

Permit

Environmental Protection Act 1994

Environmental authority EPPG00895813

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

Environmental authority number: EPPG00895813

Environmental authority takes effect on 28 September 2020

Environmental authority holder(s)

Name(s)	Registered address
Arrow Energy Pty Ltd Arrow CSG (Australia) Pty Ltd	Level 39 111 Eagle Street BRISBANE QLD 4001

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Non-scheduled Petroleum Activity - Authority to Prospect - ATP	ATP683, ATP810

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

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

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *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.

Clancy Mackaway
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

Date issued: 28 September 2020

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Obligations under the *Environmental Protection Act 1994*

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

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

ENVIRONMENTAL AUTHORITY CONDITIONS

This environmental authority consists of the following schedules:

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SCHEDULE A – AUTHORISED ACTIVITIES

- (A1) The petroleum activities are authorised petroleum activities for the purposes of the *Petroleum and Gas (Production and Safety) Act 2004* and the *Petroleum Act 1923*.
- (A2) The petroleum activities when combined must not cause a total significant disturbance of more than 1% of the total land area on the relevant tenure(s) at any point in time.
- (A3) The following petroleum activities are not authorised:
- (a) the injection of a waste fluid or gas for gas storage into a natural underground reservoir or aquifer;
 - (b) no more than four regulated dams;
 - (c) the carrying out of the following environmentally relevant activities (ERAs):
 - i. ERA 8 — Chemical Storage
 - ii. ERA 60(1)(a) to 60(1)(d) — Waste disposal
 - iii. ERA 60(2)(d) to 60(2)(h) — Waste disposal > 10,000t/year
 - iv. ERA 63(1)(a)(ii), 63(1)(b)(ii), and 63(1)(c) to 63(1)(g) — Sewage treatment with a total daily peak design capacity of greater than 21 equivalent persons (EP) which releases to other than an infiltration trench or irrigation scheme or where the sewage treatment activities have a total combined daily peak design capacity exceeding 1500 EP
 - v. ERA 64(2)(a) and 64(2)(b), and 64(4)(a) and 64(4)(b) — Water treatment where desalination of more than 0.5ML of water is treated, allowing the release of waste to waters other than seawater; or carrying out, in a day, advanced treatment of 5ML or more of water, allowing the release of waste only to seawater; or to waters other than seawater.
- (A4) The following types of petroleum activities are not authorised:
- (a) processing or storing petroleum or petroleum by-products that are not necessarily associated with well operations
 - (b) extracting earthen materials (other than drilling waste rock) of more than 100,000t/year
 - (c) extracting by dredging of more than 1000t/year of material from the bed of naturally occurring surface waters
 - (d) drilling wells with fluids that are oil-based or synthetic oil-based
 - (e) carrying out stimulation activities using stimulation fluid that contains chemical additives where polycyclic aromatic hydrocarbons are in concentrations above the reporting limit.
- (A5) Petroleum activities are not authorised in Category A Environmentally Sensitive Areas.
- (A6) Only low impact petroleum activities can be undertaken within Category B Environmentally Sensitive Areas (ESAs) or Category C ESAs other than state forests or timber reserves; or within the primary protection zone of Category A ESAs.

Explanatory note: Category A ESAs are excised from DAA, WMA and ATP tenure types and therefore petroleum activities cannot occur in these areas.

- (A7) Only essential petroleum activities can be undertaken in:
- (a) The primary protection zone of Category B ESAs or Category C ESAs other than state forests or timber reserves
 - (b) The secondary protection zone of Category A ESAs or Category B ESAs
 - (c) Category C ESAs that are state forests or timber reserves.
- (A8) Essential petroleum activities carried out in a primary protection zone must:
- (a) Be located in areas of pre-existing disturbance; and
 - (b) Not negatively impact the ESA.

SCHEDULE B – PROTECTING ENVIRONMENTAL VALUES

- (B1) Petroleum activities must not cause environmental nuisance, other than where an alternative arrangement is in place.
- (B2) Contaminants must not be directly or indirectly released to land or air except for those releases authorised by conditions C10, C14, C21, C22, C24, C25, C26, C27, C28, C29, C30, C31, C33 or C34.
- (B3) For petroleum activities to be carried out in a wild river area, the activities must comply with the conditions stated for relevant petroleum activities in the wild river declaration for that area.

