

Permit

Environmental Protection Act 1994

Environmental authority EPPG00341313

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

Environmental authority number: EPPG00341313

Environmental authority takes effect on 23 March 2018

Environmental authority holder(s)

Name(s)	Registered address
Armour Energy (Surat Basin) Pty Ltd	Level 27 111 Eagle Street BRISBANE CITY QLD 4000
AGL UPSTREAM GAS (MOS) PTY LTD	Level 6 144 Edward Street BRISBANE CITY QLD 4000 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Schedule 2A, 03: A petroleum activity that is likely to have a significant impact on a category A or B environmentally sensitive area	PL30
Resource Activity, Schedule 2A, 06: A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam	PL30
Resource Activity, Schedule 2A, 08: A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	PL30

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

Environmental authority

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

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

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

Take effect

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

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

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the Sustainable Planning Act 2009 or an SDA Approval under the State Development and Public Works Organisation Act 1971), this EA will not take effect until the additional authorisation has taken effect.

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

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

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

Enquiries:
Petroleum and Gas Unit
Department of Environment and Heritage Protection
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Date issued: 23 March 2018

Legislative Requirements and Conditions of Environmental Authority

SCHEDULE A – GENERAL CONDITIONS

Authorised Petroleum Activities

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

Schedule A, Table 1 — Authorised Petroleum Activities

Tenure No.	Petroleum Activity	Number of existing activities	Number of proposed activities	Maximum size (where applicable)
PL30	Seismic (kms)	421.24	N/A	N/A
	Total wells	7	None	N/A
	- Exploration Wells (indicative)	3	None	N/A
	- Appraisal Wells (indicative)	3	None	N/A
	- Development Wells (indicative)	4	None	N/A
	Compressor Station(s)	None	None	N/A
	Regulated dam(s) / Evaporation pond(s) <400 megalitres	3	None	2 interceptor ponds - dam crest volume of maximum 2.5 megalitres each 1 evaporation pond - dam crest volume of 10 megalitres

Prevent or Minimise Likelihood of Environmental Harm

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

Maintenance of Measures, Plant and Equipment

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

Financial Assurance

- A5 The holder of this environmental authority must:
- (a) provide to the administering authority financial assurance in the amount and form required from time to time by the administering authority for the authorised petroleum activity(ies); and
 - (b) review and maintain the amount of financial assurance based on the activities and rehabilitation to be undertaken during the period of the Plan.
- A6 The calculation of financial assurance must be in accordance with the most recent version of the Department of Environment and Resource Management's Guideline *"Financial assurance for petroleum activities"*.
- A7 The financial assurance is to remain in force until the administering authority is satisfied that no claim is likely to be made on the assurance.

Third Party Audit

- A8 A third party auditor, nominated by the holder of this environmental authority and accepted by the administering authority, must audit compliance with the conditions of this environmental authority at a minimum frequency of every three (3) years commencing 20 January 2012 and submit audit report in accordance with condition (A14).

- A9 Notwithstanding Condition (A8), the holder of this environmental authority may, prior to undertaking the third party audit, negotiate with the administering authority the scope and content of the third party audit.

Note: Where minimal petroleum activities have been undertaken on tenure, the negotiation of the scope of the third party audit may also include the postponing of the third party audit to an agreeable time between the holder of this environmental authority and the administering authority. In this event, the time frame in condition (A8) must be amended to reflect the postponement.

- A10 An audit report must be prepared by the third party auditor presenting the findings of each audit carried out.

- A11 The third party auditor must certify the findings in the audit report.

- A12 The holder of this environmental authority must immediately act upon any recommendations arising from the audit report by:

- (a) investigating any non-compliance issues identified; and
- (b) as soon as reasonably practicable, implementing measures or taking necessary action to ensure compliance with the requirements of this environmental authority.

- A13 The holder of this environmental authority must attach to the audit report, a written response to the audit report detailing the actions taken or to be taken on stated dates:

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

- A14 The audit report required by condition (A10) and the written response to the audit report required by condition (A13) must be submitted with the subsequent annual return.

- A15 The financial cost of the third party audit is to be borne by the holder of this environmental authority.

Existing Petroleum Activities

- A16 Conditions (D2) to (D19) in the Schedule D — Land, relating to disturbance and conditions (C6)

and (C8) in Schedule C-Dams only apply to the petroleum activity(ies) which commenced after 23 June 2011 subject to:

- (a) the holder of this environmental authority conducting an audit of the existing petroleum activity(ies) which commenced before 23 June 2011 against the land disturbance conditions of the previous environmental authority, PEN100395309 dated 17 May 2011; and
- (b) the audit report being provided to the administering authority with the subsequent annual return following the issue of this environment authority.

Underground Gas Storage

- A17 Testing, evaluating, developing and using natural underground reservoirs for petroleum storage or to store prescribed storage gases is not authorised under this environmental authority.

SCHEDULE B - WATER

Contaminant Release

- B1 Contaminants that will or may cause environmental harm must not be directly or indirectly released to any waters except as permitted under this environmental authority.
- B2 Water emissions must not be released directly or indirectly from locations on the boundary of this activity other than at locations listed in the following -
- Release Point W2 (PL 30 Riverslea) - Water emission at the overflow from the last evaporation pond at the Riverslea Production Facility.*
- B3 Water discharge from the release point number VV2 may only occur in times of flood rains corresponding with a local AEP 5% 24 hour rainfall event.
- B4 The water emissions must comply, at the sampling and in-situ measurement point/s specified in this Schedule, with each of the limits specified in Table 1 of this Schedule for each quality characteristic.
- B5 Notwithstanding the quality characteristic limits specified in Table 1 of this Schedule, the release of water emissions to waters must not produce any slick or other visible evidence of oil or grease, nor contain visible floating oil, grease, scum, litter or other objectionable matter.

For other quality characteristics not listed in Table 1, the water emissions shall not have any properties nor contain any matter or organism in concentrations which, in the opinion of the administering authority, are likely to make the receiving environment less fit for other water uses when account is taken of any effective dilution and quality of the water.

SCHEDULE B TABLE 1 - RELEASE QUALITY CHARACTERISTIC LIMITS

QUALITY CHARACTERISTICS	RELEASE POINT NUMBER	RELEASE LIMIT	LIMIT TYPE	FREQUENCY
pH. (pH Units)	All	6.5 - 9.0	range	Quarterly
Total Alkalinity (as CaCO ₃). (mg/l)	All	3500	maximum	Quarterly
Dissolved Solids. (mg/l)	All	4000	maximum	Quarterly
Total Petroleum Hydrocarbon (mg/l)	All	10 or no visible film	maximum	Quarterly
Phenolic Compounds. (mg/l)	All	0.05	maximum	Bi-annually
Dissolved Fluoride (as F). (mg/l)	All	2	maximum	Quarterly

Erosion and Sediment Control

- B6 Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment and contaminated stormwater to waters.
- B7 By 27 April 2012, an Erosion and Sediment Control Plan must be developed and certified by a suitably qualified person.
- B8 The Erosion and Sediment Control Plan must include but not necessarily be limited to:
- (a) managing and / or diverting uncontaminated stormwater run-off around areas disturbed by the petroleum activity(ies) or where contaminants or wastes are stored or handled that may contribute to contamination of waters;
 - (b) ensuring that contaminated stormwater runoff and incident rainfall is collected, treated, reused, or released in accordance with the conditions of this environmental authority;
 - (c) roofing or minimising the size of areas where contaminants or wastes are stored or handled;
 - (d) revegetating disturbed areas as soon as practicable after the completion of works;
 - (e) using materials and or processes (e.g. dry absorbents) to clean up spills that will minimise contamination of waters;
 - (f) placing erosion and sediment control structures to minimise erosion of disturbed areas and prevent the contamination of waters;
 - (g) an inspection and maintenance program for the erosion and sediment control measures;
 - (h) provision for adequate access to maintain all erosion and sediment control measures especially during the wet season months from November to April;

- (i) additional erosion and sediment control measures for construction of wells and pipelines on slopes /-- GREATER THAN --/10%;
- (j) a surface water monitoring program designed to detect impacts from sediment runoff into waters;
- (k) identification of remedial actions required to ensure compliance with the conditions of this environmental authority; and
- (l) details of community consultation strategies and processes to be used in further developing and implementing the Erosion and Sediment Control Plan.

