

Department of Environment and Heritage Protection

Permit¹

Environmental Protection Act 1994

Environmental authority

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

Permit¹ number: EPPG00676613

Environmental authority takes effect: 11 November 2014

The anniversary date of this environmental authority is 15 October.

Environmental authority holder(s)

Name	Registered address
Merlin Energy Pty Ltd ACN: 081 592 734	56 - 58 Jephson Street TOOWONG QLD 4066
Total GLNG Australia	BGC Centre Level 13, 28 The Esplanade PERTH WA 6000

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
Non-mining resource activities	Authority to Prospect (ATP) 912

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation 13



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

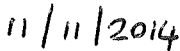
It is a requirement of the EP Act that if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being, contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.



Signature

Anthony Baker

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



Date

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Conditions of environmental authority

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SCHEDULE A – GENERAL CONDITIONS

Authorised Resource Activities

- (A1) This environmental authority authorises the carrying out of the following resource activities:
- the petroleum activities and specified relevant activities listed in **Schedule A, Table 1 - Authorised Petroleum Activities** to the extent they are carried out in accordance with the activity's corresponding scale or intensity or both (where applicable); and
 - incidental activities that are not otherwise specified relevant activities.
- (A2) The authorised resource activities are authorised subject to the conditions of this environmental authority.
- (A3) This environmental authority does not authorise a relevant act to occur in carrying out an authorised resource activity unless a condition expressly authorises that relevant act to occur. Where there is no condition, the lack of a condition must not be construed as authorising the relevant act.

Schedule A, Table 1 – Authorised Petroleum Activities

Authorised Petroleum Activity	Scale		Intensity
	Maximum size	Location	
Petroleum activities			
Tight oil and gas exploration and appraisal	N/A	Within <u>project area</u>	6 wells
Shale oil and gas exploration and appraisal			
Conventional oil and gas exploration and appraisal			
Specified relevant activities			
<u>Stimulation</u> activities	N/A	Within project area	N/A

Mainte

nance of Measures, Plant and Equipment

- (A4) The holder of the environmental authority must:
- install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;
 - maintain such measures, plant and equipment in their proper and effective condition; and
 - operate such measures, plant and equipment in a proper and effective manner.
- (A5) 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 authorised resource activities.

Contingency Plan for Emergency Environmental Incidents

- (A6) A Contingency Plan for Emergency Environmental Incidents must be developed prior to the carrying out of the authorised resource activities.

- (A7) The Contingency Plan for Emergency Environmental Incidents must include, but not necessarily be limited to:
- (a) a clear definition of what constitutes an environmental emergency incident or near miss for the authorised petroleum activities authorised to be carried out under this environmental authority;
 - (b) identification of the types of environmental incidents that may occur, including but not limited to flooding impacts, relevant to the authorised petroleum activities authorised to be carried out under this environmental authority;
 - (c) response procedures to minimise the extent and duration of environmental harm caused by environmental emergency incidents;
 - (d) the resources to be used in response to environmental emergency incidents;
 - (e) plans for restoring loss of well mechanical integrity so as to prevent environmental harm;
 - (f) procedures to avoid / minimise discharges resulting from any overtopping or loss of structural integrity of a dam;
 - (g) procedures to investigate the cause of any incidents including releases or near misses, and where necessary, the remedial actions to be implemented to reduce the likelihood of recurrence of similar events;
 - (h) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused;
 - (i) procedures for accessing monitoring locations during emergency environmental incidents;
 - (j) a receiving environment monitoring program, to be specifically implemented in the event of a release to waters or land to examine / assess environmental impacts. For monitoring of waters, this program must include upstream, downstream and impact site monitoring procedures. For soils monitoring, three replicate samples must be taken at depth intervals of 0-10 cm, 20-30 cm and 50-60 cm at both a reference site and the impact site as a minimum;
 - (k) communication procedures and lines of communication within and beyond the organisation, including but not limited to Local Government, to be employed in responding to environmental emergency incidents;
 - (l) the provision and availability of documented procedures to staff attending any emergency environmental incident to enable them to effectively respond;
 - (m) training of staff that will be called upon to respond to emergency environmental incidents to enable them to effectively respond;
 - (n) timely and accurate reporting of the circumstance and nature of emergency environmental incidents to the administering authority and any affected landholder, occupier and / or their nominated representative in accordance with conditions of this environmental authority.

Infrastructure

- (A8) The following infrastructure must be clearly and permanently marked for the life of the authorised resource activities with a unique reference name / number in such a way that it is clearly observable:
- (a) low hazard dams;
 - (b) exploration and appraisal well
- (A9) The holder of this environmental authority must ensure that records containing construction dates of authorised resource activities infrastructure associated with the authorised resource activities are available to the administering authority upon request.

Monitoring

- (A10) All monitoring required under this environmental authority must be undertaken by a suitably qualified person.
- (A11) All laboratory analyses and tests required to be conducted under this environmental authority must be carried out by a laboratory that has NATA accreditation for such analyses and tests, except as otherwise authorised by the administering authority.

- (A12) Any management or monitoring plans, systems, programs or procedures required to be developed and implemented by a condition of this environmental authority must be reviewed for performance and amended as required but not less than once every three (3) years in accordance with the requirements for the particular plans, systems, programs and procedures in the conditions of this environmental authority.
- (A13) If monitoring conducted in accordance with this environmental authority indicates a circumstance, condition or contaminant level has caused, or has potential to cause, environmental harm, the holder of this environmental authority must, as soon as is practicable, take the necessary actions to rectify the circumstance, condition or contaminant level so as to avoid or minimise environmental harm.
- (A14) An annual report must be prepared each year and submitted to the administering authority with each annual return. This report must include but not necessarily be limited to:
- (a) a comparison of the previous 12 months monitoring results to both the limits set in this environmental authority and to relevant prior results including data analyses and interpretation to assess the nature and extent of any contamination and the level of environmental harm caused as a result of the contamination and the environmentally relevant activity(ies); and
 - (b) details of any exceedances with the conditions of this environmental authority and the dates and times these exceedances were reported to the administering authority;
 - (c) an outline of actions taken to minimise the risk of environmental harm from any circumstance, condition or elevated contaminant level identified by the monitoring or recording programs as required by condition (A12).
 - (d) the results of the Rehabilitation Monitoring Program undertaken on rehabilitation carried out under the previous annual report and an assessment in relation to the requirements and acceptance criteria set out in this environmental authority.

Surface water Sampling Methodology

- (A15) The methods of water sampling required by this environmental authority must comply with that set out in the latest edition of the *Queensland Monitoring and Sampling Manual* as amended from time to time.

Groundwater Sampling Methodology

- (A16) The methods of groundwater sampling required by this environmental authority must comply with the latest edition of the *Queensland Monitoring and Sampling Manual*, AS/NZS 5667:11 1998 *Water Sampling Guidelines – Part 11 Guidance on sampling groundwater*, and the Australian Government's *Groundwater Sampling and Analysis – A Field Guide* (2009:27 GeoCat #6890.1) as relevant and as may change from time to time.

Noise Sampling Methodology

- (A17) Noise must be measured in accordance with the prescribed standards in the *Environmental Protection Regulation 2008*.

Documentation and Records Management

- (A18) A record of all documents required by this environmental authority must be kept for a minimum of five (5) years.
- (A19) All plans, procedures and monitoring programs required by this environmental authority must be certified by a suitably qualified person.
- (A20) All documents required under this environmental authority must be developed in a way that is consistent with the requirements of this environmental authority.
- (A21) All plans, procedures and monitoring programs required under this environmental authority must be implemented.

Financial Assurance

- (A22) Authorised resource activities that cause significant disturbance to land must not be carried out until financial assurance has been given to the administering authority as security for compliance with the environmental authority and any costs or expenses, or likely costs or expenses, mentioned in section 298 of the *Environmental Protection Act 1994*.

- (A23) Prior to any changes in authorised resource activities which would result in an increase to the maximum significant disturbance since financial assurance was last given to the administering authority, the holder of the environmental authority must amend the financial assurance and give the administering authority the increased amount of financial assurance.
- (A24) If the amount of financial assurance held by the administering authority has been discounted and either the nominated period of financial assurance has ended, or an event or change in circumstance has resulted in the holder of the environmental authority no longer being able to meet one or more of the mandatory pre-requisites or applicable discount criteria, the holder of the environmental authority must amend the financial assurance and give the administering authority the increased amount of financial assurance as soon as practicable.

