

Permit

Environmental Protection Act 1994

Environmental authority EPPG00653213

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

Environmental authority number: EPPG00653213

Environmental authority takes effect on 28 June 2022

Environmental authority holder(s)

Name(s)	Registered address
CH4 PTY LTD	Level 39 111 Eagle Street BRISBANE CITY QLD 4000
AGL ENERGY LIMITED	Level 22 101 Miller Street NORTH SYDNEY NSW 2060
ARROW CSG (ATP 364) PTY LTD	Level 39 111 Eagle Street BRISBANE CITY QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Non-Scheduled - Petroleum Activity - Petroleum Lease (PL)	PL223

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

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

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

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

The anniversary day of this environmental authority is the same day each year as the original take effect date unless you apply to change the anniversary day. The payment of the annual fee will be due each year on this day. An annual return will be due each year on 01 April.

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



Signature

28 June 2022

Date

Rachel Copp
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:

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Privacy statement

Pursuant to section 540 of the EP Act, the Department is required to maintain a register of certain documents and information authorised under the EP Act. A copy of this document will be kept on the public register. The register is available for inspection by members of the public who are able take extracts, or copies of the documents from the register. Documents that are required to be kept on the register are published in their entirety, unless alteration is required by the EP Act. There is no general discretion allowing the Department to withhold documents or information required to be kept on the public register. For more information on the Department's public register, search 'public register' at www.qld.gov.au. For queries about privacy matters please email privacy@des.qld.gov.au or telephone 13 74 68.

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)

Other permits required

This permit only provides an approval under the *Environmental Protection Act 1994*. 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 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 Resources (to clear vegetation), and the Department of Agriculture and Fisheries (to clear marine plants or to obtain a quarry material allocation).

Conditions of environmental authority

SCHEDULE A – GENERAL CONDITIONS

Authorised Petroleum Activities

- (A1) In the carrying out of the petroleum activity(ies), the holder of this environmental authority must not exceed the numbers and maximum size(s) for each of the specified petroleum activities listed in Schedule A - Table 1 for each petroleum tenure.

Schedule A, Table 1 – Authorised Petroleum Activities

Tenure No.	Petroleum Activity	Number	Maximum size (where applicable)
PL223	Exploration Well	10	Not applicable
	Production Well	26	Not applicable

Prevent or Minimise Likelihood of Environmental Harm

- (A2) This environmental authority does not authorise environmental harm unless a condition contained in this environmental authority explicitly authorises that harm. Where there is no condition, the lack of a condition shall not be construed as authorising harm.

Maintenance of Measures, Plant and Equipment

- (A3) The holder of this environmental authority must:
- (a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;
 - (b) maintain such measures, plant and equipment in their proper and effective condition; and
 - (c) operate such measures, plant and equipment in a proper and effective manner.
- (A4) No change, replacement or alteration of any plant or equipment is permitted if the change, replacement or alteration materially increases, or is likely to increase, the environmental harm caused by the petroleum activity.

Authorised disturbance to Environmentally Sensitive Areas

- (A5) A report must be prepared for each annual return period for all petroleum activities that involved clearing of any environmentally sensitive area or protection zone which includes:
- (a) records able to demonstrate compliance with condition (D8)
 - (b) a description of the works
 - (c) a description of the area and its pre-disturbance values (which may include maps or photographs, but must include GPS coordinates for the works); and
 - (d) based on the extent of environmental sensitive areas and primary protection zones on the relevant resource authority(ies), the proportion of native vegetation cleared per environmentally sensitive area and primary protection zone, including regional ecosystem type, over the annual return period.

Impacts to prescribed environmental matters

- (A6) Significant residual impacts to prescribed environmental matters are not authorised under this environmental authority or the *Environmental Offsets Act 2014*.

Cultural Heritage

- (A7) In the carrying out of the petroleum activity(ies) the holder of this environmental authority must not adversely impact on the cultural heritage values of any place registered on the Queensland Heritage Register.

Venting and flaring

- (A8) Unless venting is authorised under the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923*, waste gas must be flared in a manner that complies with all of (A8(a)) and (A8(b)) and (A8(c)), or with (A8(d)):
- (a) an automatic ignition system is used, and
 - (b) a flame is visible at all times while the waste gas is being flared, and
 - (c) there are no visible smoke emissions other than for a total period of no more than 5 minutes in any 2 hours, or
 - (d) it uses an enclosed flare.

Monitoring

- (A9) Monitoring and sampling must be carried out in accordance with the requirements of the following documents (as relevant to the sampling being undertaken), as amended from time to time:
- (a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual 2009 – Environmental Protection (Water) Policy 2009
 - (b) for groundwater, Groundwater Sampling and Analysis – A Field Guide (2009:27 GeoCat #6890.1)
 - (c) for noise, the Environmental Protection Regulation 2008
 - (d) for air, the Queensland Air Quality Sampling Manual and/or Australian Standard 4323.1:1995 Stationary source emissions method 1: Selection of sampling positions, as appropriate for the relevant measurement
 - (e) for soil, the Guidelines for Surveying Soil and Land Resources, 2nd edition (McKenzie et al. 2008), and/or the Australian Soil and Land Survey Handbook, 3rd edition (National Committee on Soil and Terrain, 2009)
 - (f) for dust, Australian Standard AS3580.

Records and Documentation

- (A10) A certification must be prepared by a suitably qualified person within 30 business days of completing every plan, procedure, program and report required to be developed under this environmental authority, which demonstrates that:
- (a) relevant material, including current published guidelines (where available) have been considered in the written document
 - (b) the content of the written document is accurate and true; and
 - (c) the document meets the requirements of the relevant conditions of the environmental authority.
- (A11) All plans, procedures, programs, reports and methodologies required under this environmental authority must be written and implemented.
- (A12) All documents required to be developed under this environmental authority must be kept for five years.
- (A13) All documents required to be prepared, held or kept under this environmental authority must be provided to the administering authority upon written request within the requested timeframe.
- (A14) A record of all complaints must be kept including the date, complainant's details, source, reason for the complaint, description of investigations and actions undertaken in resolving the complaint.

SCHEDULE B – WATER**Contaminant Release**

- (B1) Contaminants must not be directly or indirectly released to any waters except as permitted under this environmental authority.

Erosion and Sediment Control

- (B2) For activities involving significant disturbance to land, control measures that are commensurate to the site specific risk of erosion, and risk of sediment release to waters must be implemented to:
- (a) allow stormwater to pass through the site in a controlled manner and at non-erosive flow velocities
 - (b) minimise soil erosion resulting from wind, rain, and flowing water
 - (c) minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain, and flowing water
 - (d) minimise work-related soil erosion and sediment runoff; and
 - (e) minimise negative impacts to land or properties adjacent to the activities (including roads).

Maintenance and Cleaning

- (B3) The maintenance and cleaning of vehicles and any other equipment or plant must be carried out in areas from where the resultant contaminants cannot be released into any waters, roadside gutter or stormwater drainage system.