B9 The holder of this environmental authority must implement the Erosion and Sediment Control Plan.

B10 A copy of the Erosion and Sediment Control Plan must be made available to the administering authority and any potentially affected landholders upon request.

Maintenance and Cleaning

B11 The maintenance and cleaning of vehicles and any other equipment or plant must be carried out in areas from where the resultant contaminants cannot be released into any waters.

Watercourses, Wetlands and Springs

B12 In the carrying out of the petroleum activity(ies) the holder of this environmental authority must not clear vegetation or place fill, in or within:

- (a) 200 metres from any wetland, lake or spring; or
- (b) 100 metres of the high bank of any other watercourse.

B13 The holder of this environmental authority must not excavate or place fill in a way that interferes with the flow of water in a watercourse, wetland, or spring, including works that divert the course of flow of the water or works that impound the water.

B14 Despite Conditions (B12) and (B13), pipeline, track and road construction works may be undertaken in watercourses, wetlands or springs where there is no practicable alternative such as the use of horizontal directional drilling methods, for a maximum period of ten (10) business days, provided that the works are conducted in accordance with the following order of preference:

- (a) conducting work in times of no flow; and
- (b) using all reasonable and practical measures to reduce impacts in times of flow.

- B15 Activities or works resulting in significant disturbance to the bed or banks of a watercourse or wetland, or a spring must:
- (a) only be undertaken where necessary for the construction and/or maintenance of roads, tracks and pipelines that are essential for carrying out the authorised petroleum activity(ies) and no reasonable alternative location is feasible;
 - (b) be no greater than the minimum area necessary for the purpose of the significant disturbance;
 - (c) be designed and undertaken by a suitably qualified and experienced person taking into account the matters listed in Section 5. Planning Activities and Section 6 Impact Management During Activities of DERM's "Guideline — Activities in a watercourse, lake or spring associated with mining operations" dated April 2008, or more recent editions as such become available; and
 - (d) upon cessation of the activities or works, commence rehabilitation immediately such that the final rehabilitation is to a condition that will ensure the ongoing physical integrity and the natural ecosystem values of the site.
- B16 Sediment control measures must be implemented to minimise any increase in water turbidity due to carrying out the petroleum activity(ies) in the bed or banks of a watercourse or wetland, or a spring.
- B17 Routine, regular and frequent visual monitoring must be undertaken while carrying out construction work and/or any maintenance of completed works in a watercourse, wetland or spring. If, due to the petroleum activity(ies), water turbidity increases in the watercourse, wetland or spring outside contained areas, works must cease and the sediment control measures must be rectified to limit turbidity before activities recommence.

Groundwater

- B18 The extraction of groundwater as part of the petroleum activity(ies) from underground aquifers must not directly or indirectly cause environmental harm to any spring, wetland or other surface waters.

Wild Rivers

- B19 In a declared Wild River Area, petroleum activity(ies) must be consistent with the conditions stated in the relevant Wild River declaration and in circumstances where there is any inconsistency or conflict the conditions of the Wild River declaration prevail.

Floodplains

- B20 Where the petroleum activity(ies) is carried out on floodplain areas, the holder of this environmental authority must ensure that the petroleum activity(ies), excluding limited petroleum activity(ies) does not:
- (a) concentrate flood flows; 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) increase the risk to the safety of persons from flooding; or
 - (f) increase the risk of damage to property from flooding.

SCHEDULE C - DAMS

Management of Low Hazard Dams

- C1 All low hazard dams must be designed and constructed, operated and maintained in accordance with accepted engineering standards currently appropriate for the purpose for which they are intended.
- C2 The hazard category of each low hazard dam must be determined by a suitably qualified and experienced person:
- (a) prior to its construction; or
 - (b) within 120 business days of the date of grant of this environmental authority for existing low hazard dams; and
 - (c) prior to any change in its purpose or stored contents.
- C3 Where the hazard category of a low hazard dam is for the first time assessed as significant or high, the holder of this environmental authority must ensure that the dam meets the hydraulic performance required of the assessed hazard category within 12 months of that assessment.
- C4 In the event of early signs of loss of structural or hydraulic integrity of a low hazard dam, the holder of this environmental authority must immediately take action to prevent or minimise any actual or potential environmental harm.
- C5 Low hazard dams must be designed with a floor and sides made of material to contain the wetting front and any entrained contaminants within the bounds of the containment system during its operational life, including any period of decommissioning and rehabilitation.

Requirements for New Regulated Dams

- C6 All regulated dams must be designed by, and constructed under the supervision of a suitably qualified and experienced person in accordance with the requirements of the most recent version of the "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams" as amended from time to time.
- C7 The holder of this environmental authority must ensure that regulated dams are designed by a suitably qualified and experienced person to prevent:
- (a) floodwaters from entering the regulated dam from a watercourse or drainage line to the annual exceedance probability specified for determining spillway capacity in the "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams", as amended from time to time; and
 - (b) wall failure due to erosion by floodwaters arising from the watercourse or drainage line to the annual exceedance probability specified for determining spillway capacity in the "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams", as amended from time to time; and
 - (c) overtopping as a result of a flood event of the annual exceedance probability specified for determining spillway capacity in the 'Manual for Assessing hazard Categories and Hydraulic Performance of Dams', as amended from time to time.

Construction and Operational Requirements for New Regulated Dams

- C8 All new regulated dams must:
- (a) be designed with a floor and sides of material that will contain the wetting front and any entrained contaminants within the bounds of the containment system during its operational life including any period of decommissioning and rehabilitation; and
 - (b) have a system that will detect any passage of the wetting front or entrained contaminants through the floor or sides of the dam

Requirements for Existing Regulated Dams

- C9 The audit report required under condition (A16) must include a dams assessment report which includes but is not necessarily limited to:
- (a) the hazard category of each dam on PL30 in accordance with the most recent version of the 'Manual for Assessing Hazard Categories and Hydraulic Performance of Dams',
 - (b) the condition and adequacy of each dam for dam safety;
 - (c) each dam's structural, geotechnical and hydraulic integrity; and
 - (d) an evaluation of the dams of the alternative water management options and their viability.

- C10 The holder of this environmental authority must, upon receipt of the results of the assessment, consider the report and its recommendations and take action to ensure that each dam will safely perform its intended function.
- C11 The audit report required under condition (A16) must include notification to the administering authority of the outcomes and recommendations of the dam assessment report required under condition (C9) and the actions taken to ensure the integrity of each dam as required under condition (C10).
- C12 Within six (6) months of a dam being identified as being a regulated dam, the holder of this authority must:
- (a) ensure that the name of the regulated dam is clearly sign posted at the dam location at all times
 - (b) the Mandatory Reporting Level (MRL) is marked on each regulated dam in such a way that it is clearly observable;
 - (c) enter the relevant details into the regulated dam register as per condition (C16).
- C13 Within 12 months of receipt of the audit report required under condition (A16), the holder of this environmental authority must ensure any dam identified as being a regulated dam is appropriately certified and the certification is lodged with the administering authority.
- C14 All existing dams on PL30 must be maintained:
- (a) in accordance with generally accepted engineering standards and practices;
 - (b) to prevent the release of contaminants to waters;
 - (c) to ensure the stability of the pond's construction.

Requirements for Regulated Dam Repair

- C15 Where the holder of this environmental authority detects any passage of the wetting front through the floor or sides of a regulated dam, the holder of this environmental authority must, as soon as practicable, either:
- (a) repair the dam to rectify the detected passage of the wetting front through the floor or sides of the dam; or
 - (b) decommission and rehabilitate the dam.

