Permit[1]

Environmental Protection Act 1994

Environmental authority

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

Permit[1] number: EPPR00514913

Environmental authority takes effect on 17-JUN-2016.

The anniversary date of this environmental authority remains the 11th of February. An annual return and the payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

Name	Registered address
Linc Energy Ltd	32 Edward Street BRISBANE CITY QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
Mining - Mineral development - site specific	MDL309

Additional information for applicants

Environmentally relevant activities

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

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

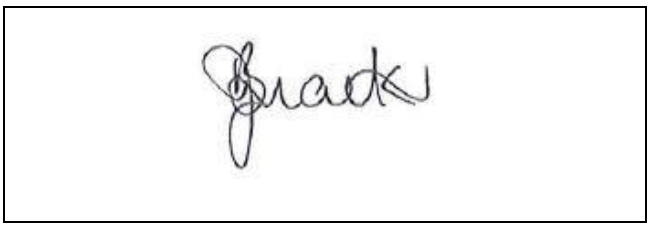
A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Contaminated land

It is a requirement of the EP Act that if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being,

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.



Signature

17-JUN-2016

Date

Jodie Brackenbury
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

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Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this environmental authority, 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 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)

Schedule A - General

Financial Assurance

(A1) The holder of the authority must provide a financial assurance in the amount and form required by the administering authority.

NOTE: The calculation of financial assurance for condition (A1) must be in accordance with the guideline "Financial assurance of mining activities". The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas at any one time, which may vary on an annual basis due to progressive rehabilitation. The amount required for the financial assurance must be the highest total rehabilitation cost calculated for any year of the environmental management plan.

(A2) The financial assurance is to remain in force until the administering authority is satisfied that no claim is likely to be made on the assurance.

NOTE: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.

Maintenance of Measures, Plant and Equipment

(A3) The holder of the environmental authority must ensure:

a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; and
b) that such measures, plant and equipment are maintained in a proper condition;
c) that such measures, plant and equipment are calibrated and operated in a proper manner; and
d) the operation and maintenance of all plant and equipment are carried out by a suitable qualified, competent and experienced person(s).

Environmental Management System

(A4) The holder of the authority must:

a) develop and implement an Environmental Management System based on AS/NZS ISO14001 to control and manage environmental risks and impacts related to the activities authorised on this authority. The EMS shall incorporate the following principles of ISO14001, as a minimum:
   - environmental policy
   - environmental aspects
   - responsibility and authority
   - emergency preparedness and response
   - incident notification and investigation
   - legal compliance

- monitoring and measurement
- management review

b) Submit a detailed description of the EMS mentioned in condition (A4) a) within 60 days of the grant of this authority.

Forward Planning Document

(A5) The holder of the environmental authority must submit to the administering authority a Forward Planning Document.

(A6) The Forward Planning Document must be submitted with the annual return and address the following criteria with respect to the activities planned for the next twelve months:

a) define the nature, scale and locations where mining activities are proposed to occur during the next twelve months;
b) identify the environmental aspects of the activities;
c) identify the control measures to be implemented and a program to ensure compliance with the conditions of this environmental authority;
d) a revised financial assurance calculation in accordance with condition (A1); and
e) an environmental audit statement.

Definitions

(A7) Words and phrases used in this environmental authority are defined in Schedule I – Definitions. Where a definition for a term used in this environmental authority is not defined within this authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

Decommissioning Plan

(A8) The holder of the environmental authority must submit to the administering authority a copy of a decommissioning plan for each Underground Coal Gasification generator prior to it being decommissioned.

(A9) The Underground Coal Gasification decommissioning plan must detail the following:

a) procedure to extinguish the Underground Coal Gasification generator;
b) monitoring program of groundwater as per Schedule C.

Third Party Auditing

(A10) Compliance with the conditions of this authority must be audited by an appropriately qualified third party auditor, nominated by the holder of this authority and accepted by the administering authority, within one year of the commencement of this authority, and then at regular intervals not exceeding two years.

(A11) Upon receipt of the final third party audit report, the holder of this authority must submit a copy of the audit report to the administering authority within 28 days.

(A12) The third party auditor must certify the findings of the audit in the report.

(A13) The financial cost of the third party audit is to be borne by the holder of this authority.

(A14) The holder of this authority must immediately act upon any recommendations arising from the audit report and:

a) investigate any non-compliance issues identified; and
b) as soon as practicable, implement measures or take necessary action to ensure compliance with this authority.

(A15) Subject to condition (A14), and not more than three (3) months following the submission of the audit report, the holder of this authority must provide written advice to the administering authority addressing the:

a) actions taken by the holder to ensure compliance with this authority; and
b) actions taken to prevent a recurrence of any non-compliance issues identified.

MDL 407

(A16) The holder of this mining authority must ensure that all activities that are conducted on MDL407 are in accordance with the Code of Environmental Compliance for Exploration and Mineral Development Projects (January 2001), or later version as released by the administering authority.