Watercourses, Wetlands and Springs

- (B4) In the carrying out of the petroleum activity(ies) the holder of this environmental authority must not clear vegetation, excavate or place fill, except for the construction of roads and pipelines, in or within:
- (a) 200m from any natural significant wetland;
 - (b) 100m from any natural wetland, lakes or springs; or
 - (c) 100m of the high bank of any other watercourse.
- (B5) The holder of this environmental authority must not excavate or place fill in a way that interferes with the flow of water in a watercourse, wetland, or spring, including works that divert the course of flow of the water or works that impound the water.
- (B6) Despite Condition (B5) pipeline and road construction works may be undertaken in watercourses, wetlands or springs where there is no practicable alternative such as the use of horizontal directional drilling methods, for a maximum period of ten days, provided that the works are conducted in accordance with the following order of preference:
- (a) conducting work in times of no flow; and
 - (b) using all reasonable and practical measures to reduce impacts in times of flow.
- (B7) Activities or works resulting in significant disturbance to the bed or banks of a watercourse or wetland, or a spring must:
- (a) only be undertaken where necessary for the construction and/or maintenance of roads, tracks and pipelines that are essential for carrying out the authorised petroleum activity(ies) and no reasonable alternative location is feasible;
 - (b) be no greater than the minimum area necessary for the purpose of the significant disturbance;
 - (c) be designed and undertaken by a suitably qualified person taking into account the matters listed in Section 5. Planning Activities and Section 6 Impact Management During Activities of DERM's "Guideline – Activities in a watercourse, lake or spring associated with mining operations" dated April 2008, or more recent editions as such become available; and
 - (d) upon cessation of the activities or works, commence rehabilitation immediately such that the final rehabilitation is to a condition that will ensure the ongoing physical integrity and the natural ecosystem values of the site.
- (B8) Sediment control measures must be implemented to minimise any increase in water turbidity due to carrying out petroleum activity(ies) in the bed or banks of a watercourse or wetland, or a spring.
- (B9) Routine, regular and frequent visual monitoring must be undertaken while carrying out construction work and/or any maintenance of completed works in a watercourse, wetland or spring. If, as a

result of the petroleum activity(ies), water turbidity increases in the watercourse, wetland or spring outside contained areas, works must cease and the sediment control measures must be rectified to limit turbidity before activities recommence.

Groundwater

- (B10) The extraction of groundwater as part of the petroleum activity(ies) from underground aquifers must not directly or indirectly cause environmental harm to any spring, wetland or other surface waters.

Floodplains

- (B11) The holder of this environmental authority must ensure that petroleum activity(ies), excluding essential petroleum activity(ies), do not significantly:
- (a) concentrate flood flows;
 - (b) divert flood flows from natural drainage paths and alter flow distribution;
 - (c) increase the local duration of floods;
 - (d) increase the risk of detaining flood flows;
 - (e) increase the risk to the safety of persons from flooding; or
 - (f) increase the risk of damage to property from flooding.

Release to Waters of Treated or Untreated Quality CSG Water

- (B12) The release of treated or untreated CSG water to any waters is prohibited under this environmental authority.

Sewage treatment works

- (B13) The construction and operation of any sewage treatment works is prohibited under this environmental authority.

SCHEDULE C –DAMS**Assessment of consequence category**

- (C1) 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.
- (C2) 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.
- (C3) Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual of assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*.

Transfer arrangements

- (C4) The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.

SCHEDULE D — Land**General**

- (D1) Contaminants must not be directly or indirectly released to land except as permitted under this environmental authority.

Disturbance to Land – General

- (D2) Prior to conducting petroleum activity(ies) that involve significant disturbance to land, an assessment must be undertaken of the condition, type and ecological value of any vegetation in such areas where the activity is proposed to take place.
- (D3) The assessment required by Condition (D2) must be undertaken by a suitably qualified person and include the carrying out of field validation surveys, observations and mapping of any category A, B or C Environmentally Sensitive Areas (ESA's) and the presence of species classed as endangered, vulnerable, rare or near threatened under the *Nature Conservation Act 1992*.
- (D4) The holder of this environmental authority, when carrying out (a) petroleum activity(ies) must:
- (a) avoid, minimise or mitigate (in order of preference) any impacts on areas of vegetation or other areas of ecological value;
 - (b) minimise the risk of injury, harm, or entrapment to wildlife and stock;
 - (c) minimise disturbance to land that may otherwise result in land degradation;
 - (d) ensure that for land that is to be significantly disturbed by (a) petroleum activity(ies):
 - i. the top layer of the soil profile is removed;
 - ii. stockpiled in a manner that will preserve its biological and chemical properties; and
 - iii. used for rehabilitation purposes (in accordance with Condition (H6)) and

- (e) prior to carrying out field based activities, make all relevant staff, contractors or agents carrying out those activities, aware of the location of any category A, B or C ESA's and the requirements of this environmental authority.
- (D5) In accordance with Condition (D4) above, if significant disturbance to land is unavoidable, the holder of this environmental authority must not clear vegetation, excavate or place fill:
- (a) in a way which significantly isolates, fragments or dissects tracts of vegetation resulting in a reduction in the current level of ecosystem functioning, ecological connectivity (i.e. stepping stone or contiguous bioregional/local corridor networks) and/or results in an increase in threatening processes (e.g. potential impacts associated with edge effects or introduced species);
 - (b) on slopes greater than 10% for activities other than pipelines and wells; or
 - (c) in discharge areas.
- (D6) Clearing of remnant vegetation shall not exceed ten metres in width for the purpose of establishing tracks and 20m in width for dual carriageway roads unless otherwise approved by the administering authority in writing.
- (D7) Cleared vegetation must be stockpiled in a manner that facilitates respreading or salvaging and does not impede vehicle, stock or wildlife movements.

Disturbance to Land – Environmentally Sensitive Areas

- (D8) Petroleum activities must be carried out in accordance with *Schedule D, Table 1 – Petroleum Activities in Environmentally Sensitive Areas* and any other relevant conditions of this environmental authority.

Schedule D, Table 1 – Petroleum Activities in Environmentally Sensitive Areas

ESA Category	Within the ESA	Primary protection zone of the ESA	Secondary protection zone of the ESA
Category A ESAs	No petroleum activities permitted	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted
Category B ESAs excluding 'Endangered' Regional Ecosystems	Only low impact petroleum activities permitted	Only essential petroleum activities permitted Subject to conditions (D9) and (D10) inclusive	N/A
Category C ESAs that are Nature Refuges, Koala Habitat and/or Declared Catchment Areas	Only low impact petroleum activities permitted	Only essential petroleum activities permitted Subject to conditions (D9) and (D10) inclusive	N/A

Category B ESAs that are 'Endangered' Regional Ecosystems	Only essential petroleum activities permitted Subject to conditions (D9) and (D10) inclusive	Only essential petroleum activities permitted Subject to conditions (D9) and (D10) inclusive	N/A
Category C ESAs that are Essential Habitat, Essential Regrowth Habitat and/or 'Of Concern' Regional Ecosystems	Only essential petroleum activities permitted Subject to conditions (D9) and (D10) inclusive	Only essential petroleum activities permitted Subject to conditions (D9) and (D10) inclusive	N/A
Category C ESAs that are Resource Reserves	Only essential petroleum activities permitted Subject to conditions (D9) and (D10) inclusive	Only essential petroleum activities permitted Subject to conditions (D9) and (D10) inclusive	N/A
Category C ESAs that are State Forests and/or Timber Reserves	Only essential petroleum activities permitted Subject to conditions (D9) and (D10) inclusive	N/A	N/A

Note: Approvals may be required under the *Forestry Act 1959* where the petroleum activity(ies) is proposed to be carried out in ESAs that are State Forests or Timber Reserves.