Site Planning

- (B4) Prior to carrying out petroleum activities, the location of petroleum activities must be selected to:
- firstly avoid, then minimise, then mitigate any negative impacts on areas of vegetation or other areas of ecological value
 - minimise disturbance to land that may otherwise result in land degradation
 - minimise isolation, fragmentation or dissection of tracts of vegetation that would lead to a reduction in the current level of ecosystem functioning or ecological connectivity.
 - minimise clearing of mature or hollow bearing trees.
- (B5) Records must be kept to demonstrate compliance with condition B5.
- (B6) Prior to any significant disturbance to land:
- an ecological assessment of areas with native vegetation that are to be significantly disturbed, must be conducted in accordance with the Queensland Government's *Biocondition, a Condition Assessment Framework for Terrestrial Biodiversity in Queensland, Assessment Manual*; and
 - an assessment of the impacts that will occur as a result of significant disturbance to land must be undertaken.

SCHEDULE C – OPERATING STANDARDS

Documentation

- (C1) All plans, procedures and reports must:
- (a) be certified by a suitably qualified person
 - (b) be kept on record for a minimum of 5 years.
- (C2) All plans and procedures required to be developed must be implemented.

Plant and Equipment

- (C3) All plant and equipment reasonably necessary to ensure compliance with the conditions must be installed.
- (C4) All plant and equipment must be maintained and operated in their proper and effective condition.
- (C5) Measures to prevent fauna entrapment must be implemented during the construction and operation of well infrastructure and dams.

Contingency and emergency response

- (C6) Petroleum activities involving significant disturbance to land or which have the potential to cause environmental harm can only commence after the development of written contingency procedures which address the risks of non-compliance with Schedule B conditions.
- (C7) The contingency procedures must include, but not necessarily be limited to:
- (a) environmental nuisance and complaint management procedures including:
 - i. a description of the petroleum activities that might result in non-compliance with Schedule B conditions and what mitigation measures are required to be implemented; and
 - ii. the action that will be undertaken when a member of the public makes a valid complaint
 - (b) management procedures including details of what actions will be taken to protect environmental values and minimise potential environmental harm from petroleum activities as a result of floods, severe storms and fires
 - (c) environmental emergency management procedures including details of the response and mitigation measures that will be actioned to reduce negative impacts to environmental values in the event of a noncompliance with Schedule B conditions.

Explanatory note: The contingency procedures may incorporate other documents by reference.

Activities in wetlands, lakes, springs and watercourses

- (C8) Petroleum activities that require earthworks, vegetation clearing and/or placing fill, other than that associated with the construction of linear infrastructure, are not permitted in or within.
- (a) 200 metres of any wetland, lake or spring; or
 - (b) 100 metres of the outer bank of any other watercourse.
- (C9) The construction and/or maintenance of linear infrastructure that will result in significant disturbance to a wetland, lake, spring or watercourse must be conducted in accordance with the following order of preference. Conducting works:
1. Firstly, in times where there is no water present
 2. Secondly, in times of no flow
 3. Thirdly, in times of flow, but in a way that does not impede low flow.
- (C10) Petroleum activities must not result in water turbidity increases of more than 10% in high ecological value waters outside contained construction or maintenance areas.
- (C11) The construction and/or maintenance of linear infrastructure that will result in significant disturbance to a lake, spring or watercourse must be designed and undertaken by a suitably qualified person in accordance with the guideline *Activities in a watercourse, lake or spring associated with a resource activity or mining operations*.
- (C12) The construction and/or maintenance of linear infrastructure that will result in significant disturbance to a wetland must be designed and undertaken by a suitably qualified person taking into consideration sections 5 and 6 of the guideline *Activities in a watercourse, lake or spring associated with a resource activity or mining operations*.

Soil management

- (C13) Measures to minimise stormwater entry onto significantly disturbed land must be implemented and maintained.
- (C14) Sediment and erosion control measures to prevent soil loss and deposition beyond significantly disturbed land must be implemented and maintained.

Chemical Storage

- (C15) Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.