Schedule B - Air

Dust Nuisance

(B1) The release of any dust and particulate matter resulting from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.

(B2) In relation to a complaint received in condition (B1), dust and particulate matter must not exceed the following levels at any sensitive or commercial place:

a) dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with AS 3580.10.1 Methods for sampling and analysis of ambient air – Determination of particulates – Deposited matter – Gravimetric method of 1991; or
b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24 hour averaging time, at a nuisance sensitive or commercial place downwind of the site, when monitored in accordance with AS 3580.9.6 'Ambient air – Particulate matter - Determination of suspended particulate matter – PM(10) high volume sampler with size selective inlet – Gravimetric method'; or AS3580.9.8

'Determination of suspended particulate matter – PM10 continuous direct mass method using a tapered element oscillating microbalance analyse'; or

c) a concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometre (µm) (PM2.5) suspended in the atmosphere of 25 micrograms per cubic metre over a 24 hour averaging time, at a nuisance sensitive or commercial place downwind of the site, when monitored in accordance with AS/NZS 3580.9.10.2006.

(B3) When requested by the administering authority, dust and particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

(B4) If monitoring, in accordance with condition (B3) indicates an exceedance of the relevant limits in condition (B2), then the holder of the environmental authority must:

a) address the complaint including the use of appropriate dispute resolution if required; or

b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

ODOUR MANAGEMENT and VOLATILE ORGANIC COMPOUNDS (VOCs)

(B5) The release of noxious and / or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.

(B6) When requested by the administering authority, odour monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any nuisance sensitive place. The results must be notified within 14 days to the administering authority following completion of monitoring.

(B7) If monitoring indicates Condition (B5) is not being met then the environmental authority holder must:

a) immediately implement odour abatement measures so that emissions of odour from the activity do not result in further environmental nuisance; and

b) address the complaint including the use of appropriate dispute resolution if required. zzz

Alternative arrangements available when air emissions may cause nuisance

(B8) Where the holders of this authority has, at their cost, made alternative arrangements to the satisfaction of and with the written agreement of each person affected by nuisance air emissions or odour emissions at a sensitive or commercial place, then the requirements specified in conditions (B1, B2 and B5) will not apply at that sensitive or commercial place for the period of the alternative arrangements.

(B9) As a minimum each written agreement of an alternative arrangement must state:

a) the location of the sensitive or commercial place;
b) the names of the affected persons;
c) the nature of the alternative arrangement(s) (e.g. provision of alternative accommodation); and
d) the period of the alternative arrangement(s).

Schedule C - Water

Groundwater

(C1) Groundwater affected by the mining activities must be monitored at the locations and frequencies defined in Schedule C – Table 1.

Schedule C – Table 1 - Groundwater Monitoring locations and Frequency

Monitoring Point	Easting (MGA94) Zone 56	Northing (MGA94)	Surface RL(m)	Monitoring Frequency
M1	269666	7019768	317.1	Regular period not exceeding 3 months
M10	269170	7019995	317 ±1%	Regular period not exceeding 3 months
M12	266829	7019033	317 ±1%	Regular period not exceeding 3 months
M15	268334	7019011	317.4	Regular period not exceeding 3 months

Schedule C – Table 2 - Groundwater Contaminant Trigger Levels

Parameter	Units	Limit Type	Contaminant Trigger Levels
Total Dissolved Solids	mg/L	Maximum	4000 [1]
pH	-	Range	7.5 - 9.5 [4]
Sulphate	mg/L	Maximum	1000 [1]
Fluoride	mg/L	Maximum	2 [1]
Cadmium	mg/L	Maximum	0.01 [1]
Calcium	mg/L	Maximum	1000 [1]
Arsenic	mg/L	Maximum	0.5 [1]
Lead	mg/L	Maximum	0.1 [1]
Zinc	mg/L	Maximum	20 [1]
Phenol	mg/L	Maximum	0.085 [3]
Benzene	mg/L	Maximum	0.6 [3]
Toluene	mg/L	Maximum	0.8 [2]
Ethyl benzene	mg/L	Maximum	0.3 [2]
Xylene	mg/L	Maximum	0.14 [3]

1 – These limits derived from ANZECC 2000 water quality guidelines for livestock
2 – These limits derived from ANZECC 2000 water quality guidelines for drinking water
3 – These limits derived from ANZECC 2000 freshwater quality guidelines 99% protection limit
4 - These limits derived from background groundwater data collected from bores M1, M7 and M12.

(C2) Subject to condition (C1), if the groundwater contaminant trigger levels defined in Schedule C -Table 2 are exceeded, then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within 3 months of receiving the analysis results.

(C3) Groundwater levels must be monitored at the locations specified in Schedule C - Table 1 at a regular period not exceeding three months.

(C4) The method of water sampling required by this environmental authority must comply with that set out in the latest edition of the Department of Environment and Resource Management's Water Quality Sampling Manual.

Schedule D - Noise and Vibration

(D1) The holder of the environmental authority must ensure that the activities do not cause an environmental nuisance at any noise sensitive place.