- (D9) Despite condition (D8) the laydown area identified in *Schedule D, Table 2 – Laydown area within buffer zone of a category C ESA that is of concern* is authorised.

Schedule D, Table 2 – Laydown area within buffer zone of a category C ESA that is of concern

Easting	Northing
627690	7569025
627809	7568942
627657	7568959
627789	7568890

Note: Coordinates are as per Zone 55, GDA 94 datum.

- (D10) Prior to carrying out essential petroleum activities undertaken within environmentally sensitive areas in accordance with Schedule D, Table 1 – Petroleum Activities in *Environmentally Sensitive Areas*, it must demonstrated, in the following order of preference that:
- no reasonable or practicable alternative exists for carrying out the essential petroleum activities within the environmentally sensitive area;
 - the essential petroleum activities are preferentially located in pre-existing areas of clearing or significant disturbance;
 - vegetation clearing for the essential petroleum activities must not exceed any of the following areas:

- i. 10m in width for access tracks not associated with a water, gas, power or communications line; or
- ii. for linear infrastructure, including provision of an access track:
 - a. 12m width for a single water, gas, power or communications line; or
 - b. 18m width for a single water, gas, power or communication line with parallel access track; and
 - c. 4m width for any additional water or gas line.

- (D11) Prior to carrying out essential petroleum activities subject to Condition (D8) within the primary and secondary protection zones of an environmentally sensitive area, the holder of the environmental authority must demonstrate, in the following order of preference:
- (a) the essential petroleum activities are preferentially located in areas of pre-existing disturbance;
 - (b) significant disturbance to land from the carrying out of the essential petroleum activities is minimised to the greatest extent practicable.
- (D12) If the assessment required by conditions (D2) and (D3) indicates that an environmentally sensitive area or wetland is incorrectly identified through state mapping, or is present and not identified by state mapping, proposed activities may proceed in accord with the conditions of the environmental authority and the field validated values.
- (D13) In the instance where a proposed activity is authorised (in D11) under the environmental authority based upon the field validated value(s), but not the State mapped value(s), the environmental authority holder must notify the administering authority five business days prior to the activity commencing. The notification must be in writing, stipulate the precise location, and the nature of the proposed activity.
- (D14) The environmental authority holder must maintain for the life of the environmental authority all documentation survey information photographs, field data or any material associated with the field validation requirements in (D2) to demonstrate to the Administering Authority that surveys were conducted in a manner consistent with requirements contained in (D2).

Soil management

- (D15) Top soil must be managed in a manner that preserves its biological and chemical properties.
- (D16) Land that has been significantly disturbed by the petroleum activities must be managed to ensure that mass movement, gully erosion, rill erosion, sheet erosion and tunnel erosion do not occur on that land.

Acid Sulfate Soils

- (D17) Acid sulfate soils must be treated and managed in accordance with the latest edition of the *Queensland Acid Sulfate Soil Technical Manual*.

Fauna Management

- (D18) The holder of this environmental authority must develop and implement fauna management procedures for the carrying out of the petroleum activity(ies), in particular pipeline construction, construction and use of dams, to prevent or minimise harm or the potential risk of causing harm to fauna.
- (D19) The fauna management procedures must include training and awareness of staff and contractors and ensure that any planned fauna handling is undertaken by a suitably qualified person.
- (D20) A copy of the fauna management procedures must be made available to the administering authority upon request.

Pest Management

- (D21) In carrying out the petroleum activity(ies) the holder of this environmental authority must develop and implement an effective pest management program that includes but is not limited to the following:
- (a) identification of pest species and infestation areas;
 - (b) prevents and/or minimises the introduction and/or spread of pests; and
 - (c) control and management of pest outbreaks as a result of petroleum activities.
- (D22) A copy of the pest management program must be made available to the administering authority upon request.

Chemical and Fuel Storage

- (D23) Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.

Well Drilling, Completion and Stimulation

- (D24) The following compounds must not be used in stimulation fluids:
- (a) hydrocarbons containing benzene, ethylbenzene, toluene, xylene, naphthalene or phenanthrene; or
 - (b) chemicals that produce, or are likely to produce, benzene, ethylbenzene, toluene or xylene as the chemical breaks down in the environment.
- (D25) A hydraulic fracturing chemical risk assessment is required to be carried out and submitted to the administering authority prior to hydraulic fracturing on PL223.
- (D26) The hydraulic fracturing chemical risk assessment required by Condition (D25) must be reviewed:
- (a) when new or additional toxicological information becomes available for the chemicals used; and
 - (b) when new chemicals, chemical concentrations or mixtures are used in hydraulic fracturing fluids.
- (D27) The updated risk assessment required by Condition (D25)(a) must be submitted to the administering authority upon request.
- (D28) The updated risk assessment required by Condition (D25)(b) must be submitted to the administering authority prior to the use of the new chemicals, chemical concentrations or mixtures for hydraulic fracturing on PL223.

- (D29) The holder of this environmental authority must monitor for the chemicals used in hydraulic fracturing fluids used on PL223 and keep a record of the groundwater quality in any landholder's bore, subject to access being permitted by the landholder that is located within a 1km radius of a well subject to hydraulic fracturing.
- (D30) The monitoring required under Condition (D29) must be undertaken at least:
- (a) once prior to hydraulic fracturing being undertaken; and
 - (b) weekly for the first month subsequent to hydraulic fracturing being undertaken; then
 - (c) monthly for next six months thereafter; then
 - (d) annually for next five years thereafter.
- (D31) The results of the monitoring required by Conditions (D29) and (D30) must be made available upon request to:
- (a) the administering authority; and
 - (b) the landholder.
- (D32) If the results of the monitoring required by Conditions (D29) and (D30) indicate that there has been a material impact caused by petroleum activities on groundwater quality, the holder of this environmental authority must notify:
- (a) the administering authority within 24 hours; and
 - (b) any affected landholders within 24 hours or as per written agreement between the holder of this environmental authority and the landholder.
- (D33) The holder of this environmental authority must ensure that the hydraulic fracturing process is carried out in such a manner that hydraulic fractures are only contained within the target coal seam.