Regulated Dam Register

- C16 The holder of this environmental authority must maintain a register of regulated dams that must include, as a minimum, the following information for each regulated dam:
- (a) dam name, the coordinates (in GDA94) for its location and date of entry in the register;
 - (b) dam purpose and its proposed actual contents;
 - (c) hazard category assessed using the "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams", as amended from time to time;
 - (d) details of the composition and construction of any liner;
 - (e) the system for detection of leakage through the floor and sides of the dam;
 - (f) dimensions (metres) and surface area (hectares) measured at the footprint of the dam;
 - (g) maximum operational volume (megalitres);
 - (h) dam crest volume (megalitres);
 - (i) spillway crest level (metres AHD);
 - (j) design storage allowance at 1 November each year (megalitres);
 - (k) mandatory reporting level (metres);
 - (l) design plan title and reference;
 - (m) date construction was certified as compliant with the design plan;
 - (n) name and qualifications of certifier;
 - (o) dates on which the dam was inspected for structural and operational adequacy;
 - (p) dates on which the report of the annual structural and operational adequacy inspection was provided to the administering authority;
 - (q) dates on which the dam was inspected for the detection of leakage through any liner;
 - (r) dates on which the dam was inspected for the purpose of annually ascertaining the
 - (s) available storage capacity on the 1 November each year; and
 - (t) dam water quality as obtained from monitoring required under conditions (129) to (131) as at 1 November each year.

Note: The dam register in the approved departmental format is available for download at: http://www.derm.qld.gov.au/environmental_management/coal-seam-gas/environment.html

- C17 The holder of this environmental authority must provisionally enter the required information in the register of regulated dams when a design plan for a regulated dam is submitted to the administering authority.
- C18 The holder of this environmental authority must make a final entry of the required information in the register of regulated dams once compliance with condition (C26) has been achieved.
- C19 The holder of this environmental authority must ensure that the information contained in the register of regulated dams is always current and complete.

- C20 All entries in the register of regulated dams must be certified by the chief executive officer for the holder of this environmental authority, or their delegate, as being accurate and correct.
- C21 The holder of this environmental authority must submit the register of regulated dams or information contained in the register available to the administering authority at each annual return.
- C22 Construction of any dam or modifications to an existing dam determined to be in the high hazard or significant hazard category in accordance with the *"Manual for Assessing Hazard Categories and Hydraulic Performance of Dams"*, as amended from time to time, is prohibited unless the required design plan details have been entered into the regulated dam register and certified by the chief executive officer for the holder of this environmental authority, or their delegate, as being accurate and correct.

Regulated Dam Design Plan and 'As Constructed' Certification

- C23 The construction and operation of regulated dams is prohibited unless the holder of this environmental authority has submitted to the administering authority a copy of the design plan, together with the certification of a suitably qualified and experienced person that the regulated dam:
- (a) will deliver the performance stated in the design plan;
 - (b) has had its hazard category assessed and been designed in accordance with the requirements of the *"Manual for Assessing Hazard Categories and Hydraulic Performance of Dams"*, as amended from time to time; and
 - (c) when constructed and operated, will be compliant in all respects with the relevant conditions of this environmental authority.
- C24 The design plan must include, but not necessarily be limited to:
- (a) a statement of the relevant legislation, regulatory documents and engineering practice relied upon in the design plan;
 - (b) a statement of the facts and data being used in the design plan and the limitations to the application and interpretation of that material;
 - (c) an assessment of the hazard category of the proposed dam based on the identification of potential impacts on any relevant sensitive places for any applicable dam failure scenarios, including the cumulative impact should all dams fail at once;
 - (d) detailed specifications for the design, operation, maintenance and decommissioning of the dam;
 - (e) an operational plan that includes contingency / emergency response procedures designed to avoid / minimise discharges resulting from any overtopping or loss of structural integrity of the dam;

- (f) design, specification and operational rules for any related structures and systems used to prevent the overtopping of the proposed dam;
- (g) a detailed plan for the decommissioning and rehabilitation of the dam at the end of its operational life;
- (h) any other matter required by the certifying suitably qualified and experienced person; and
- (i) evidence supporting the claims of the certifier that they are a suitably qualified and experienced person.

C25 If, within the 20 business days following the lodgement of a certified design plan the administering authority notifies the holder of this environmental authority, in writing, that the design plan is not compliant with either:

- (a) the conditions of this environmental authority; or
- (b) the requirements set out in the "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams", as amended from time to time.

then the construction and operation of the regulated dam is prohibited until the administering authority provides written advice that its construction may proceed.

C26 When construction of any regulated dam is complete, the holder of this environmental authority must submit to the administering authority one hard copy and one electronic copy of a set of 'as constructed' drawings, together with the certification of a suitably qualified and experienced person that the dam 'as constructed' will deliver the performance stated in the design plan and at the time of certification it is compliant in all respects with conditions (C6) to (C8), (C23) and (C24) of this environmental authority.

C27 Each regulated dam must be maintained and operated in a manner that is consistent with the design plan and the certified 'as constructed' drawings for the duration of its operational life and until decommissioned and rehabilitated.

C28 Upon any change in the purpose or stored contents of a regulated dam, the hazard category of that dam must be determined by a suitably qualified and experienced person prior to any such change.

Mandatory Reporting Level

C29 The mandatory reporting level must be marked on each regulated dam in such a way that it is clearly observable during routine inspections of each dam.

- C30 If the contents of a regulated dam reaches the mandatory reporting level, the holder of this environmental holder must immediately act to prevent or, if unable to prevent, to minimise any actual or potential environmental harm

Annual Inspection and Report

- C31 Each regulated dam must be inspected annually by a suitably qualified and experienced person.
- C32 At each annual inspection, each regulated dam must be assessed for:
- (a) its hazard category in accordance with the "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams", as amended from time to time; and
 - (b) its' condition and adequacy for dam safety; and
 - (c) its' structural, geotechnical and hydraulic performance against the criteria contained in the certified design plan.
- C33 An assessment of the adequacy of the available storage in each regulated dam is to be made, based on an actual regulated dam level observed in the month of May in each year.
- C34 The estimated level in any regulated dam as at 1 November in each year must be equal or less than the design storage allowance for the dam.
- C35 Where the assessment of the adequacy of the available storage in any regulated dam indicates that the design storage allowance will be exceeded, or at any other time the holder of this environmental authority becomes aware that the design storage allowance has been or will be exceeded, the holder of this environmental authority must immediately act to prevent or, if unable to prevent, to minimise any actual or potential environmental harm.
- C36 For each annual inspection, a report on the condition and adequacy of each regulated dam must be prepared and certified by the suitably qualified and experienced person and include any recommended actions to be taken to ensure the integrity of each regulated dam.

- C37 The holder of this environmental authority must, upon receipt of the annual inspection report, consider the report and its recommendations and take action(s) as necessary to ensure that each regulated dam will safely perform its intended function.
- C38 Within one month of receiving the annual inspection report, the holder of this environmental authority must advise the administering authority in writing of the recommendations of the inspection report and the actions taken to ensure the integrity of each regulated dam.

SCHEDULE D - LAND

General

- D1 Contaminants that will or may cause environmental harm must not be directly or indirectly released to land except as permitted under this environmental authority.

Disturbance to Land — General

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

- (e) prior to carrying out field based activities, make all relevant staff, contractors or agents carrying out these activities, aware of the location of any category A, B or C ESAs and the requirements of this environmental authority.

Note: This environmental authority does not authorise the taking of protected animals or the tampering with an animal breeding place as defined under the Nature Conservation Act 1992 and Regulations.

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

Disturbance to Land — Environmentally Sensitive Areas

- D8 Notwithstanding Conditions (D2) to (D7) inclusive, the holder of this environmental authority must ensure that petroleum activity(ies):
- (a) are not conducted in or within 200 metres of any listed category A, B or C ESAs; and
 - (b) do not involve activities other than (a) limited petroleum activity(ies) within 1km of a listed category A ESA, or within 500m of a listed category B or C ESA.
- D9 (A) limited petroleum activity(ies) carried out in accordance with Condition (D8)(b) must be preferentially located in pre-existing areas of clearing or significant disturbance to the greatest practicable extent.