(D2) When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

(D3) If the environmental authority holder can provide evidence through monitoring that the limits defined in Schedule D - Table 1 are not being exceeded then the holder is not in breach of condition (D1). Monitoring must include:

a) $L_{A, max, adj, T}$; and
b) the level and frequency of occurrence of impulsiveness or tonal noise; and
c) atmospheric conditions including wind speed and direction; and
d) location, date, and time of recording.

(D4) Despite condition (D3), the holder of the environmental authority must ensure that noise emitted from any aspect of activities must not exceed the noise levels specified in the table below at any sensitive place.

Schedule D – Table 1 – Noise Limits

Noise Level dB(A) measured as	Monday to Saturday			Sundays and public holidays		
	7am – 6pm	6pm – 10pm	10pm – 7am	9am – 6pm	6pm – 10pm	10pm – 9am
	Noise Measured at a "Noise Sensitive Place"					
$L_{A90, adj, 15mins}$	Lesser of bg+3 or 48	Lesser of bg+0 or 40	Lesser of bg+0 or 40	Lesser of bg+0 or 40	Lesser of bg+0 or 40	Lesser of bg+0 or 40
$L_{A10, adj, 15mins}$	Lesser of bg+5 or 50	Lesser of bg+5 or 45	Lesser of bg+0 or 40	Lesser of bg+5 or 45	Lesser of bg+5 or 40	Lesser of bg+0 or 35
$L_{A1, adj, 15mins}$	Lesser of bg +10 or 55	Lesser of bg +10 or 50	Lesser of bg+5 or 45	Lesser of bg+10 or 50	Lesser of bg+10 or 45	Lesser of bg+5 or 40
	Noise Measured at a "Commercial Place"					
$L_{A90, adj, 15mins}$	Lesser of bg+5 or 50	Lesser of bg+0 or 45	Lesser of bg+0 or 40	Lesser of bg+3 or 43	Lesser of bg+0 or 40	Lesser of bg+0 or 40
$L_{A10, adj, 15mins}$	Lesser of bg +10 or 55	Lesser of bg +10 or 50	Lesser of bg+5 or 45	Lesser of bg+10 or 50	Lesser of bg+10 or 45	Lesser of bg+5 or 40
$L_{A1, adj, 15mins}$	Lesser of bg +15 or 60	Lesser of bg +15 or 55	Lesser of bg +15 or 50	Lesser of bg +15 or 55	Lesser of bg +15 or 50	Lesser of bg +10 or 45

Note: In no case is the background noise level $L_{A90,\ adj,15\ mins}$ to be less than 25 dB(A). In the event that measured background noise level is less than 25 dB(A), then 25 dB(A) is to be used.

(D5) If monitoring in accordance with condition (D3) indicates condition (D1) is not being met, then the holder of the environmental authority must:

a) address the complaint including the use of appropriate dispute resolution if required; or
b) immediately implement noise abatement measures so that noise emissions from the activity do not result in further environmental nuisance.

(D6) The method of measurement and reporting of noise levels must be in accordance with the most recent edition of the Administering Authority's Noise Measurement Manual.

Alternative Arrangements Available When Noise Emissions May Cause Environmental Nuisance

(D7) Where the holder of this authority has, at their cost, made alternative arrangements to the satisfaction of and with the written agreement of each person that may be affected by nuisance noise emissions at a sensitive or commercial place, then the requirements specified in Schedule D - Table 1 – Noise Limits will not apply at that sensitive or commercial place for the period of the alternative arrangements.

(D8) As a minimum each written agreement of an alternative arrangement must state:

a) the location of the sensitive or commercial place;
b) the names of the affected persons;
c) the nature of the alternative arrangement(s) (e.g. provision of alternative accommodation); and
d) the period of the alternative arrangement(s).

Schedule E - Waste

(E1) The holder of the environmental authority must ensure that all activities do not result in the release or likely release of a contaminant to land or waters that result in material or serious environmental harm, unless the release is explicitly authorised under this environmental authority.

(E2) The holder of the environmental authority must remove and dispose of all regulated waste to a licensed waste disposal facility or recycling facility.

(E3) All regulated waste removal from the site must be removed by a person who holds a current authority to transport such waste under the provisions of the Environmental Protection Act 1994 and sent to a facility licensed to accept such waste.

(E4) When regulated waste is removed from within the boundary of the environmental authority and transported by the holder of this environmental authority, a record must be kept of the following:

a) date of waste transport;
b) quantity of waste removed and transported;
c) type of waste removed and transported;
d) route selected for transport of waste;
e) quantity of waste delivered; and
f) any incidents (e.g. spillage) that may have occurred on route.

(E5) Any spillage of hazardous contaminants or other contaminants that may cause environmental harm must be effectively contained and/or cleaned up as quickly as practicable. Such spillage must not be cleaned up by hosing, or otherwise thereby releasing such waste or contaminants to any land or waters.