SCHEDULE B - WATER

Contaminant Release

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

Wild River Areas

- (B2) Only limited petroleum activities (other than activities carried out for specified works) are permitted in the high preservation area (HPA) or special floodplain management area (SFMA).
- (B3) With the exception of temporary campsites/workforce accommodation, only limited petroleum activities are permitted in the HPA or SFMA.
- (B4) Specified works in the HPA and SFMA must be co-located to the greatest possible extent.
- (B5) Operationally generated waters must not be released to any surface waters within the SFMA.
- (B6) Contaminants must not be directly or indirectly released to any waters in the HPA or SFMA except as permitted under this environmental authority.
- (B7) Contaminants must not be directly or indirectly released to land in the HPA or SFMA except as authorised by condition I5.
- (B8) Limited petroleum activities and temporary campsites/workforce accommodation in the HPA or SFMA must not increase the natural movement of sediment beyond the work area and must not increase the delivery of sediment to water either during or following construction activities.
- (B9) Limited petroleum activities and temporary campsites/workforce accommodation in the HPA or SFMA must not:
- (a) concentrate flood flows in a way that will or may cause or threaten an adverse impact on wild river natural values; or
 - (b) divert flood flows from natural drainage paths; or
 - (c) increase the local duration of floods; or
 - (d) increase the risk of detaining flood flows.
- (B10) Construction or operational works associated with the limited petroleum activity(ies) and temporary campsites/workforce accommodation referred to in condition (B9) must not be located in a flood channel.
- (B11) Overland flow diverted as a result of construction or operational works associated with the limited petroleum activity(ies) and temporary campsites/workforce accommodation must exit the tenement at approximately the same location that the water exited the tenement prior to the works.
- (B12) For limited petroleum activities and specified works carried out within the bed and banks of a watercourse, wetland, lake or spring located within the HPA or SFMA, limited petroleum activities including specified works must:
- (a) not result in disturbance to the bed and banks of a watercourse, wetland, lake or spring beyond the minimum area necessary for the purpose of the disturbance; and
 - (b) be designed and undertaken by a suitably qualified person taking into account the matters listed in the 'Planning Activities' and 'Impact Management During Activities' sections of the administering authority's 'Guideline Activities in a watercourse, lake or spring associated with mining operations' December 2010, as amended from time to time.
- (B13) Upon cessation of the works described in Condition (B12), progressive rehabilitation must commence immediately.
- (B14) There must be no introduction of weeds or pests in the HPA or SFMA as a result of the activity.
- (B15) Any clearing of vegetation in a wildlife corridor or in a riparian zone in the HPA or SFMA must not be carried out in a way which 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.

- (B16) Waste must not be disposed of within the SFMA, where waste includes, but is not limited to, operational by-products of any kind, including sewage, contaminant fluids, and garbage.
- (B17) Rehabilitation of disturbed land in the HPA or SFMA caused by the carrying out of the limited petroleum activity(ies) which is not required for the ongoing conduct of the limited petroleum activity(ies) must commence as soon as practicable, but not longer than three (3) months following the completion of any construction or operational works associated with the limited petroleum activity(ies).
- (B18) Rehabilitated areas in the HPA or SFMA must:
- (a) be a stable landform;
 - (b) exhibit no subsidence or erosion gullies;
 - (c) be re-profiled to a level consistent with surrounding soils;
 - (d) be re-profiled to original contours and established drainage lines;
 - (e) be visually consistent with the surrounding land features;
 - (f) be vegetated with species of the surrounding areas;
 - (g) feature communities that are to the same as those of the adjacent and surrounding areas;
 - (h) be vegetated with flora that is resilient and self-sustaining (demonstrated by reproduction and colonisation);
 - (i) be managed until plant communities are restored to natural functioning; and
 - (j) be free of any declared pest plants.
- (B19) The size of any temporary campsites/workforce accommodation in the HPA or SFMA is limited to 2250m² and no more than 30 people are accommodated at any time.
- (B20) All waste products associated with the establishment and operation of a temporary campsite/workforce accommodation are only temporarily stored, and must be physically removed from the special floodplain management area for disposal regularly.
- (B21) Authorised resource activities (other than activities carried out for specified works and linear infrastructure) must not occur within:
- (a) 200 lateral metres of a watercourse, lake or spring that is in the high preservation area or special floodplain management area; or
 - (b) 100 lateral metres of a nominated waterway; and
- (B22) For activities carried out for pipelines or flow lines in the high preservation area or special floodplain management area:
- (a) any interference with overland flow and the potential for any interference with overland flow, must be temporary; and
 - (b) works must be planned in such a way as to minimise the potential for, and duration of, interference with overland flow; and
 - (c) the activities must not interfere with water in a watercourse, lake or spring (other than activities that are of a temporary nature).
- (B23) For activities carried out for pipelines or flow lines in a floodplain management area in the preservation area:
- (a) any interference with overland flow and the potential for any interference with overland flow, must be temporary; and
 - (b) works must be planned in such a way as to minimise the potential for, and duration of, interference with overland flow; and
 - (c) the activities must not interfere with water in a nominated waterway (other than activities that are of a temporary nature).

- (B24) Despite conditions (B2) to (B21):
- (a) this declaration does not prohibit seismic activities from being undertaken anywhere within the Georgina and Diamantina Basins Wild River Area; and
 - (b) temporary campsites/workforce accommodation and infrastructure necessary to support their operation, are not prohibited within the special floodplain management area provided that they comply with conditions (B3) to (B20), and they do not occur within 200 lateral metres of a watercourse, lake or spring in the special floodplain management area.
- (B25) Specified works must not be constructed across a watercourse in the high preservation area or special floodplain management area, or across a nominated waterway where an alternative watercourse crossing is already in existence and is within a reasonable distance.
- (B26) To remove any doubt, subject to conditions (B2) to (B20), (B22) and (B25), the construction of specified works is not prohibited by this declaration anywhere in the wild river area.

Floodplains

- (B27) Where the authorised resource activities are carried out on floodplains, the authorised resource activities must be carried out in a way that does not:
- (a) concentrate flood flows in a way that will or may cause or threaten an adverse environmental impact; or
 - (b) divert flood flows from natural drainage paths and alter flow distribution; or
 - (c) increase the local duration of floods; or
 - (d) increase the risk of detaining flood flows; or
 - (e) pose an unacceptable risk to the safety of persons from flooding; or
 - (f) pose an unacceptable risk of damage to property from flooding.

Works in watercourses, wetlands, lakes and springs not located within the HPA or SFMA

- (B28) Unless otherwise authorised under this environmental authority, authorised resource activities that require earthworks, vegetation clearing and / or placing fill, other than that associated with the construction of linear infrastructure, is not permitted in or within:
- (a) 200 metres from any wetland, lake or spring not located within the HPA or SFMA; or
 - (b) 100 metres of the high bank of any other watercourse not located within the HPA or SFMA.
- (B29) Works for linear infrastructure resulting in significant disturbance to a watercourse, wetland, lake or spring not located within the HPA or SFMA must:
- (a) be no greater than the minimum area necessary for the purpose of the significant disturbance;
 - (b) be for a maximum period of 10 business days;
 - (c) be designed and undertaken by a suitably qualified person in accordance with the guideline Activities in a watercourse, lake or spring associated with a resource activity or mining operations as amended from time to time; and
 - (d) upon cessation of the works, be rehabilitated immediately.

Springs

- (B30) There must be no impacts to springs.

SCHEDULE C – REGULATED STRUCTURES

(C1a) Regulated structures are not permitted.

Assessment of Hazard Category

- (C1b) The hazard category of any structure must be assessed by a suitably qualified and experienced person in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, as amended from time to time.
- (C2) The hazard assessment required under condition (C1b) must occur in any of the following situations:
- (a) prior to the design and construction of the structure;
 - (b) prior to any change in its purpose or its stored contents;
- (C3) A hazard assessment report and certification must be prepared for any structure assessed and the report may include a hazard assessment for more than one structure.
- (C4) On receipt, one paper copy and one electronic copy of the hazard assessment report and certification must be provided to the administering authority.
- (C5) All certifications must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, as amended from time to time.

Construction of Low Hazard Dam to Contain Wetting Front

- (C6) Where a dam is assessed as low hazard, it must be
- (a) constructed, operated and maintained in accordance with accepted engineering standards currently appropriate for the purpose for which the dam is intended to be used; and
 - (b) designed with a floor and sides made of material that will contain the wetting front and any entrained contaminants within the bounds of the containment system during both its operational life and including any period of decommissioning and rehabilitation.
- (C7) Where the hazard category of a dam is for the first time assessed as significant or high, the holder of this environmental authority must:
- (a) as soon as reasonably possible, advise the administering authority of the current details of that dam, including:
 - i. the assessed hazard category of that dam; and
 - ii. sufficient points of latitude and longitude in the current Australian geodetic datum to form a perimeter around that dam and its associated works; and
 - iii. the maximum surface area, maximum volume, maximum depth of that dam; and
 - (b) apply to amend this environmental authority to a level 1 environmental authority; and
 - (c) ensure that the dam meets the hydraulic performance required of the assessed hazard category within 12 months of that assessment.
- (C8) In the event of early signs of loss of structural or hydrological integrity of a low hazard dam:
- (a) immediate action to prevent or minimise any actual or potential environmental harm must be taken; and
 - (b) any findings and actions taken must be reported in writing to the administering authority within 20 business days of that event.

Monitoring of Low Hazard Dams

- (C9) The condition of all low hazard dams must be monitored for early signs of loss of structural or hydraulic integrity, based on the advice of a suitably qualified and experienced person. The methods of monitoring and frequency of monitoring shall be as assessed by the person who conducts the hazard assessment based on the particular circumstances of each dam.

Access to dams

- (C10) Any low hazard dam constructed as part of the authorised resource activities must be managed so that either:
- (a) where the quality of the water is likely to result in adverse health effects if contacted or consumed – adequate barriers are provided to limit access to the water by humans, livestock and native fauna; or
 - (b) where the quality of the water will not result in any adverse health effects if contacted or consumed – safe access to the water is provided for livestock and native fauna.