Disturbance to Land — Endangered and Of Concern Regional Ecosystems

- D10 Despite Condition (D8), where it can be demonstrated that no reasonable or feasible alternative exists, (a) limited petroleum activity(ies) may be undertaken within an endangered/of concern Regional Ecosystem (RE) and its associated buffer zone, provided that the area is not part of another listed category A, B or C ESA (e.g. a National Park) or associated buffer zone unless authorised by the administering authority.
- D11 The limited petroleum activity(ies) undertaken in accordance with Condition (D10) must comply with the following:
- (a) be located and carried out in areas according to the following order of preference:
 - i. pre-existing cleared areas or significantly disturbed areas less than 200m from an Endangered/Of Concern RE;
 - ii. undisturbed areas less than 200m from an Endangered/Of Concern RE;
 - iii. pre-existing areas of significant disturbance within an endangered/of concern regional ecosystem (e.g. areas where significant clearing or thinning has been undertaken within a regional ecosystem, and/or areas containing high densities of weed or pest species which has inhibited re-colonisation of native regrowth);
 - iv. areas where clearing of an endangered or of concern regional ecosystem is unavoidable;
 - (b) any vegetation clearing in an Endangered/Of Concern RE or associated buffer zone must not exceed any of the following areas:
 - i. 10% of the remnant unit of Endangered/Of Concern regional ecosystem as ground truthed and mapped before any activity commences as per Conditions (D1) and (D2) of this environmental authority for the life of the project; or
 - ii. more than 30m² for the construction of a sump; or
 - iii. six (6) metres in width for tracks; or
 - iv. twelve (12) metres in width for pipeline construction purposes; and
 - (c) all reasonable and practical measures are taken to minimise the area cleared and to avoid the clearing of mature trees, which must include but not be limited to, for each well site, a risk assessment to determine the minimum amount of disturbance possible.
- D12 Details of any significant disturbance to land in or within 200m of Endangered or Of Concern regional ecosystems, along with a record of the assessment required by Conditions (D2i and (D3) must be kept and submitted to the administering authority upon request.
- D13 If the assessment required by Conditions (D2) and (D3) indicates that an ecosystem mapped as Endangered or Of Concern regional ecosystem by the Queensland Herbarium should be in a lower conservation value classification and the holder of this environmental authority wishes to undertake activities as if the ecosystem is of the lower conservation value they must notify the administering authority in writing before any significant disturbance to land takes place.

- D14 If, within the 20 business days following the lodgement of the notification under Condition (D13) the administering authority notifies the holder of this environmental authority, in writing, that the regional ecosystem mapping requires further validation, then significant disturbance to land in the mapped regional ecosystem are prohibited until the administering authority provides written advice that significant disturbance to land may proceed.
- D15 When requested by the administering authority, the holder of this environmental authority must enter into an agreement with the administering authority to provide an environmental offset to counterbalance the impacts of the activity on Endangered or Of Concern regional ecosystem.
- D16 The holder of this environmental authority must comply with any environmental offset agreement made in accordance with the conditions of this environmental authority.

Disturbance to Land — State Forests and Timber Reserves

- D17 Despite Condition (D8), activities may be undertaken within State Forests or Timber Reserves provided the holder of the environmental authority has written approval from the authority responsible for the administration of the *Forestry Act 1959*.
- D18 Where activities are to be undertaken in a State Forest or Timber Reserve that are also Endangered or Of Concern Regional Ecosystems, such activities may be undertaken in accordance with condition (D10) of this environmental authority, provided the holder of this environmental authority has written approval from the authority responsible for the administration of the *Forestry Act 1959*.

Soil Management

- D19 The holder of this environmental authority must develop and implement soil management procedures for areas to be disturbed by (a) petroleum activity(ies) prior to commencement of (a) petroleum activity(ies) in these areas to prevent or minimise the impacts of soil disturbance. These procedures must include but not be limited to:
- (a) establishment of baseline soil information for areas to be disturbed including soil depth, pH, electrical conductivity (EC), chloride, cations (calcium magnesium, sodium, aluminium and potassium), exchangeable sodium percentage (ESP), particle size and soil fertility (including nitrogen, phosphorous, potassium, sulphur and micronutrients);
 - (b) a soils monitoring program outlining parameters to be monitored, frequency of monitoring and maximum limits for each parameter;

- (c) identification of soil units within areas to be disturbed by petroleum activities at a scale of 1:100000, in accordance with the 'Guidelines for Surveying Soil and Land Resources, tad Edition' (McKenzie et al. 2008), "Australian Soil and Land Survey Handbook, 3'd Edition" (National Committee on Soil and Terrain 2009) and "The Australian Soil Classification" (Isbell 2002);
- (d) development of soil descriptions that are relevant to assessment for agricultural suitability, topsoil assessment, erodibility and rehabilitation, for example:
 - i. shallow cracking clay soils;
 - ii. deep cracking clay soils;
 - iii. deep saline and/or sodic cracking clay soils with melonholes;
 - iv. thin surface, sodic duplex soils;
 - v. medium to thick surface (say >15 cm), sodic duplex soils; and
 - vi. non-sodic duplex soils;
- (e) detailed mitigation measures and procedures to manage the risk of adverse soil disturbance in the carrying out of the petroleum activity; and
- (f) for areas of good quality agricultural land, detailed methods to be undertaken to minimise potential impacts.

D20 A copy of the soil management procedures must be made available to the administering authority upon request.

Acid Sulfate Soils

D21 The holder of this environmental authority must, when clearing in areas with acid sulfate soils, develop and implement an acid sulfate soil environmental management plan prepared in accordance with the "*State Planning Policy 2/02 Guideline Planning and Managing Development Involving Acid Sulfate Soils*" and the Department of Environment and Resource Management's "Queensland Acid Sulfate Soil Technical Manual" (Version 2.2 September 2004) or more recent editions or supplements to these documents as such become available.

Fauna Management

D22 The holder of this environmental authority must develop and implement fauna management procedures for the carrying out of the petroleum activity(ies), in particular pipeline construction, construction and use of dams, to prevent or minimise harm or the potential risk of causing harm to fauna.

D23 The fauna management procedures must include training and awareness of staff and contractors and ensure that any planned fauna handling is undertaken by a suitably qualified person.

- D24 A copy of the fauna management procedures must be made available to the administering authority upon request.

Note: The procedures required by conditions (D22) and (D23) should consider the "Australian Pipeline Industry Association Code of Environmental Practice — Onshore Pipelines" dated October 2005, or subsequent versions thereof.

Pest Management

- D25 In carrying out the petroleum activity(ies) the holder of this environmental authority must develop and implement an effective pest management program that includes but is not limited to the following:
- (a) identification of pest species and infestation areas;
 - (b) prevents and/or minimises the introduction and/or spread of pests; and
 - (c) control and management of pest outbreaks as a result of petroleum activities.

- D26 A copy of the pest management program must be made available to the administering authority upon request.

Note: The pest management program required by Condition (D25) should consider the "Petroleum Industry (including coal seam methane gas) Minimising Pest Spread Guidelines" dated June 2008, or subsequent versions thereof. This document is available for download from: <http://www.dpi.qld.gov.au/documents/Biosecurity/EnvironmentalPests/IPA-Minimising-Pest-Spread-Advisory-Guidelines.pdf>

Chemical and Fuel Storage

- D27 All explosives, hazardous chemicals, corrosive substances, toxic substances, gases, dangerous goods, flammable and combustible liquids (including petroleum products and associated piping and infrastructure) must be stored and handled in accordance with the relevant Australian Standard where such is available.
- D28 Notwithstanding the requirements of any Australian Standard, any liquids stored on site that have the potential to cause environmental harm must be stored in or serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land. Where no relevant Australian Standard is available, the following must be applied:
- (a) storage tanks must be bunded so that the capacity and construction of the bund is sufficient to contain at least 110% of a single storage tank or 100% of the largest storage tank plus 10% of the second largest storage tank in multiple storage areas; and

- (b) drum storages must be bunded so that the capacity and construction of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.

D29 All containment systems must be designed to minimise rainfall collection within the system.

Pipelines

D30 Pipelines must be preferentially located alongside existing linear infrastructure such as roads, tracks and powerlines.

D31 Pipeline trenches must only be left open for the minimum time practicable.

D32 The length of pipeline trench open at any one time must be minimised as far as practicable.

SCHEDULE E – ENVIRONMENTAL NUISANCE

Odour, Dust and other Airborne Contaminants

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

Noise

E2 In the event of a complaint about noise from the carrying out of the petroleum activity(ies) being made to the administering authority and that the administering authority considers is not frivolous nor vexatious nor based on mistaken belief, then the emission of noise from the licensed place must not result in levels greater than those specified in Schedule E, Table 1 —Noise limits for fixed activities or Schedule E, Table 2 — Noise limits for itinerant activities as appropriate.