Minimising Disturbance to Land and Soil Management

(F1) The holder of this environmental authority must:

a) minimise disturbance to land in order to prevent land degradation; and
b) ensure that for land that is to be significantly disturbed by the activities, the top layer of the soil profile is removed; and
    a. stockpiled in a manner that will preserve its biological and chemical properties; and
    b. used for rehabilitation purposes in accordance with condition (F4); and
c) avoid the disturbance of sodic soils.

Vegetation Management

(F2) The holder of this environmental authority must:

a) prevent or minimise disturbance to vegetation;
b) manage the effects of clearing to prevent the loss of biodiversity, reduction of ecological processes and land degradation.

Management of Fauna

(F3) The holder of this authority must develop, implement and maintain measures to prevent access by all livestock and access by fauna to any dam or water storage facility.

Rehabilitation requirements

(F4) All land significantly disturbed by the activities must be rehabilitated to:

a) a stable landform and with a self-sustaining vegetation cover and species that are similar to adjoining undisturbed areas;
b) ensure that all land is reinstated to the pre-disturbed land use and suitability class;
c) ensure that the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by the activities; and
d) ensure that the water quality of any residual void or water bodies constructed by the activities meets criteria for subsequent uses and does not have potential to cause environmental harm.

(F5) Maintenance of rehabilitated areas must take place to ensure and demonstrate:

a) stability of landforms;
b) erosion control measures remain effective;
c) stormwater runoff and seepage from rehabilitated areas does not negatively affect the environmental values of any waters;
d) plants show healthy growth and recruitment is occurring; and
e) rehabilitated areas are free of any declared pest plants.

(F6) Rehabilitation can be considered successful when the site can be managed for its designated land-use (either similar to that of surrounding undisturbed areas or as otherwise agreed in a written document with the landowner/holder and administering authority) without any greater management input than for other land in the area being used for a similar purpose and there is evidence that the rehabilitation has been successful for at least three (3) years.

Schedule G - Storage and Handling of Flammable and Combustible Liquids

(G1) All explosive, hazardous chemicals, corrosive, toxic substances, gases, dangerous goods, flammable and combustible liquids (including petroleum products and associated piping and infrastructure) must be stored and handled in accordance with the relevant Australian Standard where such is available.

(G2) Notwithstanding the requirements of any Australian Standard, any liquids stored on site that have the potential to cause environmental harm must be stored in or serviced by an effective containment system that is impervious to the material stored and managed to prevent the release of liquids to waters or land. Where no relevant Australian Standard is available, the following must be applied:

a) storage tanks must be bunded so that the capacity and construction of the bund is sufficient to contain at least 110% of a single storage tank, or 100% of the largest storage tank plus 10% of the second largest storage tank in multiple storage areas; and
b) drum storages must be bunded so that the capacity and construction of the bund is sufficient to contain at least 25% of the maximum design storage volume within a bund.

(G3) All containment systems must be designed to minimise rainfall collection within the system.

Schedule H - Community

(H1) When the administering authority advises the holder of a complaint alleging nuisance, the holder must investigate the complaint and advise the administering authority in writing of the action proposed or undertaken in relation to the complaint.

(H2) When requested by the administering authority, the holder of this authority must undertake monitoring specified by the administering authority, within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint of environmental harm at any sensitive or commercial place

(H3) The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures implemented must be provided to the administering authority within fourteen (14) days of completion of the investigation, or receipt of monitoring results, whichever is the latter.

(H4) If monitoring in accordance with condition (H2), indicates that emissions exceed the limits set by this authority or are causing nuisance, then the holder of this authority must:

a) address the complaint including the use of appropriate dispute resolution if required; and/or
b) as soon as practicable implement abatement or attenuation measures so that noise, dust, particulate or odour emissions from the authorized activities do not result in further environmental nuisance.

(H5) The holder of this authority must maintain a record of complaints and incidents causing environmental harm, and actions taken in response to the complaint or incident.

(H6) The holder of this authority must record the following details for all complaints received and provide this information to the administering authority every 3 months:

a) name, address and contact number for complainant;
b) time and date of complaint;
c) reasons for the complaint;
d) investigations undertaken;
e) conclusions formed;
f) actions taken to resolve complaint;
g) any abatement measures implemented; and
h) person responsible for resolving the complaint.

(H7) The holder of this authority must retain the record of complaints required by this condition for five (5) years.

Schedule I – Dams

ALL DAMS

(I1) The hazard category of any dam must be assessed by a suitably qualified and experienced person:

- prior to its design and construction including modifications to an existing dam); or
- upon any changes in its purpose or its stored contents and
- at least once in each 12 month, period after its construction.

(I2) The holder of this authority must not commence construction of any dam determined to be in the significant or high hazard category, unless the location, basic details, and hydraulic performance of that dam are specifically referenced in this authority.

(I3) The holder of this authority must not abandon any dam but must decommission each dam so as to avoid any environmental harm.