Decommissioning of dams

- (C11) Dams must not be abandoned but be either:
- (a) decommissioned and rehabilitated to achieve compliance with condition H2; or
 - (b) be left in-situ for a beneficial use provided that it:
 - (i) no longer contains contaminants that will migrate in to the environment; and
 - (ii) contains water of a quality that is demonstrated to be suitable for all its intended beneficial uses; and
 - (iii) the administering authority and the landholder agree in writing that the dam will be used by the landholder following the cessation of the authorised resource activities.

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SCHEDULE D - LAND

Contaminated releases

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

Soil Management Plan

- (D2) A Soil Management Plan must be developed prior to the carrying out of any authorised resource activities authorised by this environmental authority for land that is to be significantly disturbed.
- (D3) The Soil Management Plan must include, but not necessarily be limited to:
- (a) procedures for describing landforms on the relevant resource authority(ies) either by landform patterns or landform elements and dependant on level of disturbance that will occur at any particular location and the complexity of the landscape;
 - (b) procedures for characterising soils to be significantly disturbed using mapping and by classification (including soil order and if appropriate, suborders and a description of soil profiles;
 - (c) procedures for acquiring baseline soils data for soils that are to be significantly disturbed including pH, electrical conductivity (EC), chloride, cations (aluminium, calcium, magnesium, potassium and sodium), exchangeable sodium percentage (ESP), particle size and soil fertility (including carbon, nitrogen, phosphorous, potassium, sulphur and micronutrients);
 - (d) identification of the types of soils and soil units requiring specific management practices (e.g. saline or sodic soils) relevant to assessment for agricultural suitability, erodibility and rehabilitation;
 - (e) for areas of good quality agricultural land, detailed methods to be undertaken to minimise potential impacts to soil productivity;
 - (f) detailed horizon and soils compaction management procedures for soils, including top soil and top soil stockpile management procedures and methods of keeping top soils separate on excavation, storage and backfilling so as to minimise the impacts of soil disturbance and promote successful rehabilitation;
 - (g) detailed mitigation measures and procedures for soils to manage the risk of adverse soil disturbance in the carrying out of the authorised resource activities; and
 - (h) a soils impact monitoring program outlining parameters to be monitored, frequency of monitoring and acceptable ranges for each parameter.
- (D4) A copy of the Soil Management Procedures must be made available to any potentially affected landholder upon request by that landholder.

Soil Management

- (D5) Except in areas of highly erodible soils, top soil must be:
- (a) removed from an area prior to other significant disturbance commencing in the area;
 - (b) stockpiled in a manner that will minimise erosion and preserve its biological and chemical integrity; and
 - (c) used for on-site rehabilitation purposes.
- (D6) Highly erodible soils must not be disturbed as a result of the carrying out of authorised resource activities.
- (D7) Despite (D6), where the disturbance of sand dunes is unavoidable, 2D seismic survey may be undertaken, provided reinstatement occurs immediately after the activity and rehabilitation is undertaken in accordance with Schedule H – Rehabilitation and the final acceptance criteria is achieved as outlined by condition (H5).

Acid Sulfate soils

- (D8) The following activities are not permitted in acid sulfate soils:
- (a) any excavation or otherwise removing 100 m³ or more of soil or sediment; or
 - (b) filling of land involving 500 m³ or more of material with an average depth of 0.5 m or greater.

A.6

Chemical Storage

- (D9) This environmental authority does not authorise chemical storage in excess of:
- (d) a total quantity of:
 - (i) 500 m³ of chemicals of class C1 or C2 combustible liquids or dangerous goods class 3 under AS 1940 *The Storage and Handling of Flammable and Combustible Liquids*; or
 - (ii) 50t or more of chemicals of dangerous goods class 1 or class 2, division 2.3; or
 - (e) 50 tonnes or more of chemicals of dangerous goods class 6, division 6.1 in containers capable of holding at least 900 kg of the chemicals.
- (D10) Chemicals and fuels on the relevant resource authorities must be contained within an on-site containment system and controlled in a manner that prevents environmental harm.
- (D11) All petroleum product storage's must be designed, constructed and maintained in accordance with AS 1940 - Storage and Handling of Flammable and Combustible Liquids.

Fauna Management

- (D12) Measures must be employed to prevent fauna entrapment during the construction and operation of well infrastructure and dams.

Pipelines

- (D13) The construction of pipelines is not authorised under this environmental authority.

SCHEDULE E - DISTURBANCE TO LAND

Ground-truthing Surveys

- (E1) Prior to conducting authorised resource activities that involve significant disturbance to land, an assessment must be undertaken of the condition, type and ecological value of soils and vegetation in such areas where the activity is proposed to take place.
- (E2) The assessment required by condition 0 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, areas of State Significant Biodiversity Value, wetlands and the presence of species classed as endangered, vulnerable, rare or near threatened under the *Nature Conservation Act 1992*.
- (E3) The assessment required by condition 0 must include, but not necessarily be limited to:
- (a) baseline soils quality data for soil to be significantly disturbed as provided for in the Soils Management Plan;
 - (b) identification of the vegetation communities present (including species composition and regional ecosystem type¹ for native vegetation communities) within each area(s) to be disturbed;
 - (c) data representing each vegetation community present within each area(s) to be rehabilitated including:
 - (i) flora species richness and diversity;
 - (ii) structural data including woody stem count densities for dominant species within each stratum; and
 - (iii) percent foliage cover (accounting for seasonal variation and excluding pests);
 - (d) data regarding habitat features, including but not necessarily limited to:
 - (i) organic litter cover (%); and
 - (ii) trees with hollows $\geq 10\text{cm}$ diameter (count and number per hectare);
 - (iii) hollow bearing logs (count and number per hectare); and
 - (e) fallen woody material (total length of logs $\geq 10\text{ cm}$ diameter per hectare and number of logs $\geq 10\text{cm}$ diameter per hectare); and
 - (f) data on the level of ecosystem functioning;
 - (g) a map or series of maps of suitable scale displaying the distributing of vegetation communities.

Mapping Validation

- (E4) For authorised resource activities not authorised under the conditions of this environmental authority within a ground-truthed area due either to the ground-truthed value(s) or State mapped value(s), then the proponent must submit to the administering authority a report detailing the findings of field validation surveys as required by condition (E1). The report must include a certification by the suitably qualified person who undertook the survey.
- (E5) Proposed activities (subject to condition (E4)) may proceed in accordance with the conditions of the environmental authority and the ground-truthed value(s). In the instance where a proposed activity is authorised under the environmental authority based upon the ground-truthed value(s), but not the State mapped value(s), proposed activities may only proceed following a period of not less than twenty business days from receipt of the report by the administering authority.

¹ Regional ecosystem type should be established using the most current version of the Qld Government's "Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland". Assessment of the vegetation communities should be sufficient to establish any inherent variation within a single regional ecosystem type.

Site Planning

- (E6) Prior to carrying out authorised resource activities, the location of authorised resource activities must be selected to:
- (a) firstly avoid, then minimise, then mitigate any negative impacts on areas of vegetation or other areas of ecological value
 - (b) minimise disturbance to land that may otherwise result in land degradation;
 - (c) minimise isolation, fragmentation or dissection of tracts of vegetation that would lead to a reduction in the current level of ecosystem functioning or ecological connectivity
 - (d) minimise clearing of mature or hollow bearing trees.
- (E7) Prior to carrying out authorised resource activities, the holder of this environmental authority must make all relevant staff, contractors or agents carrying out those authorised resource activities, aware of the location of any Category A, B or C Environmentally Sensitive Areas, areas of State Significant Biodiversity Value, wetlands and presence of species classed as endangered, vulnerable, rare or near threatened under the *Nature Conservation Act 1992* and the requirements of this environmental authority.
- (E8) Significant disturbance to land caused by the carrying out of the authorised resource activities must not involve vegetation or placing 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;
 - (b) on slopes greater than 10 % for the authorised resource activities other than for wells; or
 - (c) in discharge areas.
- (E9) Where petroleum activities are undertaken within high value regrowth or remnant vegetation, for linear infrastructure, that significant disturbance to land does not exceed five (5) metres in width for access tracks.

Disturbance to Land – Environmentally Sensitive Areas

- (E10) Authorised resource activities must be carried out in accordance with Schedule E, Table 1 – Authorised Resource Activities in Environmentally Sensitive Areas.

Schedule E, Table 1 – Authorised Resource 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 authorised resource activities permitted.	No authorised resource activities permitted.	No authorised resource activities permitted.
Category B ESAs	No authorised resource activities permitted.	No authorised resource activities permitted.	No authorised resource activities permitted.
Category C ESAs that are Nature Refuges	Only <u>low impact petroleum activities</u> permitted	Only low impact petroleum activities permitted Subject to conditions (E14) to (E15).	Only <u>limited petroleum activities</u> permitted. Subject to conditions (B2) to (B27), (E14) to (E15).
Category C ESAs that are 'Of-concern' regional ecosystems	Only low impact petroleum activities permitted.	Only Limited petroleum activities permitted. Subject to conditions (B2) to (B27), (E14) to (E15).	Only limited petroleum activities permitted. Subject to conditions (B2) to (B27), (E14) to (E15).

(E11) Despite condition (E10) of this environmental authority, the activities specified in Schedule E: Table 2 – authorised resource activities Disturbance, are permitted in the location specified in Schedule E: Table 2 – Authorised Resource Activities Disturbance.

