre-mining conditions including:
  - erosion or deposition processes that have occurred as a result of subsidence,
  - migration of head cut erosion within watercourses and tributaries,
  - localised changes to stream bed slope,
  - localised widening of channels,
  - destabilisation of stream bed and banks including fracturing and incision,
  - localised changes to bank heights
  - size of subsidence void created within the watercourse.
- The subsidence monitoring program for groundwater must include the following information:

- Sites must include representative locations at the interface of natural ground surface and observed changes in surface elevation from subsidence.
- Monitoring bores should be established in each aquifer at each monitoring site.
- Monitoring must include both water level measurements and water quality sampling in accordance with the following:
  - water level measurement to be taken quarterly
  - water quality field conductivity measurement to be taken 6 monthly
  - full chemical analysis of water samples to be taken annually.

Frequency of Monitoring

A proposed timeframe should be provided by the proponent in relation to the monitoring outlined in the Subsidence Management Plan. The Department, upon review of the proposed Subsidence Management Plan will determine a suitable monitoring timeframe based on the information provided. Monitoring requirements will depend on a number of factors, including the stream order of the watercourse proposed to be impacted. As a guide:

Stream Order 1, 2 and 3

Monitoring must be undertaken at the following intervals:

- immediately prior to subsidence,
- within two (2) months of the initial subsidence,
- following a rainfall event of **1 in 2 year** ARI for the duration equal to the time of concentration for the catchment at the location of the subsidence.
- following a peak flow event of greater than a **1 in 2 year** ARI and
- annually.

Stream Order 4 and higher

Monitoring (including surveys) must be undertaken at the following intervals:

- immediately prior to subsidence,
- within two (2) months of the initial subsidence,
- following a rainfall event of **1 in 5 year** ARI for the duration equal to the time of concentration for the catchment at the location of the subsidence.
- following a peak flow event of greater than a **1 in 5 year** ARI, and
- annually.

Cumulative Impacts

Where subsidence is proposed in a Subsidence Management Plan, and the watercourse has already been subsided upstream or downstream, the monitoring assessment must determine not only the localised impacts on the watercourse resulting from the proposed subsidence, but also any cumulative impacts on the watercourse as a result of all other subsidence events.

Assessment

The design and assessment of engineered structures should be performed by a Registered Professional Engineer of Queensland (RPEQ). All other assessments should be performed by suitably qualified and experienced persons in the fields that they are assessing.

- The results of all monitoring activities should be reviewed by a suitably qualified person and detailed in the associated monitoring report.
- Recommendations should be made after assessment of the results regarding any specific treatment, remediation works, or engineered structures required post-subsidence to achieve stability in the watercourse.

Reporting

An annual report will be requested by the administering authority post-subsidence. The report should detail mining activities and all monitoring and rehabilitation activities as outlined within the Subsidence Management Plan. The reporting date will be determined in consultation with the administering authority.

- A monitoring report should contain the results of all monitoring activities, the assessment of these results, and recommendations for any remedial works required. The report should comment on the following:
    - Watercourse condition and geomorphic processes;
    - The condition of vegetation in riparian zones;

Examination of pillar zones in watercourses with particular attention to potential for tension cracking;

    - The creation of in-stream waterholes;
    - Any impacts on groundwater.
- Where preventative works were undertaken pre-subsidence, subsequent monitoring assessments should include assessment of the integrity and effectiveness of these works in mitigating the impacts of subsidence.
- An annual report in the form of two (2) hard copies and one electronic copy shall be furnished to the administering authority. The report should in addition to addressing specific monitoring requirements provide comment on:
    - The current state of the groundwater and surface water resources;
    - Any impacts on these features;
    - Any remedial works required to be undertaken including a timetable for implementation.
    - Commitment from the proponent to addressing the recommendations in the report.

Mitigation

Where recommendations are made regarding specific treatment, remediation works, or engineered structures required post-subsidence to achieve stability in the watercourse, the proponent must ensure this work is undertaken.

Rehabilitation

The holder of the EA, if directed by the administering authority, will carry out additional remedial works deemed necessary to minimise the impacts of subsidence on the physical integrity of the watercourse.

Relinquishment

Relinquishment of monitoring and rehabilitation responsibilities conditional under a proponent's EA can only occur after the subsidence and approved mitigation and rehabilitation measures have been subjected to a suitable range of rainfall and flow events, and are deemed by the administering authority to be in a stable and functional condition. Any request for relinquishment will be negotiated with the administering authority and will require a submission containing monitoring data demonstrating stability and functionally in the watercourse over a suitable range of rainfall and flow events.

Acknowledgement

In 2007, BMA and Anglo Coal instigated discussions with the Department into a proposed assessment on the cumulative impacts of longwall mining beneath the Isaac River in Central Queensland. A final report was produced by Alluvium Consulting in July 2009 documenting the outcomes of the study. The Department greatly acknowledges the findings from this report and the assistance provided in the development of this guideline.

R Lucas, J Crerar, R Hardie, J Merritt and B Kirsch, 2009. *Isaac River Cumulative Impact Assessment of Mining Developments*. Report by Alluvium Consulting. ACARP for Diversion assessment guideline ex C9068.

END OF ENVIRONMENTAL AUTHORITY