(I4) As a minimum, decommissioning must be conducted such that each dam is either:

a) becomes a stable landform, that no longer contains flowable substances, or
b) is approved or authorised under relevant legislation for a beneficial use, or
c) is a void authorised by the administering authority to remain after decommissioning; and
d) is compliant with the decommissioning and rehabilitation requirements of this authority.

REGULATED DAMS – LOCATION

(I5) The following regulated dams authorised under this environmental authority must be located within the control points defined in Schedule I - Table 1, below.

Schedule I — Table 1 (Location of Regulated Dams)

Name of Regulated Dam	Latitude (N) (MGA 94 Z56)	Longitude (E) (MGA 94 Z56)
Dam 6	NW corner 268553.4653	NW corner 7019840.525
	NE corner 268653.1092	NE corner 7019831.543
	SE corner 268636.949	SE corner 7019652.27
	SW corner 2698537.305	SW corner 7019661.252

(I6) The following regulated dams authorised under this environmental authority, must be in accord with the specifications in Schedule I - Table 2, below.

Schedule I— Table 2 (Specifications of Regulated Dams)

Name of Regulated dam	Hazard Category	Maximum surface area of dam (ha)	Maximum operational volume of dam (ML)	Maximum depth of dam (m)	Use of dam
Dam 6	Significant	1.025	20.38	3.107	Waste disposal

(I7) The following regulated dams authorised under this environmental authority, must provide the hydraulic performance specified in Schedule I - Table 3, below.

Schedule I — Table 3 (Hydraulic Performance of Regulated Dams)

Name of Regulated dam	Spillway Capacity or Diversion Capacity (Levees) AEP	Design Storage Allowance (Dams other than levees) AEP	Mandatory Reporting Level (Dams other than levees) AEP
Dam 6	1 in 1000 year event	1:20	317.70 RL

REGULATED DAMS – CERTIFICATION AND OPERATION

(I8) The holder of this environmental authority must not commence construction of a regulated dam (including modifications to an existing dam) unless:

a) the holder has submitted to the administering authority two copies of a design plan, together with the certification of a suitably qualified and experienced person that the design of the regulated dam will deliver the performance stated in the design plan and that it will be compliant in all respects with this environmental authority, and
b) at least 20 business days has passed since the receipt of those documents, or the administering authority notifies the holder that a design plan and certification, has been received.

(I9) Where construction has been conducted on a regulated dam (including modifications to an existing dam), operation of that regulated dam is prohibited unless the holder has submitted to the administering authority two hard copies and one electronic copy of the certified design plan and a set of 'as constructed' drawings and specifications, together with the certification by a suitably qualified and experienced person that the dam:

a) has been constructed in accordance with the design plan;
b) with any minor changes, is still capable of delivering the performance stated in the design plan; and
c) is compliant with the conditions of this environmental authority

(I10) All regulated dams under this authority, must be designed to have either a suitable synthetic or a compacted clay liner, such that the saline wetting front is not expected to progress through the liner during the lifetime of the dam.

(I11) Regulated dams must:

(a) be designed with a floor and sides of material that will contain the wetting front and any entrained contaminants during its operational life including any period of decommissioning and rehabilitation; and

(b) have a system to detect at least daily any passage of the wetting front or entrained contaminants through either the floor or sides of the dam; and

(c) either, be repaired to rectify any passage of the wetting front through either the floor or sides of the dam, or else be decommissioned and rehabilitated.

(I12) Regulated dams must:

(a) not be located within a flood plain for a watercourse or drainage line; or

(b) be designed by a suitably qualified and experienced person to prevent waters from entering the regulated dam from the watercourse or drainage line to the same AEP as required for their spillway in the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995); and

(c) be designed by a suitably qualified and experienced person to prevent wall failure due to erosion by floodwaters arising from the watercourse or drainage line to the same AEP as required for their spillway in the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).

(I13) Any existing regulated dam must either comply with all conditions of this authority within four (4) years of the grant of this authority or be decommissioned and rehabilitated.

(I14) An operational plan must be kept current for each regulated dam, and cover all matters relevant to its operation and maintenance.

(I15) Where an operational plan covers decommissioning and rehabilitation, those operations are to be consistent with the objectives in any design plan for the dam and the rehabilitation requirements of this environmental authority.

(I16) The holder of this environmental authority must notify the administering authority immediately when the level in any regulated dam reaches the mandatory reporting level (MRL), and immediately act to prevent or minimize any actual or potential environmental harm.

REGULATED DAMS – ANNUAL INSPECTION AND REPORT

(I17) Each regulated dam must be inspected annually by a suitably qualified and experienced person.

(I18) At each annual inspection, the condition and adequacy of each regulated dam must be assessed for dam safety and against the necessary structural, geotechnical and hydraulic performance criteria.

(I19) At each annual inspection, if a mandatory reporting level is required, it must be determined and marked on each regulated dam.

(I20) A final assessment of adequacy of available storage in each regulated dam must be based on a dam level observed within the month of October and result in an estimate of the level in that dam as at 1 November

(I21) For each annual inspection, two copies of a report on the condition and adequacy of each regulated dam, certified by the suitably qualified and experienced person and including any recommended actions to be taken to ensure the integrity of each regulated dam; must be provided to the administering authority by 1 December.