Schedule E: Table 2 – Authorised Resource Activities Disturbance

Tenure	Description of Activity and maximum size where applicable	Number	Location
ATP912	2D seismic survey	N/A	Within Category C ESAs that are Nature Refuges Within the primary protection zone of Category C ESAs that are Nature Refuges Within Category C ESAs that are 'Of-concern' regional ecosystems
	Exploration (core) wells and appraisal wells including temporary camp Maximum size 1.5ha	3	Within Category C ESAs that are Nature Refuges Within the primary protection zone of Category C ESAs that are Nature Refuges
	Temporary access tracks	50km, 5m width	
	Remediation and upgrade of existing access track network	-	

- (E12) 2D seismic surveys referred to in Schedule E: Table 2 includes:
- (a) traversal by vehicles and personnel for the purposes of 2D seismic surveys and the use of temporary, self-contained, mobile seismic camps; and
 - (b) may include occasional ground and vegetation disturbance only where:
 - (i) necessary to enable safe traversal of terrain; and
 - (ii) there is no practical alternative to avoid the disturbance.
- (E13) Temporary access tracks referred to in Schedule E: Table 2 are newly-constructed tracks for the purposes of accessing exploration and appraisal well sites from existing roads and tracks. Ground and vegetation disturbance for access tracks may occur only when
- (a) necessary to enable safe traversal of terrain; and
 - (b) there is no practical alternative to avoid the disturbance.
- (E14) Limited petroleum activities carried out in a primary or secondary protection zone must not be conducted in those areas where there is overlap with another Category A, B or C Environmentally Sensitive Area or primary protection zone where low impact or limited petroleum activities are not authorised.
- (E15) Prior to carrying out limited petroleum activities in a Category C ESA, primary or secondary protection zone, the holder of this environmental authority must demonstrate, in the following order of preference:
- (a) that no reasonable or practicable alternative exists for carrying out the limited petroleum activities within the primary or secondary protection zones of Category C ESAs;
 - (b) the limited petroleum activities are located in areas of pre-disturbance;
 - (c) the limited petroleum activities do not negatively impact the environmentally sensitive area or its primary protection zone.
- (E16) Documentation demonstrating compliance with the requirement of conditions (E6), (E9) and (E12) must be prepared before any disturbance to land takes place.

SCHEDULE F – ENVIRONMENTAL NUISANCE

Release of contaminants to the atmosphere

- (F1) The release of odour, dust or any other airborne contaminant(s), or light from the authorised resource activities must not cause an environmental nuisance at any sensitive place.
- (F2) Individual or combined fuel burning equipment that is capable of burning at least 500 kg in an hour is not permitted under this environmental authority.
- (F3) Despite condition (F2), individual or combined fuel burning equipment that is capable of burning at least 500 kg in an hour and is not a permanent fuel burning or combustion facility, can be carried out for stimulation activities.
- (F4) Unless venting is authorised under section 72 of the Petroleum and Gas (Production and Safety) Act 2004 or section 74M of the Petroleum Act 1923, waste gas from production testing must be flared in a manner such that:
 - (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 is 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.

Nuisance monitoring

- (F5) When the administering authority advises of a complaint alleging nuisance, the holder must investigate the complaint as soon as practicable. The investigation is to include monitoring of environmental nuisance at any sensitive place within a reasonable and practical timeframe as specified by the administering authority.
- (F6) The administering authority must be advised in writing of the results of the investigation (including an analysis and interpretation of the monitoring results) and actions proposed or undertaken to resolve the complaint within five (5) business days of completing the complaint investigation, unless a longer time is agreed to in writing by the administering authority.
- (F7) If the investigation or monitoring in accordance with condition 0 indicates that emissions exceed the limits set in this environmental authority or are causing environmental nuisance, then:
 - (a) the complaint must be addressed including the use of alternative dispute resolution services if required; and / or
 - (b) abatement or attenuation measures must be implemented so that the authorised resource activities does not result in further environmental nuisance.
- (F8) Noise monitoring and recording required under this environmental authority must include, but not necessarily be limited to:
 - (a) LAN,T (where N equals the statistical levels of 1, 10 and 90 and T=15 mins);
 - (b) LAeq adj, 15 mins;
 - (c) background noise level as LA 90, 15 mins;
 - (d) Max LpA, 15 mins ;
 - (e) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to measured noise levels levels;
 - (f) atmospheric conditions including temperature, relative humidity and wind speed and directions;
 - (g) effects due to any extraneous factors such as traffic noise;
 - (h) location, date and time of monitoring;
 - (i) if the complaint concerns low frequency noise, Max LpZ, 15 mins; and

- (j) if the complaint concerns low frequency noise, one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range for both the noise source and the background noise in the absence of the noise source.

Noise

- (F9) A Noise Management Plan must be developed prior to the carrying out of any authorised resource activities authorised under this environmental authority.
- (F10) The Noise Management Plan must include, but not necessarily be limited to:
 - (a) a commitment by the Chief Executive Officer for the holder of this environmental authority, or their delegate, to ensure adequate allocation of staff and resources to the establishment and operation of the Noise Management Plan;
 - (b) definition of roles, responsibilities and authorities within the staffing of the Noise Management Plan;
 - (c) delivery of training to staff and contractors and maintenance of competencies;
 - (d) risk/constraint analysis methods to be undertaken prior to any new operation (e.g. drill site) or installation of new equipment that has the potential to create noise nuisance;
 - (e) procedures and methods to undertake assessments to determine compliance with the noise limits in Schedule F, Table 1 – Noise limits at Sensitive Receptors in the event of a valid complaint being received and when there are no alternative arrangements in place, taking into account any tonal or impulsive noise impacts;
 - (f) procedures for handling noise complaints;
 - (g) community liaison and consultation procedures including but not limited to consultation for when night time authorised resource activities (i.e. between 10:00 pm and 6:00 am) are likely to exceed 25 dBA;
 - (h) procedures for managing records associated with all aspects of the Noise Management Plan including standardised forms for recording monitoring results and complaints;
 - (i) details of authorised resource activities and measured and/or predicted noise levels of noise sources associated with those activities;
 - (j) reasonable and practicable control or abatement measures (including relocating the activity, altering the hours of operation, or having an alternative arrangement in place with any potentially affected person) that can be undertaken to ensure compliance with the noise limits in Schedule F, Table 1 – Noise limits at Sensitive Receptors;
 - (k) the level of noise at sensitive receptors that would be achieved from implementing the measures detailed under condition 0(j); and
 - (l) mediation processes to be used in the event that noise complaints are not able to be resolved.
- (F11) Prior to undertaking authorised resource activities that will result in short-term, medium-term or long term noise events that are likely to impact on a sensitive receptor, any potential noise emissions from the relevant authorised resource activities must be modelled or calculated to ensure that noise emissions will not exceed the noise levels specified in Schedule F, Table 1 – Noise limits at Sensitive Receptors.
- (F12) The emission of noise from the authorised resource activities authorised under this environmental authority must not result in levels greater than those specified in Schedule F, Table 1 – Noise limits at Sensitive Receptors in the event of a valid complaint about noise being made to the administering authority.

Schedule F, Table 1 – Noise Limits at Sensitive Receptors

Time Period	Metric	Short Term Noise Event	Medium Term Noise Event	Long Term Noise Event
7:00 am – 6:00 pm	$L_{Aeq,adj,15\ min}$	45 dBA	43 dBA	40 dBA
6:00 pm – 10:00 pm	$L_{Aeq,adj,15\ min}$	40 dBA	38 dBA	35 dBA
10:00 pm – 6:00 am	$L_{Aeq,adj,15\ min}$	28 dBA	28 dBA	28 dBA
	$Max\ L_{pA, 15\ mins}$	55 dBA	55 dBA	55 dBA
6:00 am – 7:00 am	$L_{Aeq,adj,15\ min}$	40 dBA	38 dBA	35 dBA

1. The noise limits in Table 1 have been set based on the following deemed background noise levels (L_{ABG}):

7:00 am - 6:00 pm: 35 dBA
 6:00 pm – 10:00 pm: 30 dBA
 10:00 pm – 6:00 am: 25 dBA
 6:00 am – 7:00 am: 30 dBA

(F13) If the noise subject to a complaint is tonal or impulsive, the adjustments detailed in Schedule F, Table 2 – Adjustments to be Added to Noise Levels at Sensitive Receptors are to be added to the measured noise level(s) to derive $L_{Aeq,adj,15\ min}$.

Schedule F, Table 2 – Adjustments to be Added to Noise Levels at Sensitive Receptors

Noise Characteristic	Adjustment to Noise
Tonal characteristic is just audible	+ 2 dBA
Tonal characteristic is clearly audible	+ 5 dBA
Impulsive characteristic is just audible	+ 2 dBA
Impulsive characteristic is clearly audibly	+ 5 dBA

(F14) Where alternative arrangements are in place with an affected person(s) at a sensitive receptor as referred to by condition 0(j), the noise limits in Schedule F, Table 1 – Noise limits at Sensitive Receptors do not apply at that sensitive receptor for the duration for which the alternative arrangements are in place.

Low Frequency Noise

(F15) Notwithstanding condition (F8), emission of any low frequency noise must not exceed the following limits in the event of a valid complaint about low frequency noise being made to the administering authority:

- (a) 60 dB(C) measured outside the sensitive receptor; and
- (b) the difference between the external A-weighted and C-weighted noise levels is no greater than 20 dB; or
- (c) 50 dB(Z) measured inside the sensitive receptor; and
- (d) the difference between the internal A-weighted and Z-weighted noise levels is no greater than 15 dB.