E3 In the event of a complaint about noise nuisance that the administering authority considers is not frivolous or vexatious then the holder of the environmental authority must prepare and submit a noise management plan to the administering authority within the reasonable and practicable timeframe specified in writing by the administering authority.

E4 The noise management plan must address, but not be limited to, the following matters:

- (a) identification of component noise sources and activities at the place(s) which impact on noise sensitive areas;
- (b) the measured and/or predicted level of these noise sources and activities at noise sensitive places;
- (c) the reasonable and practicable control or abatement measures (including hours of operation) that can be undertaken to reduce identified intrusive noise sources;
- (d) the level of noise at noise sensitive places that would be achieved from implementing these measures.
- (e) the handling of future noise complaints;
- (f) community liaison and consultation; and
- (g) training of staff and contractors in noise management practices.

E5 The holder of this environmental authority must commence implementation of the noise abatement recommendations of the noise management plan not more than 30 days following its submission to the administering authority, accounting for any comments made by the administering authority within that time.

Schedule E, Table 1 — Noise Limits for fixed activities

Sensitive place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and public holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
LA90, adj, 15 mins	lesser of bg+3 or 48	lesser of bg+0 or 40	lesser of bg+0 or 40	lesser of bg+0 or 40	lesser of bg+0 or 40	lesser of bg+0 or 40
LA10, adj, 15 mins	lesser of bg+5 or 50	lesser of bg+5 or 45	lesser of bg+0 or 40	lesser of bg+5 or 45	lesser of bg+5 or 40	lesser of bg+0 or 35
LA1, adj, 15mins	lesser of bg+10 or 55	lesser of bg+10 or 50	lesser of bg+5 or 45	lesser of bg+10 or 50	lesser of bg+10 or 45	lesser of bg+5 or 40
Commercial place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and public holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
LA90, adj, 15 mins	lesser of bg+5 or 50	lesser of bg+0 or 45	lesser of bg+0 or 40	lesser of bg+3 or 43	lesser of bg+0 or 40	lesser of bg+0 or 40
LA10, adj, 15 mins	lesser of bg+10 or 55	lesser of bg+10 or 50	lesser of bg+5 or 45	lesser of bg+10 or 50	lesser of bg+10 or 45	lesser of bg+5 or 40
LA1, adj, 15mins	lesser of bg+15 or 60	lesser of bg+15 or 55	lesser of bg+10 or 50	lesser of bg+15 or 55	lesser of bg+15 or 50	lesser of bg+10 or 45

- bg background noise level
- In the event that measured bg is less than 25 dB(A), then 25 dB(A) is to be substituted for the measured level

- If the background is higher than the number shown on the second line in any box, the limit is to be background plus 0.

Schedule E, Table 2 — Noise limits for itinerant activities

Sensitive place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and public holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
L _{A90} , adj, 15 mins	lesser of bg+3 or 48	lesser of bg+0 or 40	lesser of bg+0 or 40	lesser of bg+0 or 40	lesser of bg+0 or 40	lesser of bg+0 or 40
L _{A10} , adj, 15 mins	lesser of bg+5 or 50	lesser of bg+5 or 45	lesser of bg+0 or 40	lesser of bg+5 or 45	lesser of bg+5 or 40	lesser of bg+0 or 35
L _{A1} , adj, 15mins	lesser of bg+10 or 55	lesser of bg+10 or 50	lesser of bg+5 or 45	lesser of bg+10 or 50	lesser of bg+10 or 45	lesser of bg+5 or 40
Commercial place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and	public holidays	
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	8pm to 10pm	10pm to 9am
L _{A90} , adj, 15 mins	lesser of bg+5 or 50	lesser of bg+0 or 45	lesser of bg+0 or 40	lesser of bg+3 or 43	lesser of bg+0 or 40	lesser of bg+0 or 40
L _{A10} , adj, 15 mins	lesser of bg+10 or 55	lesser of bg+10 or 50	lesser of bg+5 or 45	lesser of bg+10 or 50	lesser of bg+10 or 45	lesser of bg+5 or 40
L _{A1} , adj, 15mins	lesser of bg+15 or 60	lesser of bg+15 or 55	lesser of bg+10 or 50	lesser of bg+15 or 55	lesser of bg+15 or 50	lesser of bg+10 or 45

- bg background noise level
- In the event that measured bg is less than 25 dB(A), then 25 dB(A) is to be substituted for the measured level
- If the background is higher than the number shown on the second line in any box, the limit is to be background plus 0.

E6 Upon completion of the noise abatement recommendations contained in the noise management plan, the holder of this environmental authority must undertake verification noise measurements. Not more than 30 days following such noise assessment, the holder of this environmental authority must submit to the administering authority a noise report confirming compliance with noise limits in Schedule E Table 1 and/or Schedule E, Table 2.

SCHEDULE F - AIR

Fuel Burning or Combustion Equipment

F1 Contaminants emitted from fuel burning or combustion equipment point sources must be directed vertically upwards.

- F2 Prior to the installation of any new or additional fuel burning and combustion equipment that is capable of burning at least 500 kg of fuel in an hour, following the issue of this environmental authority, the holder of this environmental authority must conduct air dispersion modelling to calculate the ground level concentrations of emissions from the fuel burning or combustion equipment under maximum operating conditions within the relevant airshed and identify any potential impacts to air quality within the study area.
- F3 The holder of this environmental authority must ensure that the calculated ground level concentrations required under condition (F2) do not exceed the criteria for each air contaminant in Schedule F, Table 1 — Maximum Ground Level Concentration Criteria.

Schedule F, Table 1 — Maximum Ground Level Concentration Criteria

Contaminant	Concentration at 0° Celsius	Units	Averaging time
NOx as Nitrogen Dioxide	250	µg/m ³	1 hour
NOx as Nitrogen Dioxide	33	µg/m ³	1 year
Carbon monoxide	11	mg/m ³	8 hour

- F4 The holder of this environmental authority must maintain a Register of Fuel Burning or Combustion Equipment that must include, as a minimum, the following information for each of the equipment:
- (a) Fuel Burning or Combustion Equipment Name and Location
 - (b) Stack emission height (metres)
 - (c) Minimum efflux velocity (metres /s)
 - (d) Mass emission rates (g/s)
 - (e) Contaminant concentrations (mg/Nm³ @ x %O₂ dry gas at 0°Celsius and 1 atmosphere)
- F5 The holder of this environmental authority must ensure that the information contained in the Register of Fuel Burning or Combustion Equipment is complete and current on any given day.
- F6 All entries in the Register of Fuel Burning or Combustion Equipment must be certified by the chief executive officer for the holder of this environmental authority, or their delegate, as being accurate and correct.
- F7 The holder of this environmental authority must make the Register of Fuel Burning or Combustion Equipment or information contained in the Register available to the administering authority on request.

SCHEDULE G - WASTE

General

- G1 All general waste must be removed from the site and sent to a recycling facility or disposal facility licensed to accept the waste.
- G2 All regulated waste must be removed from the site by a person who holds a current authority to transport such waste under the provisions of the *Environmental Protection Act 1994* and sent to a recycling facility or disposal facility licensed to accept the waste.
- G3 Waste must not be burned or allowed to be burned on the licensed site.
- G4 All waste fluids and muds resulting from drilling and exploration activities must be contained in a dam or containment structure for disposal, remediation or reuse where applicable.

SCHEDULE H - REHABILITATION

Progressive Rehabilitation for Significantly Disturbed Land

- H1 The holder of this environmental authority must not abandon any evaporation ponds but must decommission each evaporation ponds so as to prevent and/or minimise any environmental harm.
- H2 As a minimum, decommissioning must be conducted such that each evaporation ponds either:
 - (a) becomes a stable landform similar to that of surrounding undisturbed areas, that no longer contains substances that will migrate into the environment to cause adverse impacts; or
 - (b) is approved or authorised by the administering authority for use by the landholder following cessation of the petroleum activity(ies).
- H3 Pipelines trenches must be backfilled immediately after pipe laying and rehabilitated as soon as practicable but not longer than three (3) months after completion.