SCHEDULE E – ENVIRONMENTAL NUISANCE

Odour, Dust and other Airborne Contaminants

- (E1) The release of odour, dust or any other airborne contaminant(s), or light from the petroleum activity must not cause an environmental nuisance at any sensitive place or commercial place.

Noise - Fixed Activities

- (E2) In the event of a valid complaint about noise from the carrying out of fixed petroleum activities being made to the administering authority the emission of noise from the licensed place must not result in levels greater than those specified in Schedule E, Table 1.
- (E3) In the event of a valid complaint about noise from fixed activities, the holder of this environmental authority must prepare and submit a Noise Management Plan to the administering authority within the timeframe specified in writing by the administering authority.
- (E4) The noise Management Plan must address, but not be limited to, the following matters:
- (a) identification of component noise sources and activities at the place(s) which impact on noise sensitive areas;
 - (b) the measured and/or predicted noise level of these noise sources and activities at noise sensitive places;
 - (c) the reasonable and practicable control or abatement measures (including hours of operation) that can be undertaken to reduce identified intrusive noise sources;
 - (d) the level of noise at noise sensitive places that would be achieved from implementing these measures;
 - (e) the handling of future noise complaints;

- (f) community liaison and consultation; and
 - (g) training of staff and contractors in best available noise management practices.
- (E5) The holder of this environmental authority must commence implementation of the noise abatement recommendations of the Noise Management Plan not more than 30 days following its submission to the administering authority, accounting for any comments made by the administering authority within that time.
- (E6) Upon completion of the noise abatement recommendations contained in the Noise Management Plan, the holder of this environmental authority must undertake verification noise measurements. Not more than 30 days following such noise assessment the holder of this environmental authority must submit to the administering authority a noise report confirming compliance with the noise limits set in Schedule E, Table 1.

Schedule E, Table 1 – Noise Limits for Fixed Activities

Sensitive and commercial place				
Monday to Sunday (including public holidays)				
Noise level dB(A) measured as:	6am to 7am	7am to 6pm	6pm to 10pm	10pm to 6am
LA eq, adj, 15 min (total source noise)	35	40	35	28

Note: Deemed background levels for the limits in Schedule E, Table 1 are as follows:

6am to 7am: 30 dB(A)
 7am to 6pm: 35 dB(A)
 6pm to 10pm: 30 dB(A)
 10pm to 6am: 25 dB(A)

Noise for Temporary Activities

- (E7) For temporary activities, the investigation threshold trigger level is 45dB(A) for LAeq, adj, 15 min (total source noise) at a sensitive or commercial place on any given day at any given time.
- (E8) Prior to undertaking any temporary activities that are likely to impact on a noise sensitive or commercial place, the holder of this environmental authority must model any potential noise emissions from the relevant temporary activity and determine if noise emissions are likely to exceed the investigation threshold trigger level set in Condition (E7).
- (E9) If modelling indicates that temporary activities are likely to exceed the investigation threshold trigger level set in Condition (E7) at a noise sensitive or commercial place, the holder of this environmental authority must take appropriate measures including:
- (a) relocating of the relevant temporary activity away from the noise sensitive or commercial place; or
 - (b) incorporation of noise abatement and/or attenuation measures to mitigate the expected noise impacts at the noise sensitive or commercial place; or
 - (c) having an alternative arrangement in place with any potentially affected person.
- Note:** Any costs associated with these arrangements must be borne by the holder of this environmental authority.
- (E10) The abatement and/or attenuation measures referred to in Condition (E9)(b) must be in place prior to undertaking the relevant temporary activity.

- (E11) Where alternative arrangements are in place with any affected person(s) as referred to by Condition (E9)(c), the investigation threshold trigger level does not apply at that location and for the duration for which the alternative arrangements are in place.

SCHEDULE G – WASTE

General

- (G1) All general waste must be removed from the site and sent to a recycling facility or disposal facility licensed to accept the waste.
- (G2) All regulated waste must be removed from the site 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 recycling facility or disposal facility licensed to accept the waste.
- (G3) Waste must not be burned or allowed to be burned on the licensed site.
- (G4) All waste fluids and muds resulting from drilling and exploration activities must be contained in a dam or containment structure for disposal, remediation or reuse where applicable.
- (G5) Oil based drilling muds must not be used in the carrying out of the petroleum activity.
- (G6) Synthetic based drilling muds must not be used in the carrying out of the petroleum activity other than with the written approval of the administering authority.
- (G7) The holder of this environmental authority must ensure that CSG water is contained and is not released to land and is only used for purposes specifically authorised:
- (a) under this environmental authority; or
 - (b) under Section 186 of the *Petroleum and Gas (Production and Safety) Act 2004*; or
 - (c) under Section 86 of the *Petroleum Act 1923*; or
 - (d) under an approval of resource for beneficial use as provided for under the *Environmental Protection Act 1994*.

Coal Seam Gas Water Management

- (G8) The holder of this environmental authority must develop and implement a coal seam gas water management plan (CWM Plan) for the authorised petroleum activities which must adequately identify and quantify all CSG water generated under this environmental authority and propose management options for treating and/or disposing of or beneficially reusing CSG water.
- (G9) As part of the CWM Plan (contained within the Environmental Management Plan), the holder of this environmental authority must develop and implement an on-going Release Reduction Strategy to maximise CSG water use and minimise any release to waters. The strategy must address the following matters:
- (a) implementation of schemes to achieve maximum use of the water;
 - (b) specific targets for achieving increased use of CSG water both treated and untreated;
 - (c) a market analysis at least every three years to identify existing and future opportunities for water use;
 - (d) on-going review of emerging technologies and/or re-use options that could achieve significant reductions in mass loads of contaminants released to the environment;
 - (e) investigation of the feasibility of alternative options, practices and procedures to further minimise the volume and concentration of contaminants released to waters; and
 - (f) programs to implement feasible options to achieve increased water use and reduction in contaminant loads, including actions and timeframes for completion.

- (G10) A progress report on the strategy required by Condition (G9) must be included in the Annual Return and address at least the following matters:
- (a) details of the specific options, practices and procedures investigated;
 - (b) details of new practices, procedures and programs implemented since the last reporting period and targets met;
 - (c) where alternative options, practices and procedures are not considered feasible, the provision of justification to support that determination; and
 - (d) details of the option(s) yet to be implemented, including the timeframes for implementation, and justification for the chosen option(s).
- (G11) The holder of this environmental authority must ensure that the CSG water to be used for domestic or stock purposes meets the ANZECC 2000 Water Quality Guidelines, or subsequent versions thereof, for stock and domestic purposes.
- (G12) CSG water released to the environment in accordance with Condition (G7) must not have any properties that could cause, nor contain any contaminants in concentrations that are capable of causing environmental harm.
- (G13) Where any inconsistency exists between the conditions of this environmental authority and the CWM Plan, the conditions of this environmental authority prevail.