Vibration and Blasting

(F16) Blasting activities are not permitted under this environmental authority.

SCHEDULE G – WASTE

General

- (G1) Waste, including waste fluids but excluding waste gas, must be transported off-site for lawful re-use, remediation, recycling or disposal unless the waste is specifically authorised by conditions (G5), (G6), and (G7) to be disposed of or used on-site.
- (G2) All regulated waste must only 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 on the site.
- (G4) All waste fluids and muds resulting from drilling and exploration authorised resource activities must be contained in a lined dam or containment structure for off-site disposal, remediation or reuse unless the waste is specifically authorised by conditions (G5), (G6), (G7) and (G8) to be disposed of or used on-site.

Storage

- (G5) All containment systems for waste liquids stored on site that have the potential to cause environmental harm must be designed to minimise rainfall collection within the system.

Produced Water

- (G6) Produced water and stimulation flow-back water may be reused in:
 - (a) drilling and well hole activities; or
 - (b) stimulation activities where its use will not result in negative effects on waters beyond the stimulation impact zone.

Residual Drilling Material

- (G7) Residual drilling material can only be disposed of on-site:
 - (a) by mix-bury-cover method if the residual drilling material meets the approved quality criteria; or
 - (b) if it is certified by a suitably qualified third party as being of acceptable quality for disposal to land by the proposed method and that environmental harm will not result from the proposed disposal.
- (G8) Records must be kept of drilling fluids and all additives used in drilling activities.

SCHEDULE H – REHABILITATION

Rehabilitation of significantly disturbed land

- (H1) Significantly disturbed areas that are no longer required for the ongoing conduct of the authorised resource activities must be progressively rehabilitated within 6 months (unless an exceptional circumstance in the area to be rehabilitated (e.g. a flood event) prevents this timeframe being met) so that:
- (a) the areas are reshaped to a stable landform
 - (b) the areas are re-profiled to contours consistent with the surrounding landform
 - (c) surface drainage lines are re-established
 - (d) top soil is reinstated

Final acceptance criteria for significantly disturbed land

- (H2) All significantly disturbed land caused by the carrying out of the authorised resource activities must be rehabilitated to meet condition (H1) and the following final acceptance criteria:
- (e) any contaminated land (e.g. contaminated soils, decommissioned dams containing salt) is remediated and rehabilitated
 - (f) rehabilitation is undertaken in a manner such that any actual or potential acid sulphate soils on the area of significant disturbance are treated to prevent or minimise environmental harm in accordance with the Instructions for the treatment and management of acid sulphate soils (2001)
 - (g) for land that is not being cultivated by the landholder:
 - (i) groundcover, that is not a declared pest species is established and self-sustaining;
 - (ii) vegetation of similar species richness and species diversity to pre-selected analogue sites is established and self-sustaining
 - (h) for land that is to be cultivated by the landholder, cover crop is reinstated, unless the landholder will be preparing the site for cropping within 3 months of authorised resource activities being completed.

Rehabilitation Monitoring Program

- (H3) Monitoring of performance indicators must be carried out on rehabilitation activities until final acceptance criteria in condition (H2) have been met for the rehabilitated area.

Rehabilitation Reporting for Relinquishment of Part of an Authority to Prospect Area

- (H4) Prior to relinquishing part of an authority to prospect area, a rehabilitation report must be prepared which specifically relates to the area to be relinquished and which:
- (a) reports on the condition of the area to be relinquished against the requirements of condition 0 of this environmental authority; and
 - (b) includes the results of all rehabilitation monitoring undertaken in the area to be relinquished in accordance with the Rehabilitation Monitoring Program and condition (H3) of this environmental authority.
- (H5) The report required under condition 0 must be submitted to the administering authority twenty (20) business days prior to the relinquishment notice being lodged with the administering authority of the *Petroleum and Gas (Production and Safety) Act 2004*.

SCHEDULE I WELL CONSTRUCTION, MAINTAINANCE AND STIMULATION ACTIVITIES

Drilling Activities

- (11) Oil based or synthetic oil based drilling muds must not be used in the carrying out of the authorised resource activities.
- (12) Drilling activities must not result in the connection of the target gas producing formation and another aquifer.
- (13) Practices and procedures must be in place to detect, as soon as practicable, any fractures that have or may result in the connection of a target formation and another aquifer as a result of drilling activities.

Stimulation Activities

- (14) Polycyclic aromatic hydrocarbons or products that contain polycyclic aromatic hydrocarbons must not be used in stimulation fluids in concentrations above the reporting limit.
- (15) The authorised resource activities must not involve well stimulation activities at a well located within 2 kilometres laterally of a landholder's active groundwater bore and sourced from a formation within 200 metres vertically of the stimulation impact zone.
- (16) Prior to undertaking well stimulation activities, written stimulation management procedures must be developed.
- (17) Stimulation activities must not result in:
 - (a) negative impacts to groundwater quality beyond the stimulation impact zone; or
 - (b) negative impacts to water quality in landholder's active groundwater bore(s) which tap into the target formation; or
 - (c) interconnectivity between the target formation and another aquifer.

SCHEDULE J – COMMUNITY ISSUES

- (J1) A record of all valid complaints and incidents causing environmental harm, and actions taken in response to the valid complaint or incident must be kept.
- (J2) The following details for all valid complaints received must be recorded:
- (a) name, address and contact number for valid complainant;
 - (b) time and date of valid complaint;
 - (c) reasons for the complaint as stated by the valid complainant;
 - (d) investigations undertaken in response to the valid complaint;
 - (e) conclusions formed;
 - (f) actions taken to resolve the valid complaint;
 - (g) any abatement measures implemented to mitigate the cause of the valid complaint; and
 - (h) name and contact details of the person responsible for resolving the valid complaint.

SCHEDULE K – NOTIFICATION

- (K1) The Department of Environment and Heritage Protection Pollution Hotline must be notified as soon as reasonably practicable, but within 48 hours after becoming aware of:
- (a) a release of contaminants as provided for in condition 0; or
 - (b) any event where environmental harm (excluding environmental nuisance) has been caused or may be caused; or
 - (c) any result from baseline bore or well monitoring that exceeds a water quality objective for the protection of an environmental value of that water resource.
 - (d) any non-compliance with any condition of this environmental authority other than in relation to a release of contaminants; or
 - (e) a potential or actual loss of structural or hydraulic integrity of a dam; or
 - (f) any incident where there is a potential or actual loss of well integrity.
- (K2) The Department of Environment and Heritage Protection Pollution Hotline must be notified as soon as reasonably practicable, but within 48 hours after becoming aware of the following releases (or their mixtures):
- (a) an event resulting in the unauthorised releases of any volume of prescribed contaminants to waters;
 - (b) an event resulting in the unauthorised releases of volumes of contaminants, in any mixture, to land greater than:
 - (i) 200L of hydrocarbons; or
 - (ii) 200 L of stimulation additives;
 - (iii) 500 L of stimulation fluids;
 - (iv) 5 000 L of associated water;
 - (v) 5 000 L of raw sewage
 - (vi) 10 000 L of treated sewage effluent.
- (K3) The notification of emergencies or incidents as required by condition (K2) must be submitted to the administering authority using a *Notice Duty to Notify Harm (EM468)*.
- (K4) Unless a longer time is agreed to in writing by the administering authority, a written report must be provided to the administering authority within 10 business days of notification under condition (K3) including the following (where relevant to the emergency or incident):
- (a) the root cause of the emergency or incident;
 - (b) the confirmed quantities and types of any contaminants involved in the incident;
 - (c) results and interpretation of any analysis of samples taken at the time of the emergency or incident (including the analysis results of any impact monitoring);
 - (d) a final assessment of the impacts from the emergency or incident including any actual or potential environmental harm that has occurred or may occur in the longer term as a result of the release;
 - (e) the success or otherwise of actions taken at the time of the incident to prevent or minimise environmental harm;
 - (f) results and current status of landholder consultation, including commitment to resolve any outstanding issues / concerns; and
 - (g) actions and / or procedural changes to prevent a recurrence of the emergency or incident.

SCHEDULE L – DEFINITIONS

Explanatory note: Where a term is not defined in this document, the definition in the Environmental Protection Act 1994, its regulations and environmental protection policies, then the Acts Interpretation Act 1954 then the Macquarie Dictionary should be used in that order.