- H4 During backfilling of pipeline trenches, soils must be replaced so that the soil horizons are consistent with the soils of the immediately surrounding area.
- H5 Backfilled and rehabilitated pipeline trenches must:
- (a) be a staple landform;
 - (b) exhibit no subsidence or erosion gullies for at least five (5) years; and
 - (c) be re-profiled to a level consistent with surrounding soils; and
 - (d) be re-profiled to original contours and established drainage lines; and
 - (e) be visually consistent with the surround land features; and
 - (f) be vegetated with floristic species composition found in immediately surrounding area(s).
- H6 Progressive rehabilitation of significantly disturbed land caused by the carrying out of the petroleum activity(ies) (other than constructing pipelines) which is not required for the ongoing conduct of the petroleum activity(ies) must commence as soon as practicable, but not longer than nine (9) months following the completion of any construction or operational works associated with the petroleum activity(ies).
- H7 Progressive rehabilitation of significantly disturbed land caused by the carrying out of the petroleum activity(ies) must:
- (a) remediate any contaminated land (e.g. contaminated soils, decommissioned dams containing salt);
 - (b) reshape all significantly disturbed land to a stable landform;
 - (c) re-profile all significantly disturbed land to original contours;
 - (d) on all significantly disturbed land:
 - i. re-establish surface drainage lines;
 - ii. reinstate the top layer of the soil profile;
 - iii. establish groundcover to ensure that erosion is minimised; and
 - iv. establish vegetation of floristic species composition found in immediately surrounding area(s);
 - (e) undertake rehabilitation in a manner such that any actual and potential acid sulfate soils in or on the site are either not disturbed, or submerged, or are treated to prevent and/or minimise environmental harm.

Final Acceptance Criteria for Significantly Disturbed Land

- H8 All significantly disturbed land caused by the carrying out of the petroleum activity(ies) must be rehabilitated to meet the following final acceptance criteria:
- (a) all significantly disturbed land is reinstated to the pre-disturbed land use unless otherwise agreed to between the holder of this environmental authority, the landholder and the administering authority;
 - (b) all significantly disturbed land is reinstated to the pre-disturbed soil suitability class;
 - (c) the landform is safe for humans and fauna;
 - (d) the landform is stable with no subsidence or erosion gullies for at least three (3) years;
 - (e) a minimum of 80% percent foliage cover of immediate surrounding area is maintained in the rehabilitated sites for at least three (3) years;
 - (f) a minimum of 80% of the flora species in the analogue sites is maintained in the rehabilitated sites for at least three (3) years;
 - (g) a minimum equal density of habitat structures as that in analogue sites is maintained;
 - (h) erosion is minimised with appropriate sediment traps and erosion control measures installed as determined by a suitably qualified person;
 - (i) the water quality of any residual void or water bodies constructed by petroleum activity(ies) meets criteria for subsequent uses and does not have potential to cause environmental harm;
 - (j) there is no ongoing contamination to waters;
 - (k) there is no ongoing contamination to groundwater from dams or monocells (demonstrated via groundwater monitoring and leak detection); and
 - (l) the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by petroleum activity(ies).
- H9 Notwithstanding condition (H8), all buried pipelines must be decommissioned in accordance with the requirements of Australian Standard 2885.

SCHEDULE I – MONITORING PROGRAMS

General

- I1 All monitoring under this environmental authority must be conducted by a suitably qualified person.
- I2 All instruments, equipment and measuring devices used for measuring or monitoring in accordance with any condition of this environmental authority must be calibrated, and operated and maintained effectively.

- 13 The method of water sampling required by this environmental authority must comply with the most recent edition of the Department of Environment and Resource Management — Water Quality Sampling Manual.

- 14 All determinations of water quality must be:

- (a) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements; and
- (b) made in accordance with methods prescribed in the latest edition of the Department of Environment and Resource Management - Water Quality Sampling Manual; and
- (c) carried out on representative samples.

Note: this condition requires the Monitoring and Sampling Manual — Environmental Protection (Water) Policy 2009 to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.

- 15 All laboratory analyses and tests required to be conducted under this environmental authority must be carried out by a laboratory that has NATA certification for such analyses and tests, except as otherwise authorised by the administering authority.

- 16 If monitoring conducted in accordance with this environmental authority indicated a condition or contaminant level that has caused, or has potential to cause, environmental harm, the environmental authority holder must:

- (a) as soon as is practicable, take the necessary actions to rectify the condition or
- (b) contaminant level so as to avoid or minimise environmental harm; and
- (c) notify the administering authority of the condition or contaminant level and the actions taken to rectify it.

- 17 Any management or monitoring plans, systems or programs required to be developed and implemented by a condition of this environmental authority must be reviewed for performance and amended if required on an annual basis.

- 18 The holder of this environmental authority must record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.

- I9 An annual monitoring report must be prepared each year and presented to the administering authority when requested. This report shall include but not be limited to:
- (a) a summary of the previous twelve (12) months monitoring results obtained under any monitoring programs required under this environmental authority and, a comparison of the previous twelve (12) months monitoring results to both the limits set in this environmental authority and to relevant prior results; and
 - (b) an evaluation/explanation of the data derived from any monitoring programs; and
 - (c) a summary of any record of quantities of releases required to be kept under this environmental authority; and
 - (d) an outline of actions taken or proposed to minimise the risk of environmental harm from any condition or elevated contaminant level identified by the monitoring or recording programs.

Groundwater Monitoring Program

- I10 By 27 April 2012, a Groundwater Monitoring Program must be developed and implemented which is able to detect any changes to groundwater quality as a result of storing contaminants in a containment facility(ies) (e.g. surface dams, evaporation ponds).
- I11 The Groundwater Monitoring Program must be developed and implemented by a suitably qualified person in the fields of hydrogeology, groundwater sampling design and groundwater monitoring program design.
- I12 The Groundwater Monitoring Program, must include, but not necessarily be limited to:
- (a) locations of monitoring sites, monitoring methodology and trigger values for detecting impacts on groundwater quality;
 - (b) as a minimum, sampling of the parameters and at the frequency listed in Schedule I, Table 1 — Minimum Groundwater Monitoring Parameters and Monitoring Frequency;
 - (c) procedures to establish background groundwater quality;
 - (d) a sufficient number of monitoring sites to provide information on the following:
 - i. seepage to groundwater and surrounding soils from any regulated dam and its effect on groundwater and soils; and
 - ii. (ii) background monitoring sites (i.e. groundwater quality in representative bores that have not been affected by the petroleum activity(ies) authorised under this environmental authority); and
 - iii. (ii) the conduct of a geodetic survey of all monitoring bores to determine the relative water surface elevations of each bore and reported in metres relative to the AHD; and
 - iv. (iii) the determination of groundwater flow direction, groundwater flow rate and hydraulic conductivity;

- (e) a rationale containing details on the program purpose, program conceptualisation and verification of assumptions.

- I13 The holder of this environmental authority must implement the Groundwater Monitoring Program.
- I15 Groundwater monitoring bores constructed after 20 January 2012 must be installed according to the standards outlined in the Department of Environment and Resource Management's *"Minimum Construction Requirements for Water Bores in Australia"* 2003 or the *"Minimum Standards for the Construction and Reconditioning of Water Bores that Intersect the Sediments of Artesian Basins in Queensland"* 2010, as amended from time to time.
- I15 Groundwater monitoring bores constructed after 20 January 2012 must be constructed by, or under the supervision of a licensed Queensland water bore driller who has the correct endorsements on their licence for the type of activity being performed.
- I16 Groundwater samples must be monitored for the water quality parameters at the minimum frequencies specified in Schedule I, Table 1 — Groundwater Monitoring Parameters and Monitoring Frequency.