Structures that are dams or levees

- (C16) Other than for flare pits and sumps used to store residual drilling material and drilling fluids, the hazard category of any dam or levee to be used in carrying out petroleum activities must be assessed in accordance with the Queensland Government *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures*.
- (C17) Low consequence dams must be:
- (a) constructed, operated and maintained in accordance with accepted engineering standards currently appropriate for the purpose for which the dam is intended to be used; and
 - (b) designed with a floor and sides made of material that will contain the wetting front and any entrained contaminants within the bounds of the containment system during both its operational life and including any period of decommissioning and rehabilitation.
- (C18) All low consequence dams must be monitored for early signs of loss of structural or hydraulic integrity as specified in the initial hazard assessment.
- (C19) When no longer required all low consequence dams must be decommissioned to no longer accept inflow from the petroleum activities and be either:
- (a) rehabilitated; or
 - (b) agreed to in writing by the administering authority and the landholder to remain in situ following the cessation of the petroleum activity(ies) associated with the dam, with the contained water of a quality suitable for the intended ongoing uses(s) by that landholder.

Blasting

- (C20) A Blast Management Plan must be developed for each blasting activity in accordance with Australian Standard 2187.
- (C21) Blasting operations must be designed to not exceed an airblast overpressure level of 120 dB (linear peak) at any time, when measured at or extrapolated to any sensitive place.
- (C22) Blasting operations must be designed to not exceed a ground-borne vibration peak particle velocity of 10mm/s at any time, when measured at or extrapolated to any sensitive place.

Waste management

- (C23) Measures must be implemented so that waste is managed in accordance with the waste and resource management hierarchy and the waste and resource management principles.

- (C24) Waste, including waste fluids but excluding waste used in closed-loop systems, must be transported off-site for lawful re-use, remediation, recycling or disposal unless the waste is specifically authorised by conditions C25, C26, C27, C28, C29, C30 or C31 to be disposed of or used on-site.
- (C25) Sumps may be used for residual drilling material and drilling fluids only for the duration of drilling activities.
- (C26) Green waste may be used either on-site for rehabilitation or for sediment and erosion control purposes or both.

Treated sewage effluent

- (C27) Treated sewage effluent or greywater can be released to land provided it:
- meets or exceeds secondary treated class B standards for a treatment system with a daily peak design capacity of between 150 EP and 1500 EP; or
 - meets or exceeds secondary treated class C standards for a treatment system with a daily peak design capacity of less than 150 EP; and
 - is released within fenced and signed contaminant release area(s) and does not result in pooling or run-off or aerosols or spray drift or vegetation die-off.

Produced water

- (C28) Produced water may be reused in:
- drilling and well hole activities; or
 - stimulation activities where its use will not result in negative effects on waters beyond the stimulation impact zone.
- (C29) Produced water may be used for dust suppression and construction activities provided that it does not result in adverse effects on the composition and structure of soil or subsoils and can be demonstrated to meet the following standards:
- pH between 6—9
 - electrical conductivity (EC) not exceeding 3000 μ S/cm
 - sodium adsorption ratio (SAR) not exceeding 8
 - bicarbonate ion concentration not exceeding 100mg/L.
- (C30) Produced water used by an owner or occupier for domestic purposes or stock purposes must meet the irrigation or livestock watering criteria as relevant to those purposes in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)*.

Residual drilling material

- (C31) Residual drilling material can only be disposed of on-site:
- by mix-bury-cover method if the residual drilling material meets the approved quality criteria; or

- (b) if it is certified by a suitably qualified third party as being of acceptable quality for disposal to land by the proposed method and that environmental harm will not result from the proposed disposal.

(C32) Records must be kept of drilling fluids and all additives used in drilling activities.

Venting and well flaring

- (C33) Unless venting is authorised under the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923*, waste gas must be flared in a manner that complies with all of (C33)(a) and (C33)(b) and (C33)(c), or (C33)(d):
- (a) an automatic ignition system is used; and
 - (b) a flame is visible at all times while the waste gas is being flared; and
 - (c) there are no visible smoke emissions other than for a total period of no more than 5 minutes in any 2 hours; or
 - (d) it uses an enclosed flare.

Explanatory note: if an enclosed flare is used, the requirements in relation to the ignition system, flare and smoke do not apply.

Stimulation

- (C34) The petroleum activities must not involve well stimulation activities at a well located within 2 kilometres laterally of a landholder's active groundwater bore and sourced from a formation within 200 metres vertically of the stimulation impact zone.
- (C35) Prior to undertaking well stimulation activities, written stimulation management procedures must be developed.

Explanatory note: The stimulation management procedures may incorporate other documents by reference.

- (C36) Stimulation activities must not result in:
- (a) negative impacts to groundwater quality beyond the stimulation impact zone; or
 - (b) negative impacts to water quality in landholder's active groundwater bore(s) which tap into the target formation; or
 - (c) interconnectivity between the target formation and another aquifer.