Coal Seam Gas Water Use for Dust Suppression

- (G14) CSG water produced from the authorised petroleum activities may be used for dust suppression within tenures covered by this environmental authority, provided the water quality meets the limits specified in Schedule G, Table 1 for each of the water quality characteristics.

Schedule G, Table 1 – Road Dust Suppression Water Contaminant Release Limits

Water Quality Characteristics	Unit	Limit	Limit Type
pH	ph Units	6.0 to 9.0	range
Total Suspended Solids	mg/L	30	maximum
Total Dissolved Salts	mg/L	2,000	maximum
Total Petroleum Hydrocarbons	mg/L	10	maximum

- (G15) Use of CSG water for dust suppression activities must be carried out in a manner that:
- (a) vegetation is not damaged;
 - (b) soil erosion and soil structure damage is avoided;
 - (c) there is no surface ponding of the CSG water;
 - (d) minimises deep drainage below the root zone of any vegetation;
 - (e) quality of shallow aquifers is not adversely affected; and
 - (f) there are no releases of CSG waters to any surface waters.

Salt Management

- (G16) Following cessation of petroleum activities, any residual brine or solid salt present in a CSG water dam must be removed and transported to a facility that can lawfully reuse, recycle or dispose of such waste.

CSG Water and Treated Water Injection Trials

- (G17) The injection of CSG water, treated water or brine into any underground aquifer is prohibited under this environmental authority.

SCHEDULE H – REHABILITATION

- (H1) Where there is a dam (including a low consequence dam) that is being or intended to be utilised by the landholder or overlapping tenure holder, the dam must be decommissioned to no longer accept inflow from the petroleum activity(ies) and the contained water must be of a quality suitable for the intended on-going use(s) by the landholder or overlapping tenure holder.
- (H2) Progressive rehabilitation of disturbed areas must commence as soon as practicable following the completion of any construction or operational works associated with the petroleum activity(ies).
- (H3) As soon as practicable, but no later than twelve months (or a longer period agreed in writing by the administering authority) after the end of petroleum activity(ies) causing significant disturbance to land, the holder of this environmental authority must:
- (a) remediate contaminated land (e.g. dams containing salt);
 - (b) reshape all significantly disturbed land to a stable landform similar to that of
 - (c) surrounding undisturbed areas;
 - (d) on all significantly disturbed land, take all reasonable and practicable measures to:
 - (e) re-establish surface drainage lines;
 - (f) reinstate the top layer of the soil profile; and
 - (g) promote establishment of vegetation.
 - (h) undertake rehabilitation in a manner such that any actual and potential acid sulfate soils in or on the site are either not disturbed, or submerged, or treated so as to not be likely to cause environmental harm; and
 - (i) decommission all inactive buried pipelines in accordance with the requirements of AS 2885 and ensuring that there will not be any subsequent subsidence of land along the pipeline route.
- (H4) All significantly disturbed land caused by the carrying out of the petroleum activity(ies) 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 petroleum activities; and
 - (d) ensure that the water quality of any residual void or water bodies constructed by petroleum activities meets criteria for subsequent uses and does not have potential to cause environmental harm.
- (H5) 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.
- (H6) Rehabilitation can be considered successful when:
- (a) the site can be managed for its designated land-use (e.g. similar to that of surrounding undisturbed areas);
 - (b) no greater management input than for other land in the area being used for a similar purpose is required and there is evidence that the rehabilitation has been successful for at least three years; the rehabilitation is carried out in accordance with the goals, objectives indicators and completion criteria as specified in Conditions (H1), (H3), (H4) and (H5); or
 - (c) written agreement is obtained from the landowner/holder and the administering authority.

SCHEDULE I – MONITORING PROGRAMS**General**

- (I1) The holder of this environmental authority must develop and implement a monitoring program, the result of which will demonstrate compliance with the conditions of this environmental authority.
- (I2) All monitoring under this environmental authority must be conducted by a suitably qualified person.
- (I3) All instruments, equipment and measuring devices used for measuring or monitoring in accordance with any condition of this environmental authority must be calibrated, and operated and maintained effectively.
- (I4) All determinations of water quality must be:
 - (a) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements; and
 - (b) made in accordance with methods prescribed in the latest edition of the Department of Environment and Resource Management - Water Quality Sampling Manual; and
 - (c) carried out on representative samples.
- (I5) All analyses and tests required to be conducted under this environmental authority must be carried out by a laboratory that has NATA certification for such analyses and tests, except as otherwise authorised by the administering authority.
- (I6) If monitoring conducted in accordance with this environmental authority indicated a condition or contaminant level that has caused, or has potential to cause, environmental harm, the environmental authority holder must:
 - (a) as soon as is practicable, take the necessary actions to rectify the condition or contaminant level so as to avoid or minimise environmental harm; and
 - (b) notify the administering authority of the condition or contaminant level and the actions taken to rectify it.
- (I7) An annual monitoring report must be prepared each year and presented to the administering authority when requested. This report shall include but not be limited to:
 - (a) a summary of the previous twelve months monitoring results obtained under any monitoring programs required under this environmental authority and, a comparison of the previous twelve months monitoring results to both the limits set in this environmental authority and to relevant prior results; and
 - (b) an evaluation/explanation of the data derived from any monitoring programs; and
 - (c) a summary of any record of quantities of releases required to be kept under this environmental authority; and
 - (d) an outline of actions taken or proposed to minimise the risk of environmental harm from any condition or elevated contaminant level identified by the monitoring or recording programs.

Seepage monitoring program

- (I8) A seepage monitoring program must be developed by a suitably qualified person which is commensurate with the site-specific risks of contaminant seepage from containment facilities, and which requires and plans for detection of any seepage of contaminants to groundwater as a result of storing contaminants by 10 November 2016.
- (I9) The seepage monitoring program required by condition (I8) must include but not necessarily be limited to:
 - (a) identification of the containment facilities for which seepage will be monitored

- (b) identification of trigger parameters that are associated with the potential or actual contaminants held in the containment facilities
- (c) identification of trigger concentration levels that are suitable for early detection of contaminant releases at the containment facilities
- (d) installation of background seepage monitoring bores where groundwater quality will not have been affected by petroleum activities authorised under this environmental authority to use as reference sites for determining impacts
- (e) installation of seepage monitoring bores that:
 - (i) are within formations potentially affected by the containment facilities authorised under this environmental authority (i.e. within the potential area of impact)
 - (ii) provide for the early detection of negative impacts prior to reaching groundwater dependent ecosystems, landholder's active groundwater bores, or water supply bores
 - (iii) provide for the early detection of negative impacts prior to reaching migration pathways to other formations (i.e. faults, areas of unconformities known to connect two or more formations)
- (f) monitoring of groundwater at each background and seepage monitoring bore for the trigger parameters identified in condition (I9(b)) at a frequency determined for each dam by a suitably qualified person and:
 - (i) At least once every two years where baseline data has been established; or
 - (ii) At least every six months for two years to establish baseline data for any impact to groundwaters, after which time monitoring may continue at the frequency according to condition (I9(f)(i)).
- (g) seepage trigger action response procedures for when trigger parameters and trigger levels identified in conditions (I9(b)) and (I9(c)) trigger the early detection of seepage, or upon becoming aware of any monitoring results that indicate potential groundwater contamination
- (h) a rationale detailing the program conceptualisation including assumptions, determinations, monitoring equipment, sampling methods and data analysis; and
- (i) provides for annual updates to the program for new containment facilities constructed in each annual return period.