Schedule I, Table 1 — Groundwater Monitoring Parameters and Monitoring Frequency

Groundwater parameter	Monitoring frequency
Water level [m]	Quarterly
Groundwater Pressure in Geological Strata [kPa]	Biannually
pH	Biannually
Electrical conductivity [μ S/m]	Biannually
Total Dissolved Solids [mg/L]	Biannually
Temperature [$^{\circ}$ C]	Biannually
Dissolved Oxygen [mg/L]	Biannually
Alkalinity (Bicarbonate, Carbonate, Hydroxide and Total as CaCO_3) [mg/L]	Biannually
Residual Alkali [mg/L]	Biannually
Sodium Adsorption Ratio (SAR)	Biannually
Anions (Bicarbonate, Carbonate, Hydroxide, Chloride, Fluoride, Sulphate) [mg/L]	Biannually
Cations (Aluminium, Calcium, Magnesium, Potassium, Sodium) [mg/L]	Biannually
Silica [mg/L]	Biannually
Dissolved and total metals (including but not necessarily being limited to: aluminium, arsenic III, cadmium, copper, iron, lead, manganese, mercury, nickel, silver, borate, chromium III and zinc) [μ g/L]	Biannually
Total Phosphorus as Phosphorus [mg/L]	Biannually
Ammonia, Nitrate and Nitrite as Nitrogen [mg/L]	Biannually
Total Petroleum Hydrocarbons [mg/L]	Biannually
BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene and total xylene) [μ g/L];	Biannually
Polycyclic Aromatic Hydrocarbons (including but not necessarily being limited to: Naphthalene, Phenanthrene, Benzo[a]pyrene) [μ g/L]	Biannually

- I17 All groundwater monitoring bores must be maintained in an operative condition and be accessible at all times to any authorised person.

Air Monitoring (Point Source)

- I18 The holder of this environmental authority must conduct a monitoring program of contaminants released to the atmosphere at each release point recorded in the Register of Fuel Burning or Combustion Equipment (Condition (F4)) for the contaminants listed in Schedule F - Table 1 (release of contaminants) and at the frequencies specified in Schedule I -Table 1.

Schedule I, Table 1 – Monitoring Frequency for Contaminants

Contaminant	Monitoring frequency
NOx as Nitrogen Dioxide	Annually
Carbon monoxide	

- I19 The monitoring program must comply with the following:
- (a) Monitoring provisions for the release points must comply with the most recent edition of AS4323.1 Stationary source emissions method 1: Selection of sampling provisions.
 - (b) The following tests must be performed for each sample taken at each release point specified in the Register of Fuel Burning or Combustion Equipment (Condition (F4)):
 - i. Gas velocity, volume and mass flow rate.
 - ii. Temperature.
 - iii. Water vapour concentration (for non-continuous sampling).
 - (c) Samples taken must be representative of the contaminants discharged when operating under maximum operating conditions.
 - (d) During the sampling period the following additional information must be gathered:
 - i. Production rate
 - ii. Plant status.
 - (e) Monitoring of contaminant release must be carried out in accordance with the latest edition of the administering authority's Air Quality Sampling Manual.

Noise Monitoring

- I20 The holder of this environmental authority must undertake noise monitoring when requested by the administering authority to investigate a complaint of environmental nuisance at a sensitive or commercial place within the reasonable and practicable timeframe nominated by the administering authority, and report the results to the administering authority within three (3) business days of completion of the monitoring.
- I21 Noise monitoring and recording must include the following descriptor, characteristics and matters:
- (a) $L_{AN,T}$ (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins);
 - (b) background noise $L_{A90,T}$;
 - (c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;
 - (d) atmospheric conditions including temperature, relative humidity and wind speed and directions;
 - (e) effects due to any extraneous factors such as traffic noise;
 - (f) location, date and time of monitoring;
 - (g) if the complaint concerns low frequency noise, Max $L_{PZ, 15min}$; and
 - (h) 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.
- I22 The method of measurement and reporting of noise levels and background sound pressure levels must comply with the latest edition of the administering authority's Noise Measurement Manual or the most recent version of AS1055 Acoustics — description and measurement of environmental noise.

Nuisance Monitoring (other than Noise)

- I23 When the administering authority advises the holder of this environmental authority of a complaint alleging nuisance other than noise, the holder must investigate the complaint and advise the administering authority in writing of the action proposed or undertaken to resolve the complaint.
- I24 When requested by the administering authority, the holder of this environmental authority must undertake monitoring as specified by the administering authority, within a reasonable and practical timeframe nominated by the administering authority to investigate any complaint of environmental harm at any sensitive or commercial place.

- I25 The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures implemented must be provided to the administering authority within ten (10) business days of completion of the investigation, or receipt of the monitoring results, whichever is the latter.
- I26 If monitoring in accordance with Condition (I24) and (I25) indicates that emissions exceed the limits set in this environmental authority or are causing environmental nuisance, then the holder of this environmental authority must:
- (a) address the complaint including the use of alternative dispute resolution services if required; and/or
 - (b) as soon as practicable implement abatement or attenuation measures so that light, dust, particulate or odour emissions from the authorised activities do not result in further environmental nuisance.

Monitoring of Low Hazard Dams

- I27 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.

Annual Regulated Dam Water Quality Monitoring

- I28 The holder of this environmental authority must monitor the quality of water in all regulated dams on the petroleum tenure(s) covered by this environmental authority in the month of October every year.
- I29 The monitoring of regulated dam water must include sufficient analytes and physico-chemical parameters to characterise water quality in the dam and must include, but not necessarily be limited to:
- (a) pH;
 - (b) electrical conductivity [$\mu\text{S/m}$];
 - (c) turbidity [NTU];
 - (d) total dissolved solids [mg/L];
 - (e) temperature [$^{\circ}\text{C}$];
 - (f) dissolved oxygen [mg/L];
 - (g) alkalinity (bicarbonate, carbonate, hydroxide and total as CaCO_3) [mg/L];
 - (h) residual alkali [mg/L];
 - (i) sodium adsorption ratio (SAR);
 - (j) anions (bicarbonate, carbonate, hydroxide, chloride, fluoride, sulphate) [mg/L];

- (k) cations (aluminium, calcium, magnesium, potassium, sodium) [mg/L];
 - a. silica [mg/L];
- (l) dissolved and total metals (including but not necessarily being limited to: aluminium, arsenic III, cadmium, copper, iron, lead, manganese, mercury, nickel, silver, borate, chromium III and zinc) [µg/L];
- (m) total phosphorus [mg/L];
- (n) ammonia, nitrate, nitrite as nitrogen [mg/L];
- (o) total petroleum hydrocarbons [µg/L];
- (p) BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene and total xylene) [µg/L];
- (q) polycyclic aromatic hydrocarbons (including but not necessarily being limited to naphthalene, phenanthrene, benzo[a]pyrene) [µg/L];
- (r) chlorophyll a [µg/L]; and
- (s) total cyanobacteria biovolume [cells/mg/L].

- I30 Water quality samples of regulated dams must be taken from at least three (3) different dam profile depths for each sampling event and be taken as far as practicable from the edge of the regulated dam.

Progressive Rehabilitation Monitoring

- I31 Regular maintenance and at least yearly monitoring of rehabilitated areas must take place to measure compliance with the requirements of condition (H5).

Monitoring of Rehabilitation Success

- I32 At least yearly monitoring of rehabilitated areas must be undertaken until compliance with the requirements of condition (H6) has been demonstrated.

SCHEDULE J – COMMUNITY ISSUES

- J1 The holder of this environmental authority must maintain a record of complaints and incidents causing environmental harm, and actions taken in response to the complaint or incident.
- J2 The holder of this environmental authority must record the following details for all complaints received and provide this information to the administering authority on request:
- (a) name, address and contact number for complainant;
 - (b) time and date of complaint;
 - (c) reasons for the complaint as stated by the complainant;

- (d) investigations undertaken in response to the complaint;
- (e) conclusions formed;
- (f) actions taken to resolve complaint;
- (g) any abatement measures implemented to mitigate the cause of the complaint; and
- (h) name and contact details of the person responsible for resolving the complaint.