Rehabilitation and financial assurance

- (C37) Significantly disturbed areas that are no longer required for the ongoing conduct of the petroleum activities must be progressively rehabilitated within 6 months (unless an exceptional circumstance in the area to be rehabilitated (e.g. a flood event) prevents this timeframe being met) so that:

- (a) the areas are reshaped to a stable landform
 - (b) the areas are re-profiled to contours consistent with the surrounding landform
 - (c) surface drainage lines are re-established
 - (d) Top soil is reinstated.
- (C38) All significantly disturbed land caused by the carrying out of the petroleum activity(ies) must be rehabilitated to meet condition 37 and the following final acceptance criteria:
- (a) any contaminated land (e.g. contaminated soils, decommissioned dams containing salt) is remediated and rehabilitated
 - (b) rehabilitation is undertaken in a manner such that any actual or potential acid sulfate soils on the area of significant disturbance are treated to prevent or minimise environmental harm in accordance with the *Instructions for the treatment and management of acid sulfate soils* (2001)
 - (c) for land that is not being cultivated by the landholder:
 - i. groundcover, that is not a declared pest species is established and self-sustaining
 - ii. vegetation of similar species richness and species diversity to pre-selected analogue sites is established and self-sustaining
 - (d) for land that is to be cultivated by the landholder, cover crop is reinstated, unless the landholder will be preparing the site for cropping within 3 months of petroleum activities being completed.
- (C39) Rehabilitation conditions continue to apply after this environmental authority has ended or ceased to have effect.
- (C40) Monitoring of performance indicators must be carried out on rehabilitation activities until final acceptance criteria in condition C38 have been met for the rehabilitated area.

SCHEDULE D – MONITORING AND REPORTING CONDITIONS

Monitoring

- (D1) All monitoring must be undertaken by a suitably qualified person.
- (D2) If requested by the administering authority in relation to investigating a valid complaint, monitoring must be undertaken within 10 business days.
- (D3) All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests.
- (D4) Notwithstanding condition D3, where there are no NATA accredited laboratories available to test for a specific analyte or substance, then duplicate samples must be sent to separate laboratories for independent testing or evaluation.

Rehabilitation reporting for relinquishment of part of an authority to prospect area under the *Petroleum and Gas (Production and Safety) Act 2004*

- (D5) Prior to relinquishing all or part of an authority to prospect area, a rehabilitation report must be prepared which specifically relates to the area to be relinquished and which:
- reports on the condition of the area to be relinquished against the requirements of conditions C38 and C39; and
 - includes the results of all rehabilitation monitoring undertaken in the area to be relinquished in accordance with condition C40.
- (D6) The report required under condition D5 must be submitted to the administering authority at least 40 business days prior to the relinquishment notice being lodged with the administering authority for the *Petroleum and Gas (Production and Safety) Act 2004*.

Sampling

- (D7) Monitoring and sampling must be carried out in accordance with the requirements of the following documents (as relevant to the sampling being undertaken):
- for waters and aquatic environments, the Queensland Government's *Monitoring and Sampling Manual 2009 — Environmental Protection (Water) Policy 2009*
 - for groundwater, *Groundwater Sampling and Analysis —A Field Guide (2009:27 GeoCat #6890.1)*
 - for noise, the Environmental Protection Regulation 2019
 - for air, the *Queensland Air Quality Sampling Manual and/or Australian Standard 4323.1:1995 Stationary source emissions method 1: Selection of sampling positions*, as appropriate for the relevant measurement

- (e) for soil, the *Guidelines for Surveying Soil and Land Resources, 2nd edition* (McKenzie et al. 2008), and/or the *Australian Soil and Land Survey Handbook, 3rd edition* (National Committee on Soil and Terrain, 2009)
- (f) for dust, Australian Standard AS3580

Notification

- (D8) In addition to the requirements under section 320A of the *Environmental Protection Act 1994*, the administering authority must be notified in writing within 5 business days of any event which has resulted in the contingency procedures required by conditions C6 and C7 being activated.
- (D9) The annual return must include an Update Report detailing activities during the annual return period, demonstrating:
 - (a) significant disturbance during the period
 - (b) rehabilitation undertaken
 - (c) a list of all valid complaints relating to environmental issues made including the date source, reason for the complaint and a description of investigations undertaken in resolving the complaint
 - (d) the results of all monitoring undertaken.