Seepage monitoring bore drill logs

- (I10) A bore drill log must be completed for each seepage monitoring bore in condition (I12) which must include:
 - (a) bore identification reference and geographical coordinate location
 - (b) specific construction information including but not limited to depth of bore, depth and length of casing, depth and length of screening and bore sealing details
 - (c) standing groundwater level and water quality parameters including physical parameter and results of laboratory analysis for the possible trigger parameters
 - (d) lithological data, preferably a stratigraphic interpretation to identify the important features including the identification of any aquifers; and
 - (e) target formation of the bore.

Noise Monitoring

- (I11) The holder of this environmental authority must undertake noise monitoring when requested by the administering authority to investigate a complaint of environmental nuisance at a sensitive or commercial place within the reasonable and practicable timeframe nominated by the administering authority, and report the results to the administering authority within three business days of completion of the monitoring.
- (I12) Noise monitoring and recording must include the following descriptor, characteristics and matters:
 - (a) LAN,T (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins);
 - (b) background noise LA90,T;
 - (c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;
 - (d) atmospheric conditions including temperature, relative humidity and wind speed and directions;
 - (e) effects due to any extraneous factors such as traffic noise;

- (f) location, date and time of monitoring;
- (g) if the complaint concerns low frequency noise, Max LPZ, 15 min; and
- (h) If the complaint concerns low frequency noise, one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200Hz range for both the noise source and the background noise in the absence of the noise source.

Nuisance Monitoring (other than Noise)

- (I13) When the administering authority advises the holder of this environmental authority of a complaint alleging nuisance other than noise, the holder must investigate the complaint and advise the administering authority in writing of the action proposed or undertaken to resolve the complaint.
- (I14) When requested by the administering authority, the holder of this environmental authority must undertake monitoring as specified by the administering authority, within a reasonable and practical timeframe nominated by the administering authority to investigate any complaint of environmental harm at any sensitive or commercial place.
- (I15) 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 ten business days of completion of the investigation, or receipt of the monitoring results, whichever is the latter.
- (I16) If monitoring in accordance with Condition (I14) and (I15) indicates that emissions exceed the limits set in this environmental authority or are causing environmental nuisance, then the holder of this environmental authority must:
 - (a) address the complaint including the use of alternative dispute resolution services if required; and/or
 - (b) as soon as practicable implement abatement or attenuation measures so that light, dust, particulate or odour emissions from the authorised activities do not result in further environmental nuisance.

SCHEDULE K - NOTIFICATION PROCEDURES

- (K1) The holder of this environmental authority must telephone the administering authority's Pollution Hotline (1300 130 372) and the landholder or their nominated representative within 24 hours of becoming aware of any release of contaminants not in accordance with the conditions of this environmental authority or any event where environmental harm has been caused or may be caused.
- (K2) Subject to Condition (K1), the holder of this environmental authority is required to report in the case of uncontained spills of contaminants (including but not limited to hydrocarbon, CSG water or mixtures of both) of the following volumes or kind:
 - (a) releases of any volume of contaminants to water; and
 - (b) releases of volumes of contaminants greater than 200 litres of hydrocarbon, 2,000 litres of brine or 10,000 litres of coal seam gas water to land; and
 - (c) releases of any volumes of contaminants where potential serious or material environmental harm has occurred or may occur.
- (K3) The notification of emergencies or incidents as required by Conditions (K1) and (K2) must include but not be limited to the following information:
 - (a) the environmental authority number and name of the holder of this environmental authority;
 - (b) the name and telephone number of the designated contact person;
 - (c) the location of the emergency or incident;
 - (d) the date and time of the release;

- (e) the time the holder of this environmental authority became aware of the emergency or incident;
 - (f) the estimated quantity and type of any substances involved in the incident;
 - (g) the actual or potential suspected cause of the release;
 - (h) a description of the effects of the incident including any environmental harm that has occurred or may occur as a result of the release;
 - (i) any sampling conducted or proposed, relevant to the emergency or incident; and
 - (j) actions taken to prevent any further release and mitigate any environmental harm caused by the release.
- (K4) Within ten business days following the initial notification of an emergency or incident or receipt of monitoring results, whichever is the later, a written report must be provided to the administering authority, including the following:
- (a) results and interpretation of any samples taken at the time of the incident and analysed;
 - (b) the outcomes of actions taken at the time of the incident to prevent or minimise environmental harm; and
 - (c) proposed actions to prevent a recurrence of the emergency or incident.
- (K5) As soon as practicable, but not more than six weeks following the conduct of any environmental monitoring performed in relation to the emergency or incident, which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority, a written report on the results of any such monitoring must be provided to the administering authority.

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.

Note: *Where a term is not defined in this environmental authority the definition in the Environmental Protection Act 1994, its regulations and Environmental Protection Policies or the Petroleum and Gas (Production and Safety) Act 2004 and its regulations must be used in that order.*

“acid sulfate soils” means a soil or soil horizon which contains sulfides or an acid soil horizon affected by oxidation of sulfides.

“annual return period” means the most current 12 month period between two anniversary dates.

“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:

- operations of any kind and all things constructed, erected or installed for that dam; and
- any land used for those operations.

“background noise level” means the sound pressure level, measured in the absence of the noise under investigation, as the L A90,T being the A-weighted sound pressure level exceeded for 90 percent of the measurement time period T of not less than 15 minutes, using Fast response.

“bed and banks” for a watercourse or wetland means land over which the water of the watercourse or wetland 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 or banks that is from time to time covered by floodwater.

“beneficial use” means

- with respect to dams, that the current or proposed owner of the land on which a dam stands, has found a use for that dam that is:
 - of benefit to that owner in that it adds real value to their business or to the general community,
 - in accordance with relevant provisions of the *Environmental Protection Act 1994*,
 - 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. Or
- with respect to coal seam gas water, refer the DERM's Operational Policy *Management of water produced in association with petroleum activities (CSG water)* and *Notice of decision to approve a resource for beneficial use – CSG water* which can be accessed on DERM's website at www.derm.qld.gov.au.

“brine” means either saline water with a total dissolved solid concentration greater than 40,000mg/l or CSG water after it has been concentrated through water treatment processes and/or evaporation.

“bund or banded” in relation to spill containment systems for fabricated or manufactured tanks or containers designed to a recognised standard means an embankment or wall of brick, stone, concrete or other impervious material which may form part or all of the perimeter of a compound and provides a barrier to retain liquid. Since the bund is the main part of a spill containment system, the whole system (or banded area) is sometimes colloquially referred to within industry as the bund. The bund is designed to contain spillages and leaks from liquids used, stored or processed above ground and to facilitate clean-up operations. As well as being used to prevent pollution of the receiving environment, bunds are also used for fire protection, product recovery and process isolation.