(I22) The holder of this environmental authority must, upon receipt of the annual inspection report, consider the report and its recommendations, and take action to ensure that each regulated dam safely performs its intended functions.

DECOMMISSIONING REGULATED DAMS

(I23) Prior to decommissioning any regulated dam authorised under this authority, the scope of work for decommissioning shall be developed and agreed to with the administering authority.

(I24) Subject to condition (I23), the holder of this authority must:

a) Remove all remaining liquids in the dam.
b) Remove and dispose of synthetic liners and dispose at a facility licensed to accept such waste material;
c) Remove where possible all contaminated solids from the dam including contaminated subsoils and:
    i. dispose of the contaminated solids at a facility licensed to accept such regulated waste; or
    ii. encapsulate in a purpose built storage facility.
d) Design, install and maintain adequate diversion drains or similar structures to protect or minimise the erosion of any exposed surfaces by stormwater runoff.
e) Design, install and maintain adequate surface drainage to prevent water ponding and infiltration into any contaminated materials.
f) Establish a monitoring program to determine the success of the decommissioning plan.
g) If required, remove the wall and rehabilitate the disturbed area in accordance with the rehabilitation conditions of this authority.
h) Rehabilitate the disturbed areas in accordance with the rehabilitation conditions of this authority.

Appendix A – Definitions – generally

TERM	MEANING
Administering authority	Administering authority means - (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the *Environmental Protection Act 1994* – the local government; or (b) for all other matters – the Chief Executive of the Department of Environment and Resource Management; or (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.
AEP	Means the Annual Exceedance Probability, which is the probability that at least one event in excess of a particular magnitude will occur in any given year.
AR&R	means Australian Rainfall and Runoff, a well known hydrologic publication, available for purchase in hard copy and electronic versions, containing amongst other things data and techniques for estimating design rainfalls. At the present time these estimates are based on rainfall data to the mid 1980s from Bureau of Meteorology daily rainfall stations with some pluviograph data.
Assessment, assessed or assess	By a suitably qualified and experienced person in relation to a hazard 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 at any time: (a) exactly what has been assessed and the precise nature of that assessment; (b) the relevant legislative, regulatory and technical criteria on which the assessment has been based; (c) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and (d) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.
Associated works	In relation to a dam, means: (a) operations of any kind and all things constructed, erected or installed for that dam; and (b) any land used for those operations.
Authority	Means an environmental authority granted in relation to an environmentally relevant activity under the *Environmental Protection Act 1994*.
Background noise level	Background noise level $L_{A90,15min}$ means the A-weighted sound pressure level of the residual noise exceeded for 90% of a representative time period of not less than 15 minutes, using time weighting, 'F'.
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*,

TERM	MEANING
	(c) sustainable by virtue of written undertakings given by that owner to maintain that dam, and the transfer and use have been approved or authorised under any relevant legislation.
Certification or certified	By a suitably qualified and experienced person in relation to a design plan or an annual report regarding dams, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time: (a) exactly what is being certified and the precise nature of that certification. (b) the relevant legislative, regulatory and technical criteria on which the certification has been based; (c) the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and (d) the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.
Commercial place	A work place used as an office or for business or commercial purposes, which is not part of the mining activity and does not include employees' accommodation or public roads.
Construction	Means a dam includes building a new dam and modifying or lifting an existing dam, but does not include investigations and testing necessary for purposes of preparing a design plan.
Contaminant	The *Environmental Protection Act 1994* defines, under Section 11, a contaminant as: (a) 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 a combination of contaminants.
CRCFORGE	is a method of producing estimates of design rainfalls by analysis and processing of data from Bureau of Meteorology daily rainfall stations up to the late 1990s. Output data and computer application are public domain and widely distributed in electronic form amongst the profession. This method produces estimates that extend to AEP 1 in 2,000
Critical duration	in relation to an hydrologic analysis is the duration of a design rainfall event that maximises the peak flow or volume that is the target of that particular analysis
Dam	Means a land-based structure or a void that is designed to contain, divert 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. A dam does not mean a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container.
Dam crest volume	means the volume of material 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,