SCHEDULE E – STRUCTURES

Assessment of consequence category

- (E1) The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635) at the following times:
- (a) prior to the design and construction of the structure, if it is not an existing structure; or
 - (b) if it is an existing structure, prior to the adoption of this schedule; or
 - (c) prior to any change in its purpose or the nature of its stored contents.
- (E2) A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.
- (E3) Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635).

Seepage monitoring program

- (E4) A seepage monitoring program must be developed by a suitably qualified person which is commensurate with the site-specific risks of contaminant seepage from containment facilities, and which requires and plans for detection of any seepage of contaminants to groundwater as a result of storing contaminants by no longer than 3 months from the take effect date of this environmental authority.
- (E5) The seepage monitoring program required by condition E4 must include but not necessarily be limited to:
- (a) identification of the containment facilities for which seepage will be monitored
 - (b) identification of trigger parameters that are associated with the potential or actual contaminants held in the containment facilities
 - (c) identification of trigger concentration levels that are suitable for early detection of contaminant releases at the containment facilities
 - (d) installation of background seepage monitoring bores where groundwater quality will not have been affected by the petroleum activities authorised under this environmental authority to use as reference sites for determining impacts
 - (e) installation of seepage monitoring bores that:
 - i. are within formations potentially affected by the containment facilities authorised under this environmental authority (i.e. within the potential area of impact)
 - ii. provide for the early detection of negative impacts prior to reaching groundwater dependent ecosystems, landholder's active groundwater bores, or water supply bores

- iii. provide for the early detection of negative impacts prior to reaching migration pathways to other formations (i.e. faults, areas of unconformities known to connect two or more formations)
- (f) monitoring of groundwater at each background and seepage monitoring bore at least annually for the trigger parameters identified in condition E5(b)
- (g) seepage trigger action response procedures for when trigger parameters and trigger levels identified in conditions E5(b) and E5(c) trigger the early detection of seepage, or upon becoming aware of any monitoring results that indicate potential groundwater contamination
- (h) a rationale detailing the program conceptualisation including assumptions, determinations, monitoring equipment, sampling methods and data analysis; and
- (i) provides for annual updates to the program for new containment facilities constructed in each annual return period.

Seepage monitoring bore drill logs

- (E6) A bore drill log must be completed for each seepage monitoring bore in condition E5 which must include:
 - (a) bore identification reference and geographical coordinate location
 - (b) specific construction information including but not limited to depth of bore, depth and length of casing, depth and length of screening and bore sealing details
 - (c) standing groundwater level and water quality parameters including physical parameter and results of laboratory analysis for the possible trigger parameters
 - (d) lithological data, preferably a stratigraphic interpretation to identify the important features including the identification of any aquifers; and
 - (e) target formation of the bore.
- (E7) If groundwater monitoring indicates that any significant changes in groundwater quality caused by petroleum activities are detected, then information must be submitted to the administering authority within ten (10) business days of receipt of the analysis indicating these changes, including any proposed actions to mitigate the changes in groundwater quality.

SCHEDULE F – 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, then the Acts Interpretation Act 1954, then the Macquarie Dictionary then the Petroleum and Gas (Production and Safety) Act 2004 or its regulations must be used in that order.

“**acid sulfate soil(s)**” means a soil or soil horizon which contains sulfides or an acid soil horizon affected by oxidation of sulfides.

“**accepted engineering standards**” in relation to dams, means those standards of design, construction, operation and maintenance that are broadly accepted within the profession of engineering as being good practice for the purpose and application being considered. In the case of dams, the most relevant documents would be publications of the *Australian National Committee on Large Dams* (ANCOLD), guidelines published by Queensland government departments and relevant Australian and New Zealand Standards.

“**administering authority**” means has the meaning in Schedule 4 of the *Environmental Protection Act 1994*.

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

“**alternative arrangement**” means a written agreement about the way in which a particular environmental nuisance impact will be dealt with at a sensitive place, and may include an agreed period of time for which the arrangement is in place. An alternative arrangement may include, but is not limited to, a range of nuisance abatement measures to be installed at the sensitive place, or provision of alternative accommodation for the duration of the relevant nuisance impact.

“**analogue site(s)**” means an area of land which contains values and characteristics representative of an area to be rehabilitated prior to disturbance. Such values must encompass land use, topographic, soil, vegetation, vegetation community attributes and other ecological characteristics. Analogue sites can be the pre-disturbed site of interest where significant surveying effort has been undertaken to establish benchmark parameters.