SCHEDULE K – NOTIFICATION PROCEDURES

- K1 The holder of this environmental authority must telephone the Department of Environment and Resource Management's Pollution Hotline (telephone: 1300 130 372) and any affected landholder, occupier or their nominated representative as soon as reasonably practicable, but within 24 hours after becoming aware of:
- (a) any release of contaminants not in accordance with the conditions of this environmental authority; or
 - (b) any other non-compliance with any condition of this environmental authority; or
 - (c) any event where environmental harm has been caused or may be caused; or
 - (d) any incident where there is a potential or actual loss of well integrity (e.g. when the annulus pressure during stimulation increases by more than 3.5 MPa from the pressure immediately preceding stimulation), or
 - (e) any result of restricted stimulation fluids from monitoring of stimulation fluids that is above a maximum amount prescribed by a regulation; or
- K2 Subject to Condition (K1), the holder of this environmental authority must report spills of contaminants of the following volumes or kind:
- (a) releases of any volume of contaminants to water; and
 - (b) releases of greater than 200L of hydrocarbons, and
 - (c) releases of any volumes of contaminants where potential serious or material environmental harm has occurred or may occur.
- K3 The notification of emergencies or incidents as required by Conditions (K1) and (K2) must include but not be limited to the following information:
- (a) the environmental authority number and name of the holder of this environmental authority;
 - (b) the name and telephone number of the designated contact person;
 - (c) the location of the emergency or incident;
 - (d) the date and time of the release;

- (e) the time the holder of this environmental authority became aware of the emergency or incident;
- (f) the estimated quantity and type of any substances involved in the incident;
- (g) the actual or potential suspected cause of the release;
- (h) a description of the effects of the incident including any environmental harm that has occurred or may occur as a result of the release;
- (i) any sampling conducted or proposed, relevant to the emergency or incident; and
- (j) actions taken to prevent any further release and mitigate any environmental harm caused by the release.

K4 Within ten (10) business days following the initial notification of an emergency or incident or receipt of monitoring results, whichever is the later, a written report must be provided to the administering authority, including the following:

- (a) results and interpretation of any samples taken at the time of the incident and analysed;
- (b) the outcomes of actions taken at the time of the incident to prevent or minimise environmental harm; and
- (c) proposed actions to prevent a recurrence of the emergency or incident.

K5 As soon as practicable, but not more than six (6) weeks following the conduct of any environmental monitoring performed in relation to the emergency or incident, which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority, a written report on the results of any such monitoring must be provided to the administering authority.

DEFINITIONS

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

"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.

"active" for the purposes of landholders' groundwater bores means bores that are able to continue to provide a reasonable yield of water in terms of quality and quantity for the bores authorised purpose or use.

"alternative arrangement" means a written agreement between the holder of this environmental authority and an affected or potentially affected person at a sensitive receptor for a defined noise nuisance impact and may include an agreed period of time for which the arrangement is in place. An agreement for alternative arrangements may include, but not necessarily be limited to a range of noise abatement measures to be installed at a sensitive receptor and/or provision of alternative accommodation or the duration of the defined noise nuisance impact.

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

"bed and banks" for a watercourse or wetland means land over which the water of the watercourse or wetland normally flows or that is normally covered by the water, whether permanently or intermittently; but does not include land adjoining or adjacent to the bed or banks that is from time to time covered by floodwater.

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

"category A ESA" means any area listed in Section 25 of the Environmental Protection Regulation 2008.

"category B ESA" means any area listed in Section 26 of the Environmental Protection Regulation 2008.

"category C ESA" means any of the following areas:

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

"clearing" means:

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

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

"dam crest volume" means the volume of material that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls without regard to flows entering or leaving (e.g. via a spillway).

"design plan" is the documentation required to describe the physical dimensions of the dam, the materials and standards to be used for construction of the dam, and the criteria to be used for operating the dam. The documents must include 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 'Manual for Assessing Hazard Categories and Hydraulic Performance of Dams', prepared 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.

"discharge area" means:

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

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

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

"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.

"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.

"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 "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams", prepared 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.

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

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

"infrastructure" means water storage dams, roads and tracks, equipment, buildings and other structures built for the purpose and duration of the conduct of the petroleum activities, but does not include other facilities required for the long term management of the impact of those activities or the protection of potential resources. Such other facilities include dams other than water storage dams

(e.g. evaporation dams), pipelines and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.

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

"lake" means:

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

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

"levee" means a dyke or bund that is designed only to provide for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from unplanned releases from other works of infrastructure, during the progress of those stormwater or flood flows or those unplanned releases; and does not store any significant volume of water or flowable substances at any other times.

"limited petroleum activities" mean activities including geophysical surveys (including seismic activities), well sites, well pads, sumps, flare pits, flow lines and supporting access tracks. Limited petroleum activities do not include the construction of production infrastructure for processing or storing petroleum or by-products, dams, compressor stations, campsites/workforce accommodation, power supplies, waste disposal or other supporting infrastructure for the project.

"low hazard dam" means any dam in the low hazard category as assessed using the 'Manual for Assessing Hazard Categories and Hydraulic Performance of Dams', prepared by the Department of Environment and Resource Management, as amended from time to time.

"mandatory reporting level" or **"MRL"** means a warning and reporting level determined in accordance with the criteria in the "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams" prepared by the Department of Environment and Resource Management, as amended from time to time.

"material impact" means an increase in concentration of a chemical of /-- GREATER THAN --/10% above background, detection of a chemical that was not present in the background sample or a chemical present at a concentration in excess of drinking water quality guidelines.

"max $L_{PZ, 15min}$ " means the maximum value of the Z-weighted sound pressure level measured over 15 minutes.

"mg/L" means milligrams per litre.

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

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

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

"pest" means species:

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

"prescribed storage gases" has the meaning provided in section 12 of the Petroleum and Gas (Production and Safety) Act 2004.

"programmed and approved" means when the location of infrastructure has been approved by the authorised person(s) with the organisation(s).

"regulated dam" means any dam in the significant or high hazard category as assessed using the "Manual for Assessing Hazard Categories and Hydraulic Performance of Dams", prepared 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

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

"River Improvement Trust Asset Area" means an area within a River Improvement Area declared under the River Improvement Trust Act 1940 that is or has been subject to restoration or flood mitigation works. The locations and details of these areas can be obtained from the relevant River Improvement Trust.

"sensitive place" means:

- a dwelling (including residential allotment, mobile home or caravan park, residential manna 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.

"significantly disturbed land or significant disturbance to land" means disturbance to land as defined in section 28 of the Environmental Protection Regulation 2008.

"site" means the petroleum authority(ies) to which the environmental authority relates.

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

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

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

"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 and experienced person" in relation to a hazard assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

- exactly what has been assessed and the precise nature of that assessment;
- the relevant legislative, regulatory and technical criteria on which the assessment has been based;
- the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
- the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

"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 Environmental Protection Act 1994, and the administering authority for the Environmental Protection Act 1994 is satisfied that person has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below:

- knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams; and

- a total of five (5) years of suitable experience and demonstrated expertise in the geomechanics of dams with particular emphasis on stability, geology and geochemistry, and
- a total of five (5) years of suitable experience and demonstrated expertise each, in three (3) of the following categories:
 - investigation and design of dams.
 - construction, operation and maintenance of dams.
 - hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology.
 - hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes.
 - hydrogeology with particular reference to seepage, groundwater.
 - solute transport processes and monitoring thereof.
 - dam safety.

"third party auditor" means a suitably qualified person who is either a certified third party auditor or an internal auditor employed by the holder of the environmental authority and the person is independent of the day to day management and operation of activities covered by this environmental authority "threatening processes" means processes, features and actions that can have a detrimental effect upon the health and viability of an area of vegetation. For example altered hydrology, land use practices, invasion by pest and weed species, land degradation, edge effects and fragmentation.

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

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

"valid complaint" means a complaint 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, dam, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.

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

- (a) in a natural channel, whether artificially improved or not; or
- (b) in an artificial channel that has changed the course of the watercourse; but, in any case, only:

- (c) unless a regulation under paragraph (d), (e) or (f) declares otherwise-at every place upstream of the point (point A) to which the high spring tide ordinarily flows and reflows, whether due to a natural cause or to an artificial barrier; or
- (d) if a regulation has declared an upstream limit for the watercourse-the part of the river, creek or stream between the upstream limit and point A; or
- (e) if a regulation has declared a downstream limit for the watercourse-the part of the river, creek or stream upstream of the limit; or
- (f) if a regulation has declared an upstream and a downstream limit for the watercourse-the part of the river, creek or stream between the upstream and the downstream limits.

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

"wetland" means an area shown as a wetland on a 'Map of referable wetlands', a document approved by the chief executive (environment). A map of referable wetlands can be viewed at www.derm.ald.gov.au

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