Term	Definition
acid sulfate soil(s)	means soil or sediment containing highly acidic soil horizons or layers affected by the oxidation of iron sulfides (actual acid sulfate soils) and / or soil or sediment containing iron sulfides or other sulfidic material that has not been exposed to air and oxidised (potential acid sulfate soils). The term acid sulfate soil generally includes both actual and potential acid sulfate soils. Actual and potential acid sulfate soils are often found in the same soil profile, with actual acid sulfate soils generally overlying potential acid sulfate soil horizons.
accepted engineering standards	in relation to dams, means those standards of design, construction, operation and maintenance that are broadly accepted within the profession of engineering as being good practice for the purpose and application being considered. In the case of dams, the most relevant documents would be publications of the Australian National Committee on Large Dams (ANCOLD), guidelines published by Queensland government departments and relevant Australian and New Zealand Standards.
administering authority	has the meaning in Schedule 4 of the <i>Environmental Protection Act 1994</i> .
adverse impact in relation to Wild Rivers	is a change from natural functioning
AHD	means Australian Height Datum and is the datum used for the determination of elevations in Australia. The determination uses a national network of benchmarks and tide gauges and sets mean sea level at zero elevation.
alternative arrangement	means a written agreement about the way in which a particular nuisance impact will be dealt with at a sensitive place, and may include an agreed period of time for which the arrangement is in place. An alternative arrangement may include, but is not limited to, a range of nuisance abatement measures to be installed at the sensitive place, or provision of alternative accommodation for the duration of the relevant nuisance impact.
analogue site(s)	means an area of land which contains values and characteristics representative of an area to be rehabilitated prior to disturbance. Such values must encompass land use, topographic, soil, vegetation and other ecological characteristics. Analogue sites can be the pre-disturbed site of interest where significant surveying effort has been undertaken to establish benchmark parameters.
analyte	means a chemical parameter determined by either physical measurement in the field or by laboratory analysis.
annual exceedance probability or AEP	is the probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.
appraisal well	means a petroleum well to test the potential of one (1) or more natural underground reservoirs for producing or storing petroleum. For clarity, an appraisal well does not include an exploration well.

approved quality criteria

for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards:

Part A

In all cases:

Parameter	Maximum concentration
pH	6–10.5 (range)
Electrical Conductivity	20dS/m (20,000µS/cm)
Chloride*	8000mg/L

*Chloride analysis is only required if an additive containing chloride was used in the drilling process

The limits in Part A must be measured in the clarified filtrate of oversaturated solids prior to mixing.

Part B

If any of the following metals are a component of the drilling fluids, then for that metal:

Parameter	Maximum concentration
Arsenic	20mg/kg
Selenium	5mg/kg
Boron	100mg/kg
Cadmium	3mg/kg
Chromium (total)	400mg/kg
Copper	100mg/kg
Lead	600mg/kg
Nickel	60mg/kg
Zinc	200mg/kg
Mercury	1mg/kg

The limits in Part B refer to the post soil/by-product mix.

Part C

If a hydrocarbon sheen is visible, the following hydrocarbon fractions:

TPH	Maximum concentration
C6-C10	170mg/kg
C10-C16	150mg/kg
C16-C34	1300mg/kg

	C34-C40	5600mg/kg
	Total Polycyclic Aromatic Hydrocarbons (PAHs)	20mg/kg
	Phenols (halogenated)	1mg/kg
	Phenols (non-halogenated)	60mg/kg
	Monocyclic aromatic hydrocarbons ²	7mg/kg
	Benzene	1mg/kg
The limits in Part C refer to the post soil/by-product mix.		
areas of pre-existing disturbance	means areas where environmental values have been negatively impacted as a result of anthropogenic activity and these impacts are still evident. Areas of pre-disturbance may include areas where legal clearing, logging, timber harvesting, or grazing activities have previously occurred, where high densities of weed or pest species are present which have inhibited re-colonisation of native regrowth, or where there is existing infrastructure (regardless of whether the infrastructure is associated with the authorised petroleum activities). The term 'areas of pre-disturbance' does not include areas that have been impacted by wildfire/s, controlled burning, flood or natural vegetation die-back.	
associated water	means water extracted in connection with an authorised activity under a petroleum authority.	
associated works	in relation to a dam, means: - any kind and all things associated with the construction and operation of a dam; and - any land used for those operations.	
Australian Standard 1055	means Australian Standard 1055.1:1997 "Description and Measurement of Environmental Noise – General procedures".	
Australian Standard 2187	means Australian Standard 2187.0:1998 <i>Explosives—Storage, transport and use, Part 0</i> , Australian Standard 2187.1:1998 <i>Explosives—Storage, transport and use Part 1</i> and Australian Standard 2187.2:2006 <i>Explosives—Storage and use, Part 2</i> or any updated versions that becomes available from time to time.	
Australian Standard 4323	means Australian Standard 4323.1:1995 <i>Stationary source emissions method 1: Selection of sampling positions</i> .	
authorised person	means a person holding office as an authorised person under an appointment under the <i>Environmental Protection Act 1994</i> by the chief executive or chief executive officer of a local government.	
authorised resource activities	for this environmental authority means the resource activities authorised to be carried out under condition A1.	
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	

² Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene.

	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 <i>Environmental Protection Act 1994</i>, ○ 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 to the <i>Operational Policy - Management of water produced in association with petroleum activities</i> and <i>Notice of decision to approve a resource for beneficial use – CSG water</i> as amended from time to time and published by the Department of Environment and Resource Management. These documents can be accessed on the Department of Environment and Heritage Protection website at www.ehp.qld.gov.au.
bore	means a water observation bore or a water supply bore that is either sub-artesian or artesian.
brine	means saline water with a total dissolved solid concentration greater than 40 000 mg/l.
bund or bunded	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 bunded 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.
business day	has the meaning in the <i>Acts Interpretation Act 1954</i> and means a day that is not— • a Saturday or Sunday; or • a public holiday, special holiday or bank holiday in the place in which any relevant act is to be or may be done.

BTEX	means benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene and total xylene.
Category A ESA	means any area listed in Section 25 of the <i>Environmental Protection Regulation 2008</i> .
Category B ESA	means any area listed in Section 26 of the <i>Environmental Protection Regulation 2008</i> .
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 (Koala) Conservation Plan 2006; • 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" or "Essential Regrowth Habitat" under the Vegetation Management Act 1999 for a species of wildlife listed as endangered, vulnerable, rare or near threatened under the Nature Conservation Act 1992; or • Of Concern Regional Ecosystems identified in the database called 'RE description database' containing Regional Ecosystem numbers and descriptions. • Threshold regional ecosystems as defined and listed in Appendix 6 of the Queensland Biodiversity Offsets Policy; or • Critically limited regional ecosystems as defined and listed in Appendix 5 of the Queensland Biodiversity Offsets Policy.
certification or certified by a suitably qualified and experienced person	in relation to a design plan, 'as constructed' drawings 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.
certify or certification or certified	in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding dams in this environmental authority means a Statutory Declaration by a suitably qualified person accompanying the written document stating that:

	- all relevant material has been considered in the written document; and - that the content of the written document is accurate and true; and - that the written document meets the requirements of the relevant conditions of the environmental authority.
clear or cleared or clearing	for vegetation means removing, cutting down, ringbarking, pushing over, poisoning or destroying in any way including by burning, flooding or draining; but does not include destroying standing vegetation by stock, or lopping a tree.
Coal seam gas water	means underground water brought to the surface of the earth, or otherwise interfered with, in connection with exploring for or producing coal seam gas. Coal seam gas water is a waste, as defined under s13 of the <i>Environmental Protection Act 1994</i> .
Coal seam gas water concentrate	means the concentrated saline water waste stream from a water treatment process that does not exceed a total dissolved solid concentration of 40 000 mg/L.
coal seam gas water dams	include any type of dam (storage or evaporation) used to contain groundwater that is necessarily or unavoidably brought to the surface in the process of coal seam gas exploration or production.
Construction	in relation to a dam includes building a new dam and modifying or lifting an existing dam but does not include investigations and testing necessary for the purposes of preparing a design plan.
contaminants in relation to the HPA and SFMA	are chemicals or pollutants that are not naturally found in the area, and/or chemicals or pollutants at levels above those found naturally in the area.
cultivated	means used for cropping or gardening.
dam(s)	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 <i>not</i> 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.
declared pest species	are listed in Schedule 2 of the Land Protection (Pest and Stock Route Management) Regulation 2003.
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 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.
Design storage allowance or DSA	means an available volume, estimated in accordance with the <i>Manual for Assessing Hazard Categories and Hydraulic Performance of Dams</i> , published by the Department of Environment and Resource Management, as amended from time to time, that must be provided in a dam to an annual exceedance probability specified in that Manual.
Development well	means a petroleum well which produces or stores petroleum. For clarity, a development well does not include an appraisal well.

discharge area	means: - that part of the land surface where groundwater discharge produces a net movement of water out of the groundwater; and - identified by an assessment process consistent with the document "Salinity Management Handbook" Queensland Department of Natural Resources, 1997, as amended from time to time; or - identified by an approved salinity hazard map.
disturbance to land	is— - the covering, compaction, exposure, removal or stockpiling of soil or other material; - the destruction or removal of vegetation; - the carrying out of a mining activity in a watercourse or wetland; - the submergence of an area with a hazardous contaminant, tailings, or water land is disturbed if— - any operation that has made the land more susceptible to erosion; - the land use capability or suitability of the land is diminished; or - the quality of water in a watercourse downstream of the land has been significantly reduced
document	has the meaning in the <i>Acts Interpretation Act 1954</i> and means: - any paper or other material on which there is writing; and - any paper or other material on which there are marks; and - figures, symbols or perforations having a meaning for a person qualified to interpret them; and - any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).
ecological connectivity	is a measure of ecological condition and means the flow or connection of organisms and ecological processes across landscapes at multiple scales. Ecological connectivity has a positive relationship with landscape connectivity and habitat connectivity and effects vary between species. It includes connectivity by stepping stone or contiguous bioregional/local corridor networks.
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 the vegetation community.
EHP	means Queensland Department of Environment and Heritage Protection.
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 petroleum activities such as rehabilitation. In other words, it does not refer to the 'completion' of the petroleum activity(ies), the time at which the petroleum authority ends or the time that the land in question ceases to be part of an authority.