“**analyte**” means a chemical parameter determined by either physical measurement in the field or by laboratory analysis.

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

“**approved quality criteria**” for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards:

Part A In all cases:

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

Chloride*	8000mg/L
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*Chloride analysis is only required if an additive containing chloride was used in the drilling process
The limits in Part A must be measured in the clarified filtrate of oversaturated solids prior to mixing.

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

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

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

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

TPH	Maximum concentration
C6-C10	170mg/kg
C10-C16	150mg/kg
C16-C34	1300mg/kg
C34-C40	5600mg/kg
Total Polycyclic Aromatic Hydrocarbons (PAHs)	20mg/kg
Phenols (halogenated)	1mg/kg
Phenols (non-halogenated)	60mg/kg
Monocyclic aromatic hydrocarbons (Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene)	7mg/kg
Benzene	1mg/kg

“**aquifer**” means an identifiable stratigraphic formation that has the potential to produce useful flows of water.

“**areas of pre-existing disturbance**” means areas where environmental values have been negatively impacted as a result of anthropogenic activity and these impacts are still evident. Areas of pre-disturbance may include areas where legal clearing, logging, timber harvesting, or grazing activities have previously occurred, where high densities of weed or pest species are present which have inhibited re-colonisation of native regrowth, or where there is existing infrastructure (regardless of whether the infrastructure is associated with the authorised petroleum activities). The term ‘areas of pre-disturbance’ does not include areas that have been impacted by wildfire/s, controlled burning, flood or natural vegetation die-back.

“**assessed or assessment**” by a suitably qualified and experienced person in relation to a consequence assessment of a dam, means that a statutory declaration has been made by that person and, when taken

together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment:

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

“associated works” in relation to a dam, means:

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

“authority” means an environmental authority or a development approval.

“bed” of any waters, has the meaning in Schedule 19 of the Environmental Protection Regulation 2019 and—

- (a) includes an area covered, permanently or intermittently, by tidal or non-tidal waters; but
- (b) does not include land adjoining or adjacent to the bed that is from time to time covered by floodwater.

“bore” means a water observation bore or a water supply bore that is either subartesian or artesian.

“business day” has the meaning in section 36 of the *Acts Interpretation Act 1954*.

“Category A Environmentally Sensitive Area” means any area listed in Schedule 19, Part 1 of the Environmental Protection Regulation 2019.

“Category B Environmentally Sensitive Area” means any area listed in Schedule 19, Part 2 of the Environmental Protection Regulation 2019.

“Category C Environmentally Sensitive Area” means any of the following areas:

- nature refuges as defined in the conservation agreement for that refuge under *the Nature Conservation Act 1992*
- koala habitat areas as defined under the Nature Conservation (Koala) Conservation Plan 2006
- state forests or timber reserves as defined under the *Forestry Act 1959*
- regional parks (previously known as resource reserves) under the *Nature Conservation Act 1992*
- an area validated as 'essential habitat' or 'essential regrowth habitat' from ground-truthing surveys in accordance with the *Vegetation Management Act 1999* for a species of wildlife listed as endangered or vulnerable under the *Nature Conservation Act 1992*
- 'of concern regional ecosystems' that are remnant vegetation and identified in the database called 'RE description database' containing regional ecosystem numbers and descriptions.

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

“**certifying, certify or certified**” in relation to regulated structures in Schedule E of this environmental authority have a corresponding meaning as ‘certification’.

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

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

“**clearing**” has the meaning in the dictionary of the *Vegetation Management Act 2000* and for vegetation—
(a) means remove, cut down, ringbark, push over, poison or destroy in any way including by burning, flooding or draining; but
(b) does not include destroying standing vegetation by stock, or lopping a tree.

“**closed-loop systems**” means using waste on site in a way that does not release waste or contaminants in the waste to the environment.

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

“**coal seam gas water**” means groundwater that is necessarily or unavoidably brought to the surface in the process of coal seam gas exploration or production.

“**coal seam gas water concentrate**” means the concentrated saline water waste stream from a water treatment process that does not exceed a total dissolved solid concentration of 40,000 mg/L.

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

“**consequence category**” means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

“**construction or constructed**” in relation to a dam includes building a new dam and modifying or lifting an existing dam, but does not include investigations and testing necessary for the purpose of preparing a design plan.

“**cultivated**” means used for cropping or gardening.