“category A ESA” means any area listed in Schedule 12, Section 1 of the Environmental Protection Regulation 2008.

“category B ESA” means any area listed in Schedule 12, Section 2 of the Environmental Protection Regulation 2008.

“category C ESA” means any of the following areas:

- Nature Refuges as defined under the *Nature Conservation Act 1992*;
- Koala Habitat Areas as defined under the *Nature Conservation Act 1992*;
- State Forests or Timber Reserves as defined under the *Forestry Act 1959*;
- Declared catchment areas under the *Water Act 2000*;
- Resources reserves under the *Nature Conservation Act 1992*
- An area identified as “Essential Habitat” for a species of wildlife listed as endangered, vulnerable, rare or near threatened under the *Nature Conservation Act 1992*;
- Any wetland shown on the Map of Referable Wetlands available from DERM’s website; or
- “Of concern” regional ecosystems identified in the database maintained by DERM called ‘Regional ecosystem description database’ containing regional ecosystem numbers and descriptions.

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

“certification 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:

- exactly what is being certified and the precise nature of that certification.
- the relevant legislative, regulatory and technical criteria on which the certification has been based;
- 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
- the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

“certified 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:

- exactly what has been assessed and the precise nature of that assessment;
- the relevant legislative, regulatory and technical criteria on which the assessment has been based;
- 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

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

“clearing” means:

- in relation to grass, scrub or bush—the removal of vegetation by disturbing root systems and exposing underlying soil (including burning), but does not include—
 - the flattening or compaction of vegetation by vehicles if the vegetation remains living; or
 - the slashing or mowing of vegetation to facilitate access tracks; or
 - the clearing of noxious or introduced plant species; and
 - in relation to trees—cutting down, ringbarking, pushing over, poisoning or destroying in any way

“commercial place” means a work place used as an office or for business or commercial purposes, which is not part of the petroleum activities and does not include employees accommodation or public roads.

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

“consequence category” means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933).

“construction” in relation to a dam includes building a new dam and modifying or lifting an existing dam.

“Control Measure” has the meaning in section 47 of the Environmental Protection Regulation 2008 and means a device, equipment, structure, or management strategy used to prevent or control the release of a contaminant or waste to the environment.

“CSG water” means groundwater that is necessarily or unavoidably brought to the surface in the process of coal seam gas exploration or production. CSG water typically contains significant concentrations of salts, has a high sodium adsorption ratio (SAR) and may contain other contaminants that have the potential to cause environmental harm if released to land or waters through inappropriate management. CSG water is a waste, as defined under s13 of the EP Act.

“CSG water concentrate” is the concentration of saline water waste stream from a water treatment process that does not exceed a total dissolved solid concentration of 40,000mg/L.

“CSG evaporation dam” is defined as an impoundment, enclosure or structure that is designed to be used to hold CSG water for evaporation.

“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.

“design plan” means 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 design and investigation reports, specifications and certifications, together with the planned decommissioning and rehabilitation works and outcomes. A design plan may include ‘as constructed’ drawings.

“discharge area” means:

- (a) that part of the land surface where groundwater discharge produces a net movement of water out of the groundwater; and
- (b) identified by an assessment process consistent with the document: Salinity Management Handbook, Queensland Department of Natural Resources, 1997; or
- (c) identified by an approved salinity hazard map held by the Department of Environment and Resource Management.

“ecosystem functioning” means the interactions between and within living and nonliving components of an ecosystem and generally correlates with the size, shape and location of an area of vegetation.

“enclosed flare” means a device where the residual gas is burned in a cylindrical or rectilinear enclosure that includes a burning system and a damper where air for the combustion reaction is admitted.

“end” means the stopping of the particular activity that has caused a significant disturbance in a particular area. It refers to, among other things, the end of a seismic survey or the end of a drilling operation. It does not refer to the end of all related activities such as rehabilitation. In other words, it does not refer to the ‘completion’ of the petroleum activity, the time at which the petroleum authority ends or the time that the land in question ceases to be part of an authority.

“equivalent person or EP” means an equivalent person under volume 1, section 2 of the *Guidelines for Planning and Design of Sewerage Schemes*, October 1991, published by the Water Resources Commission, Department of Primary Industries, Fisheries and Forestry.

“essential petroleum activities” means activities that are essential to bringing the resource to the surface and are only the following:

- low impact petroleum activities
- single well sites not exceeding 1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance
- associated infrastructure located on a well site necessary for the construction and operations of wells:
 - water pumps and generators
 - flare pits
 - above ground containers and chemical / fuel storages
 - sumps for residual drilling material and drilling fluids
 - dams to contain stimulation flow back waters that are not significant or high hazard dams
 - erosion and sediment and control structures
 - pipe laydown and vegetation stockpile areas
 - a temporary camp associated with a drilling rig that may involve sewage treatment works that are no release works
- communication and power lines that are necessary for the undertaking of petroleum activities and that are located within well sites, well pads and pipeline right of ways without increasing the disturbance area of petroleum activities
- ecological surveys, geophysical surveys, topographic or cadastral surveys or geological surveys (including seismic and geotechnical petroleum activities)
- gathering / flow pipelines from a well head to the initial compression facility
- supporting access tracks.

“fill” means any kind of material in solid form (whether or not naturally occurring) capable of being deposited at a place but does not include material that forms a part of, or is associated with, a structure constructed in a watercourse, wetland or spring including a bridge, road, causeway, pipeline, rock revetment, drain outlet works, erosion prevention structure or fence.

“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” means 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 acceptably low probability of failure before that time.

“groundwater dependent ecosystems” means ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services.

For the purposes of the environmental authority, groundwater dependent ecosystems do not include those mapped as “unknown”.

“hazard” in relation to a dam as defined, 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 *DERM’s Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (Version 1.0, 2008)* or any updated version of the Manual that becomes available from time to time.

“heritage place” means any place that may be of cultural heritage significance, or any place with potential to contain archaeological artefacts that are an important source of information about Queensland’s history.

“high bank” means the defining terrace or bank or, if no bank is present, the point on the active floodplain, which confines the average annual peak flows in a watercourse.

“highly erodible soils” means very unstable soils that are generally described as Sodosols with hard – setting, fine sandy loam to silty clay loam surfaces (solodics, solodised solonetz and solonetz) or soils with a dispersible layer located less than 25cm deep or soils less than 25cm deep.

“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 *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (Version 1.0, 2008)* published by DERM on its website.

“impulsive sound” means sound characterised by brief excursions of sound pressure (acoustic impulses) that significantly exceed the background sound pressure. The duration of a single impulsive sound is usually less than one second.