TERM	MEANING
	without regard to flows entering or leaving (eg via spillway).
Design plan	Is the documentation required to describe the physical dimensions of the dam, the materials and standards to be used for construction of the dam, and the criteria to be used for operating the dam. The documents must include all investigation and design reports, plans and specifications sufficient to hand to a contractor, and planned decommissioning and rehabilitation outcomes; so as to address all hazard scenarios that would be identified by a properly conducted hazard assessment for the structure. Documentation must be such that a 'suitable qualified and experience person' could conduct an independent review without seeking further information from the designer.
Design storage allowance or DSA	Means the minimum storage required in a dam at 1 November each year in order to meet the hydraulic performance requirements.
Dispersible soils	Soils in which clay material disintegrates into particles less than 2 microns across. This can be observed within 24 hours when soil crumbs are submerged in distilled water.
environmental authority	means an environmental authority granted in relation to an environmentally relevant activity under the *Environmental Protection Act 1994*.
environmental authority holder	means the holder of this environmental authority.
Environmental Management Plan	The environmental management plan is an environmental management document to be submitted during the application process for a level 1 environmental authority (mining activities).
Environmental nuisance	Environmental nuisance is unreasonable interference or likely interference with an environmental value caused by: (a) noise, dust, odour, light; or (b) an unhealthy, offensive or unsightly condition because of contamination; or (c) another way prescribed by regulation.
Environmentally sensitive area	Environmentally sensitive area (as determined from the DERM GIS data base) means a location, however large or small, that has environmental values that contribute to maintaining biological diversity and integrity, have intrinsic or attributed scientific, historical or cultural heritage value, or are important in providing amenity, harmony or sense of community.
Evaporation pond	Evaporation pond means a dam or interceptor pond constructed outside a watercourse, wetland or waterway by excavating a pit and constructing a wall around the pit with the excavated material. Natural surface flow is excluded from the pond.
Financial assurance	A security deposit, either cash or a bank guarantee, held by the administering authority to cover the potential costs of rehabilitating areas significantly disturbed by the mining activities.
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.

TERM	MEANING
Fully operational	means in working order and ready for use.
Hazard	In relation to a dam as defined in this authority, means the potential for environmental harm resulting from the collapse, or failure of the dam to perform its primary purpose of containing, diverting or controlling flowable substances.
Hazard Category	means a category, either low significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).
Hazardous contaminant	A contaminant that, if improperly treated, stored, disposed of or otherwise managed, is likely to cause serious or material environmental harm because of: (a) its quantity, concentration, acute or chronic toxic effects, carcinogenicity, teratogenicity, mutagenicity, corrosiveness, explosiveness, radioactivity or flammability; or (b) its physical, chemical or infectious characteristics.
Hydraulic Performance	means the capacity of a regulated dam to contain or safely pass flowable substances based on a probability (AEP) of performance failure specified for the relevant hazard category in the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).
Levee (dyke or bund)	Means a long embankment that is designed only to provide for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of water or flowable substances at any other times.
Licensed waste disposal facility	A facility approved under a development approval and operated by a holder of a registration certificate for environmentally relevant activity item number 75 under Schedule 1 of the *Environmental Protection Regulation 1998*.
$L_{A10, ad, 10 mins}$	Means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10%of any 10 minute measurement period using Fast response.
Land degradation	Land degradation includes the following: (a) soil erosion; (b) rising water tables; (c) the expression of salinity; (d) mass movement by gravity of soil or rock; (e) stream bank instability; and (f) a process that results in declining water quality.
Mandatory Reporting Level or MRL	means a warning and reporting level determined in accordance with the Site Water Management Technical Guideline for Environmental Management of Exploration and Mining in Queensland (DME 1995).
Mining activities	means an activity, mentioned in subsection (2) that, under the Mineral Resources Act, is authorised to take place on – a) land to which a mining tenement relates; or b) land authorised under the Act for land mentioned in (a) above.

TERM	MEANING
	subsection (2) 1. prospecting, exploring or mining under the Mineral Resources Act or another Act relating to mining; 2. processing a mineral won or extracted by an activity under (1); 3. an activity that – • is directly associated with, or facilitates or supports, an activity mentioned in (1) or (2); and • may cause environmental harm. 4. Rehabilitating or remediating environmental harm because of a mining activity under (1) and (2). 5. action taken to prevent environmental harm because of an activity mentioned in (1) to (4). 6. any other activity prescribed in this subsection under a regulation.
Mining tenement	means a prospecting permit, mining claim, exploration permit, mineral development licence or mining lease.
Mining project	Means all mining activities carried out, or proposed to be carried out, under 1 or more mining tenements, in any combination, as a single integrated operation.
mg/L	Means milligrams per litre
NATA	National Association of Testing Authorities.
Odour	Means organoleptic attributes perceptible by the olfactory organ on sniffing certain volatile substances.
Odour Concentration	Mean the number of odour units
Odour Unit (OU)	One odour unit (OU) is that concentration of odorant(s) at standard conditions that elicits a physiological response from a panel (detection threshold) equivalent to that elicited by one Reference Odour Mass (ROM), evaporated in one cubic metre of neutral gas at standard conditions.
Offensive	Means causing offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive.
Operational Plan	Means a document that amongst other things sets out procedures and criteria to be used for operating a dam during a particular time period. The operational plan as defined herein may form part of a plan of operations or plan otherwise required in legislation.
Petroleum project	A petroleum project is all activities carried out, or proposed to be carred out, under 1 or more of the following, in any combination, as a single integrated operation— (a) a 1923 Act petroleum tenure granted under the *Petroleum Act 1923*; (b) a petroleum authority granted under the *Petroleum and Gas (Production and Safety) Act 2004*; a licence, permit, pipeline licence, primary licence, secondary licence or special prospecting authority granted under the *Petroleum (Submerged Lands) Act 1982*
process water	means any waters produced by the underground coal gasification process during operation, shutdown and decommission phases and includes any condensate.
Regulated Dam	means any dam in the significant or high hazard category as assessed using the Site Water Management Technical Guideline for Environmental