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.
equivalent person or EP	has the meaning under section 3 of the Planning Guidelines For Water Supply and Sewerage, 2005, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the Environmental Protection Regulation 2008 where: • $EP = V/200$ where V is the volume, in litres, of the average dry weather flow of sewage that can be treated at the works in a day; or • $EP = M/2.5$ where M is the mass, in grams, of phosphorus in the influent that the works are designed to treat as the inlet load in a day.
exploration well	means a petroleum well that is drilled to: • explore for the presence of petroleum or natural underground reservoirs suitable for storing petroleum; or • obtain stratigraphic information for the purpose of exploring for petroleum. For clarity, an exploration well does not include an appraisal or development well.
exploring for petroleum	means carrying out an activity for the purpose of finding petroleum or natural underground reservoirs as per section 14 of the <i>Petroleum and Gas (Production and Safety) Act 2004</i> for example including: • conducting a geochemical, geological or geophysical survey; • drilling a well; • carrying out testing in relation to a well; • taking a sample for chemical or other analysis.
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.
financial assurance	for an environmental authority, means financial assurance given for the authority under Chapter 5, part 12, division 2 of the <i>Environmental Protection Act 1994</i> .
flare pit	means a containment area where any hydrocarbon that is discovered in an over-pressured reservoir during the drilling operation is diverted to, and combusted. The flare pit is only used during the drilling and workover process.
flood channel	means natural areas of depressions within floodplains that that can contain flowing water, whether flowing continuously or periodically
floodplain	has the meaning in the <i>Water Act 2000</i> and means an area of reasonably flat land adjacent to a watercourse that— • is covered from time to time by floodwater overflowing from the watercourse; and • does not, other than in an upper valley reach, confine floodwater to

	generally follow the path of the watercourse; and • has finer sediment deposits than the sediment deposits of any bench, bar or in-stream island in the watercourse.
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.
foliage cover	means the proportion of the ground, which would be shaded if sunshine came from directly overhead and is defined for each stratum. It includes branches and leaves and is similar to the crown type of Walker and Hopkins (1990) but is applied to a stratum or plot rather than an individual crown.
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.
fuel burning or combustion facility	means a permanent fuel burning or combustion equipment which in isolation, or combined in operation, or which are interconnected, is, or are capable of burning more than 500 kg of fuel in an hour.
geophysical survey	means a systematic collection of geophysical data.
greywater	means wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Greywater does not include sewage.
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 <i>Manual for Assessing Hazard Categories and Hydraulic Performance of Dams</i> , published by the Department of Environment and Resource Management, as amended from time to time.
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.
high value regrowth	vegetation means • any of the following: ○ an endangered regional ecosystem; ○ an of concern regional ecosystem; ○ a least concern regional ecosystem; and • have not been cleared since 31 December 1989; and • is shown on a regrowth vegetation map.
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 <i>Manual for Assessing Hazard Categories and Hydraulic Performance of Dams</i> , published by the Department of Environment and Resource Management, as amended from time to time.
impulsive noise	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.
incidental activity	for this environmental authority means an activity that is reasonably necessary for carrying out a petroleum activity.
infrastructure	means plant or works including for example, communication systems, compressors, powerlines, pumping stations, reservoirs, roads and tracks, water storage dams, evaporation or storage ponds and tanks, equipment, buildings and other structures built for the purpose and duration of the conduct of the petroleum activity(ies) including temporary structures or structures of an industrial or technical nature, including, for example, mobile and temporary camps. Infrastructure does not include other facilities required for the long term management of the impact of those petroleum activities or the protection of potential resources. Such other facilities include dams other than water storage dams, pipelines and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.
$L_{Aeq, adj, 15 mins}$	means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within any 15 minute period has the same square sound pressure as a sound level that varies with time.
$L_{A 90, adj, 15 mins}$	means the A-weighted sound pressure level, adjusted for tonal character, that is equal to or exceeded for 90% of any 15 minutes sample period equal, using Fast response
lake	means: • a lagoon, swamp or other natural collection of water, whether permanent or intermittent; and • the bed and banks and any other element confining or containing the water.
landholder's active groundwater bore	means bores that are able to continue to provide a reasonable yield of water in terms of quantity for the bores authorised purpose or use. This term does not include monitoring bores owned by the administering authority of the <i>Water Act 2000</i> .
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.
limited petroleum activities	mean only the following petroleum activities: • well sites not exceeding 1.25 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance. Well sites may include the following infrastructure: ○ well pads; ○ water pumps and generators associated with well operations; ○ sumps for storing drilling muds; ○ flare pits; ○ ponds used to contain and / or store <u>stimulation</u> fluid; • ecological surveys, geophysical surveys or geological surveys (including

	seismic petroleum activities); - gathering / flow pipelines from a well head to the initial compression facility; - supporting access tracks; and - 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. For clarity, limited petroleum activities exclude and exclusions are not necessarily limited to: - the construction of infrastructure for processing or storing petroleum or by-products; - low hazard dams (that do not meet the limitations prescribed above); - regulated dams; - borrow pits; - compressor stations; - campsites / workforce accommodation; - pipelines which are used to transport gas after the initial compression facility (e.g. trunk pipelines, transmission pipelines or pipelines that require a pipeline licence); - waste disposal; or - other supporting infrastructure for the project (e.g. sewage treatment plants).
linear infrastructure	means powerlines, pipelines, roads and access tracks.
long term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five (5) days, even when there are respite periods when the noise is inaudible within those five (5) days.
lopping	a tree, means cutting or pruning its branches, but does not include— - removing its trunk; and - cutting or pruning its branches so severely that it is likely to die.
low hazard dam	means any dam that is not classified as high or significant as assessed using the <i>Manual for Assessing Hazard Categories and Hydraulic Performance of Dams</i> , published by the Department of Environment and Resource Management and which contains contaminants in concentrations which exceed or will exceed during the dam's operational life, the values or range shown in Table 3 of said Manual.
low impact petroleum activities	means limited 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. Examples of such activities include but are not necessarily limited to soil surveys, topographic surveys, cadastral surveys and ecological surveys 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.
mandatory reporting level or MRL	means a warning and reporting level determined in accordance with the criteria in the <i>Manual for Assessing Hazard Categories and Hydraulic</i>

	<i>Performance of Dams</i> published by the Department of Environment and Resource Management, as amended from time to time.
Max L _{pA} , 15 min	means the absolute maximum instantaneous A-weighted sound pressure level, measured over 15 minutes.
medium term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than five (5) days and does not re-occur for a period of at least four (4) weeks. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a difference source or source location.
meter	means a device for measuring, or giving an output signal proportional to, quantities of water passed and/or the rate of flow in a pipe.
mix-bury-cover	means the stabilisation of residual drilling solids in the bottom of a sump by mixing with subsoil and which occurs in accordance with the following methodology: - the base of the subsoil and residual solid mixture must be separated from the groundwater table by at least one metre of a continuous layer of impermeable subsoil material ($k_w=10^{-8}m/s$) or subsoil with a clay content of >20%; and - the residual solids is mixed with subsoil in the sump and cover; and - the subsoil and residual solids is mixed at least three parts subsoil to one part waste (v/v); and - a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and topsoil is replaced.
month	has the meaning in the Acts Interpretation Act 1954 and means a calendar month and is a period starting at the beginning of any day of one (1) of the 12 named months and ending— - immediately before the beginning of the corresponding day of the next named month; or - if there is no such corresponding day—at the end of the next named month.
NATA accreditation	means accreditation by the National Association of Testing Authorities Australia.
nominated waterway	for a wild river declaration, is the part of a drainage channel in the preservation area that— (a) is between the upstream and downstream limits, described in the wild river declaration, of the drainage channel; and (b) extends laterally to the outer banks of the drainage channel.
oil-based drilling mud	means mud where the base fluid is a petroleum product such as diesel fuel.
operationally generated waters	means any water that is produced as a result of the petroleum and gas activity, including water that is extracted from below the ground. It does not include natural runoff as a result of rainfall; it does include rainfall that has been caught in an artificial impoundment.

performance indicator(s)	means a quantitative measure against which success can be assessed and audited in a consistent, objective and repeatable manner.
pest	means species: - declared under the <i>Land Protection (Pest and Stock route Management) Act 2002</i>; - declared under Local Government model local laws; and - which may become invasive in the future.
populated area	includes towns and cities which have a populated of 200 or more people and with a minimum density of 40 people / km ² .
prescribed contaminant	has the meaning in section 440ZD of the <i>Environmental Protection Act 1994</i> and means: (a) earth; or (b) a contaminant prescribed under section 440ZF.
primary protection zone	means an area within 200 metres from the boundary of any Category A, B or C environmentally sensitive area.
produced water	has the meaning in section 15A of the <i>Petroleum and Gas (Production and Safety) Act 2004</i> .
production testing	has the meaning in section 73 of the <i>Petroleum and Gas (Production and Safety) Act 2004</i> .
project area	for this environmental authority means the following tenures: ATP 912
regrowth vegetation map	means a map certified by the chief executive as the regrowth vegetation map for the State and showing for the State: - areas of regrowth vegetation, identified on the map as high-value regrowth vegetation, that— - are any of the following: (i) an endangered regional ecosystem; (ii) an of concern regional ecosystem; (iii) a least concern regional ecosystem; and - have not been cleared since 31 December 1989; and - particular watercourses in the Burdekin, Mackay Whitsunday and Wet Tropics catchments, identified on the map as regrowth watercourses; and - areas the chief executive decides under section 20AI to show on the map as high value regrowth vegetation.
regulated dam(s)	means any dam in the significant or high hazard category as assessed using the <i>Manual for Assessing Hazard Categories and Hydraulic Performance of Dams</i> , published by the Department of Environment and Resource Management , as amended from time to time.
regulated structure	means any dam or levee in the significant or high hazard category as assessed using the <i>Manual for Assessing Hazard Categories and Hydraulic Performance of Dams</i> , published by the Department of Environment and