“infrastructure” means water storage dams, roads and tracks, equipment, buildings and other structures built for the purpose and duration of the conduct of the petroleum activities, but does not include other facilities required for the long term management of the impact of those activities or the protection of potential resources. Such other facilities include dams other than water storage dams (e.g. evaporation dams), pipelines and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.

“itinerant activities” means activities that are carried out at various locations using transportable plant or equipment and carried out at one location and for less than 14 consecutive days and on more than two occasions in each calendar year.

“LAeq, adj, 15 min (total source noise)” means the equivalent continuous (energy average) A-weighted sound pressure level of the source over 15 minutes., adjusted for tonality and impulsiveness for all contributing noise sources subject to this environmental authority.

“lake” means:

- (a) 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.

“landfill monocell” means a specialised, isolated landfill facility where a single specific waste type is exclusively disposed (i.e. salt).

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

“levee” means a dyke or bund 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 unplanned releases from other works of infrastructure, during the progress of those stormwater or flood flows or those unplanned releases; and does not store any significant volume of water or flowable substances at any other times.

“linear Infrastructure” means powerlines, pipelines and access tracks.

“low impact petroleum activities” means petroleum activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation or result in significant disturbance to land which cannot be rehabilitated immediately using hand tools after the activity is completed. Examples of such activities include but are not necessarily limited to soil surveys (excluding test pits), topographic surveys, cadastral surveys and ecological surveys, may include installation of monitoring equipment provided that it is within the meaning of low impact and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.

“max LPZ, 15 min” means the maximum value of the Z-weighted sound pressure level measured over 15 minutes.

“material impact” for the purposes of Condition D37 means an increase in concentration of a chemical used in fracturing fluids on PL191 and PL196 of >10% above background, detection of a chemical that was not present in the background sample or a chemical present at a concentration in excess of drinking water quality guidelines.

“mg/L” means milligrams per litre.

“oil based drilling muds”- Oil-based mud where the base fluid is a petroleum product such as diesel fuel.

“overland flow water” means water, including floodwater, flowing over land, otherwise than in a watercourse or lake:

- after having fallen as rain or in any other way; or
- after rising to the surface naturally from underground.

“permanent infrastructure” includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads, pipelines etc), which is to be left by agreement with the landowner.

“pest” means species:

- (a) declared under the *Land Protection (Pest and Stock route Management) Act 2002*;
- (b) declared under Local Government model local laws; and
- (c) which may become invasive in the future.

“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.

“primary protection zone” means an area within a 200 metre buffer from the boundary of any Category A, B or C Environmentally Sensitive Area.

“regulated dam” means any dam in the significant or high hazard category as assessed using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (Version 1.0, 2008)* or any updated version of the Manual that becomes available from time to time.

“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.

“remnant unit” means a continuous area of remnant vegetation representative of a single Regional Ecosystem type or a single heterogeneous unit (multiple Regional Ecosystem types that cannot be distinguished individually due to the scale of mapping).

“secondary protection zone” in relation to a Category A Environmentally Sensitive Area means an area within an 100m buffer from the boundary of a **primary protection zone**.

“secondary protection zone” in relation to a Category B or C Environmentally Sensitive Area means an area within a 100m buffer from the boundary of a **primary protection zone**.

“sensitive place” means

- a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel; or
- a library, childcare centre, kindergarten, school, university or other educational institution;
- a medical centre, surgery or hospital; or
- a protected area; or
- a public 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 or significant disturbance to land” means disturbance to land as defined in section 28 of the Environmental Protection Regulation 2008.

“Significant residual impacts” has the meaning in section 8 *Environmental Offsets Act*

2014. **“site”** means the petroleum authority(ies) to which the environmental authority relates.

“spring” means the land to which water rises naturally from below the ground and the land over which the water then flows.

“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.

“state heritage place” means a place entered in the Queensland heritage register under Part 4 of the *Queensland Heritage Act 1992*.

“structure” means dam or levee

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

“stimulation” means a technique used to increase the permeability of a natural underground reservoir, including, for example, hydraulic fracturing, cavitations, fracture acidising, and the use of proppant treatments.

“suitably qualified and experienced person” in relation to 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:

- knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impacts of dams; and
- 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
- a total of five years of suitable experience and demonstrated expertise each, in three of the following categories:
 - investigation and design of dams.
 - 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

“synthetic based drilling muds”- Synthetic-based fluid is a mud where the base fluid is a synthetic oil.

“third party auditor” means a suitably qualified person who is either a certified third party auditor or an internal auditor employed by the holder of the environmental authority and the person is independent of the day to day management and operation of activities covered by this environmental authority.

“threatening processes” means processes, features and actions that can have a detrimental effect upon the health and viability of an area of vegetation. For example altered hydrology, land use practices, invasion by pest and weed species, land degradation, edge effects and fragmentation.

“tolerable limits” means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values. For example, a range of settlement for a tailings capping, rather than a single value, could still meet the objective of draining the cap quickly, preventing damage and limiting infiltration and percolation.

“topsoil” means the surface (top) layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from the natural surface.

“valid complaint” means a complaint regarding any petroleum activity carried out on the site which has been made to the administering authority and that the administering authority considers is neither frivolous nor vexatious nor based on mistaken belief.

“void” means any man-made, open excavation in the ground (includes borrow pits, drill sumps, frac pits, flare pits, cavitation pits and trenches).

“waters” includes all or any part of a creek, river, stream, lake, lagoon, dam, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.

“watercourse” means a river, creek or stream in which water flows permanently or intermittently:

- (a) in a natural channel, whether artificially improved or not; or
- (b) in an artificial channel that has changed the course of the watercourse;
but, in any case, only:
- (c) unless a regulation under paragraph (d), (e) or (f) declares otherwise-at every place upstream of the point (point A) to which the high spring tide ordinarily flows and reflows, whether due to a natural cause or to an artificial barrier; or
- (d) if a regulation has declared an upstream limit for the watercourse-the part of the river, creek or stream between the upstream limit and point A; or
- (e) if a regulation has declared a downstream limit for the watercourse-the part of the river, creek or stream upstream of the limit; or
- (f) if a regulation has declared an upstream and a downstream limit for the watercourse-the part of the river, creek or stream between the upstream and the downstream limits.

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

“wetland” means an area shown as a wetland on a ‘Map of referable wetlands’, a document approved by the chief executive (environment). A map of referable wetlands can be viewed at www.ehp.qld.gov.au.

“wild river declaration” means a statutory instrument under the *Wild Rivers Act 2005*. A declaration lists the relevant natural values to be preserved and delineates certain parts of the wild river area and the different constraints that may apply in these areas. With reference to environmental authorities for petroleum, each declaration also specifies conditions to be included in a new authority if the activity is to be located within the wild river area.

“80th percentile release limits” means that not more than one of the measured values is to exceed the stated release limit for any five consecutive samples where:

- (1) the consecutive samples are taken over a five month period; and
- (2) the consecutive samples are taken at approximately equal periods.

END OF ENVIRONMENTAL AUTHORITY