TERM	MEANING
	Management of Exploration and Mining in Queensland (DME 1995).
Regulated waste	A non-domestic waste mentioned in Schedule 7 of the *Environmental Protection Regulation 1998* (whether or not it has been treated or immobilised), and includes — (a) for an element—any chemical compound containing the element; and (b) anything that has contained the waste.
rehabilitated	means restored to a former condition.
Rehabilitation	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.
Sedimentation pond	A bunded or excavated structure used to contain and settle waterborne sediment running off disturbed areas.
Sensitive place	Sensitive place means any of the following places -- (a) a dwelling; (b) a library, childcare centre, kindergarten, school, college, university or other educational institution; (c) a hospital, surgery or other medical institution; (d) a protected area or an area identified under a conservation plan as a critical habitat or an area of major interest, under the *Nature Conservation Act 1992*; (e) a marine park under the *Marine Parks Act 1982*; and a park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment).
Significantly disturbed land	Significantly disturbed land and significant disturbance means land if: (a) it is contaminated land; or (b) it has been disturbed and human intervention is needed to rehabilitate it: i. to a state required under the relevant environmental authority; or ii. if the environmental authority does not require the land to be rehabilitated to a particular state – to its state immediately before the disturbance. Examples of a disturbance to land: (a) areas where soil has been compacted, removed, covered, exposed or stockpiled; (b) areas where vegetation has been removed or destroyed to an extent where the land has been made susceptible to erosion; (c) areas where land use suitability or capability has been diminished; (d) areas within a watercourse, waterway, wetland or lake where mining activities occur and human intervention is necessary to restore or stabilise the disturbed area; (e) areas submerged by hazardous waste storage and dam walls in all cases; (f) areas under temporary infrastructure. Temporary infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after mining activities have ceased; or (g) areas where land has become contaminated land and a suitability

TERM	MEANING
	statement has not been issued. However, the following areas are not significantly disturbed: (a) areas off the mining lease (e.g. roads or tracks which provide access to the petroleum authority); (b) areas previously significantly disturbed which have been rehabilitated to the administering authority's satisfaction; (c) areas under permanent infrastructure; (d) areas that were significantly disturbed prior to the grant of the environmental authority, unless those areas are re-disturbed by the holder of the environmental authority during the term of the authority; minor disturbances such as drill sumps and minor respreading of soil on GPS located seismic lines.
Significant wetland	Means the area of land that supports plants or is associated with plants that are adapted to and dependent on living in wet conditions for at least part of their life cycle and that is— a) a regional ecosystem listed in Table 14 and the area on the ground represented as a swamp, lake, marsh, waterhole, wetland, billabong, pool, spring or like, on the most recent 1:250 000 Geoscience Australia topographic map of the area; or b) a Ramsar wetland.
Silo data drill	means the service (provided for a fee or charge) provided by the Department of Natural Resources and Water at the following web address: 'http://www.nrw.qld.gov.au/silo/'.
site	means the area within which the mining activities to which the environmental authority relates.
Spillway	Means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges form the dam, normally under flood conditions or in anticipation of flood conditions.
Stable	Means land form 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.
Suitably qualified and experienced person for dams	Means one who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the Professional Engineers Act 1988, OR registered as a National Professional Engineer (NPER) with the Institution of Engineers Australia, OR holds equivalent professional qualifications to the satisfaction of the administering authority for the Act; AND the administering authority for the Act is satisfied that person has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below: (a) knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams; and (b) a total of five years of suitable experience and demonstrated expertise in the geomechanics of dams with particular emphasis on stability, geology and geochemistry, and (c) a total of five years of suitable experience and demonstrated expertise each, in three of the following categories: • investigation and design of dams.

TERM	MEANING
	• Construction, operation and maintenance of dams. • hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology. • hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes. • hydrogeology with particular reference to seepage, groundwater. • solute transport processes and monitoring thereof. • dam safety.
This authority	means this environmental authority.
This approval	means this environmental authority.
TPH	Total petroleum hydrocarbons
Watercourse	Mean the area of land between the high banks of a natural channel—whether artificially improved or not—in which water flows permanently or intermittently, and that is represented as— (a) a creek, stream, river or watercourse on the most recent 1:100 000 Geoscience Australia topographic map; or (b) a creek, stream, river or watercourse on the most recent 1:250 000 Geoscience Australia topographic map in areas where there is no 1:100 000 Geoscience Australia topographic map available.
Waters	includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, bed and banks of any waters, dams, non-tidal or tidal waters (including the sea) or any part-thereof.

Appendix B – Maps and Figures

Location of Dam 6

END OF PERMIT