	Resource Management , as amended 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.
release	of a contaminant into the environment includes: (a) to deposit, discharge, emit or disturb the contaminant; and (b) to cause or allow the contaminant to be deposited, discharged, emitted or disturbed; and (c) to allow the contaminant to escape; and (d) to fail to prevent the contaminant from escaping.
remnant vegetation	means vegetation, part of which forms the predominant canopy of the vegetation— • covering more than 50 % of the undisturbed predominant canopy; and • averaging more than 70 % of the vegetation's undisturbed height; and • composed of species characteristic of the vegetation's undisturbed predominant canopy cover.
reporting limit	means the lowest concentration that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes, the reporting limit is selected as the lowest non-zero standard in the calibration curve. Results that fall below the reporting limit will be reported as 'less than' the value of the reporting limit. The reporting limit is also referred to as the practical quantitation limit or the limit of quantitation. For polycyclic aromatic hydrocarbons, the reporting limit must be based on super-ultra trace methods and, depending on the specific polycyclic aromatic hydrocarbon, will range between 0.005µg/L – 0.02µg/L.
residual drilling material	means waste drilling materials including muds and cuttings returned from well holes and which have been left behind after the drilling fluids are pumped out.
secondary protection zone	in relation to a Category A Environmentally Sensitive Area means an area within an 800 metre buffer from the boundary of a primary protection zone.
secondary protection zone	in relation to a Category B or C Environmentally Sensitive Area means a area within a 300 metre buffer from the boundary of a primary protection zone.
secondary treated class B standards	means treated sewage effluent or greywater which meets the following standards: • total phosphorous as P, maximum 20mg/L • total nitrogen as N, maximum 30mg/L • 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L • suspended solids, maximum 30mg/L • pH, range 6.0 to 8.5 • e-coli, 80th percentile based on at least 5 samples with not less than 30

	minutes between samples, 1000cfu per 100mL, maximum 10000cfu per 100mL.
secondary treated class C standards	means treated sewage effluent or greywater which meets the following standards: (a) total Phosphorous as P, maximum 20mg/L (b) total Nitrogen as N, maximum 30mg/L (c) 5-day Biochemical oxygen demand (inhibited) (e.g. Release pipe from sewage treatment plant), maximum 20mg/L (d) suspended solids, maximum 30mg/L (e) pH, range 6.0 to 8.5 (f) e-Coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 10000cfu per 100mL, maximum 100000cfu per 100mL.
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; or • a work place used as an office or for business or commercial purposes, which is not part of the petroleum activity(ies) and does not include employees accommodation or public roads.
sensitive receptor	means an area or place where noise (including low frequency, vibration and blasting) is measured to investigate whether nuisance impacts are occurring and includes: • 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; or • a work place used as an office or for business or commercial purposes, which is not part of the petroleum activity(ies) and does not include employees accommodation or public roads.
short term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven (7) days. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a

	period of one hour or more, even if it originates from a different source or source location.
significantly disturbed land or significant disturbance to land or significant disturbance	means disturbance to land as defined in section 28 of the <i>Environmental Protection Regulation 2008</i> .
site	means the area within the petroleum authority or authorities to which this environmental authority relates.
species richness	means the number of different species in a given area.
species diversity	means the diversity within an ecological community that incorporates both species richness and the evenness of species' abundances.
Specified relevant activity	for this environmental authority means an activity that: (a) but for being carried out as a resource activity, would otherwise be a prescribed ERA; (b) stimulation activities; (c) point source discharge of treated produced water to surface waters; (d) storing waste that is not regulated waste (including coal seam gas water) in a regulated dam; (e) storing coal seam gas water that is not regulated waste in a low hazard / consequence dam; or (f) borrow pits or quarries that extract more than 5000 tonnes of material in the project area.
specified works	means: (a) infrastructure and works prescribed under a regulation to be necessary for disaster management; or (b) desnagging that is the minimum necessary to allow safe navigation of a marked navigable channel; or (c) the following infrastructure and works: (i) roads; (ii) railways; (iii) jetties and boat ramps for use by the public; (iv) works for the rehabilitation of land, including, for example, rehabilitation of abandoned mines; (v) infrastructure for the transmission or distribution of electricity; (vi) pipelines; (vii) conveyor belts; (viii) cables; (ix) other infrastructure, prescribed under a regulation, that relates to the transportation, movement, transmission or flow of anything through a wild river area including, for example, goods, materials substances, matter, particles with or without charge, light, energy, information and anything generated or produced.

spring(s)	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.
stimulation	means a technique used to increase the permeability of a natural underground reservoir that is undertaken above the formation pressure and involves the addition of chemicals. It includes hydraulic fracturing/hydrofracking, fracture acidizing and the use of proppant treatments. This definition is restricted from that in the Petroleum and Gas (Production and Safety) Act 2004 in order to only capture the types of stimulation activities that pose a risk to the environmental values of water quality in aquifers.
stimulation fluid	means the fluid injected underground to increase permeability. For clarity, the term stimulation fluid only applies to fluids injected down well post-perforation.
stimulation impact zone	means a 100m maximum radial distance from the stimulation target location within a gas producing formation
stimulation management procedures	means procedures for the management of stimulation activities that include, but is not necessarily limited to information on: • the local stratigraphy including aquifers, faults, linear features, hydraulic conductivity, porosity, seismic risk and groundwater dependent assets • the impacts of applied stresses including aquifer drawdown, on connectivity to aquifers above and below the fractured zone subsequent to the stimulation activity • the extent to which there are vertically impermeable formations between the fractured zone and other aquifers • methods to ensure isolation of hydrocarbon bearing formations from aquifers and internal and external mechanical integrity of well(s) • process control techniques incorporating real-time analysis, fracture modelling and formation understanding utilising techniques such as micro-seismic measurements • quantity and quality monitoring of flow back water.
structure	means dam or levee.
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 <i>Environmental Protection Act 1994</i> , and the administering authority for the <i>Environmental Protection Act 1994</i> is satisfied that person has knowledge, suitable experience and demonstrated expertise in relevant fields.

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.
suitably qualified third party	means a person who: (a) has qualifications and experience relevant to performing the function including but not limited to: i. a bachelor's degree in science or engineering; and ii. 3 years experience in undertaking soil contamination assessments; and (b) is a member of at least one organisation prescribed in Schedule 8 of the Environmental Protection Regulation 2008; and (c) not be an employee of, nor have a financial interest or any involvement which would lead to a conflict of interest with the holder(s) of the environmental authority.
synthetic oil-based drilling mud	means a mud where the base fluid is a synthetic oil, consisting of chemical compounds which are artificially made or synthesised by chemically modifying petroleum components or other raw materials rather than the whole crude oil.
threatening processes	means processes, features and actions that can have a detrimental effect upon the health and viability of an area of vegetation (e.g. 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 (e.g. 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).
top soil	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.
transmissivity	means the rate of flow of water through a vertical strip of aquifer which is one unit wide and which extends the full saturated depth of the aquifer.
valid complaint	means a complaint the administering authority considers is not 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, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.
watercourse	has the meaning provided in section 5 of the <i>Water Act 2000</i> and includes the bed and banks and any other element of a river, creek or stream

	confining or containing water.
watercourse, wetland, lake or spring with state significant biodiversity values	are those described in Appendix 1 of the <i>Queensland Biodiversity Offsets Policy</i> (Department of Environment and Resource Management, 2011).
well infrastructure	means infrastructure required for the construction, completion and operation of a well including but not limited to cellar pits, dams and drill sumps.
well site	means a maximum area of land disturbance for the purposes of constructing, installing and operating an exploration, appraisal or development well or such wells as part of a multi-well arrangement and includes well lease infrastructure.
wetland	means a wetland as defined under the Queensland Wetlands Program and are areas of permanent or periodic / intermittent inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six (6) metres. To be classified as a wetland, the area must have one or more of the following attributes: • at least periodically, the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle, or • the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers, or • the substratum is not soil and is saturated with water, or covered by water at some time. For the purposes of Chapter 5A activities, wetlands do not include springs and watercourse and those wetlands that are defined in the document <i>Wetland Mapping and Classification Methodology</i> (2005) published by the Department of Environment and Resource Management as: • H2M1 Riverine or ex-riverine (lacustrine) water bodies associated with dams and weirs located in a channel; • H2M3p Ponded pastures; • H2M5 Palustrine / lacustrine water bodies where ecological character has changed due to gross mechanical disturbance (e.g. cropping); • H2M6 Palustrine / lacustrine water bodies that have been converted, completely or mostly, to a ring tank or other controlled storage; • H2M7 Riverine water bodies that have been converted mostly to canals or irrigation channels; • H3C1 Artificial stand-alone water storages not within a natural water body or channel; or • H3C2 Artificial Channel drain / canal –bore drains, swales, bores and irrigation channel overflows / ponding.
year(s)	means a period of 12 months.

END OF PERMIT