“**daily peak design capacity**” for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the Environmental Protection Regulation 2019 as the higher equivalent person (EP) for the works calculated using each of the formulae found in the definition for EP.

“**dam(s)**” means a land-based structure or a void that is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. A dam does not mean a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container.

“**dam crest volume**” means the volume of material (liquids and/or solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (for example, via spillway).

“**declared pest species**” has the meaning in the Land Protection (Pest and Stock Route Management) Regulation 2003 and is a live animal or plant declared to be a declared pest under section 36 (Declaring Pests by Regulation) or section 37(2) (Declaring Pest under Emergency Pest Notice) of that Act and includes reproductive material of the animal or plant.

“**design plan**” is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.

“**designer**” for the purposes of a regulated dam, means the certifier of the design plan for the regulated dam.

“**design storage allowance or DSA**” means an available volume, estimated in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635) published by the administering authority, must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that Manual.

“**document**” has the meaning in the *Acts Interpretation Act 1954* and means:

- any paper or other material on which there is writing; and
- any paper or other material on which there are marks; and
- figures, symbols or perforations having a meaning for a person qualified to interpret them; and
- any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).

“**domestic purposes**” has the meaning in Schedule 2 of the *Petroleum and Gas (Production and Safety) Act 2004*.

“**ecological connectivity**” is a measure of ecological condition and means the flow or connection of organisms and ecological processes across landscapes at multiple scales. Ecological connectivity has a positive relationship with landscape connectivity and habitat connectivity and effects vary between species. It includes connectivity by stepping stone or contiguous bioregional/local corridor networks.

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

“**emergency action plan**” means documentation forming part of the operational plan held by the holder or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam owner and operating personnel in the event of an emergency. The actions

are to minimise the risk and consequences of failure, and ensure timely warning to downstream communities and the implementation of protection measures. The plan must require dam owners to annually update contact.

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

“**environmental harm**” has the meaning in section 14 of the *Environmental Protection Act 1994* and means any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value, and includes environmental nuisance.

Environmental harm may be caused by an activity—

- (a) whether the harm is a direct or indirect result of the activity; or
- (b) whether the harm results from the activity alone or from the combined effects of the activity and other activities or factors.

“**environmental value**” has the meaning in section 9 of the *Environmental Protection Act 1994*.

“**environmental nuisance**” has the meaning in section 15 of the *Environmental Protection Act 1994* and means unreasonable interference or likely interference with an environmental value caused by—

- (a) aerosols, fumes, light, noise, odour, particles or smoke; or
- (b) an unhealthy, offensive or unsightly condition because of contamination; or
- (c) another way prescribed by regulation.

“**environmentally sensitive area**” means Category A, B or C environmentally sensitive areas (ESAs)

“**equivalent person or EP**” has the meaning under section 3 of the Planning Guidelines for Water Supply and Sewerage, 2005, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the Environmental Protection Regulation 2019 where:

- $EP = V/200$ where V is the volume, in litres, of the average dry weather flow of sewage that can be treated at the works in a day; or
- $EP = M/2.5$ where M is the mass, in grams, of phosphorus in the influent that the works are designed to treat as the inlet load in a day.

“**environmentally relevant activity**” has the meaning in section 18 of the *Environmental Protection Act 1994*.

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

- low impact petroleum activities
- single well sites not exceeding 1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance
- associated infrastructure located on a well site necessary for the construction and operations of wells:
 - water pumps and generators
 - flare pits
 - above ground containers and chemical / fuel storages
 - sumps for residual drilling material and drilling fluids
 - dams to contain stimulation flow back waters that are not significant or high hazard dams
 - erosion and sediment and control structures
 - pipe laydown and vegetation stockpile areas

- a temporary camp associated with a drilling rig that may involve sewage treatment works that are no release works.
- communication and power lines that are necessary for the undertaking of petroleum activities and that are located within well sites, well pads and pipeline right of ways without increasing the disturbance area of petroleum activities
- ecological surveys, geophysical surveys, topographic or cadastral surveys or geological surveys (including seismic and geotechnical petroleum activities)
- gathering / flow pipelines from a well head to the initial compression facility
- supporting access tracks

“existing structure” means a structure that was in existence prior to the adoption of this schedule of conditions under the authority.

“flare pit” has the meaning in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635), and means containment area where any hydrocarbon that is discovered in an over-pressured reservoir during a drilling operation is diverted to, and combusted. The flare pit is only used during the drilling and work over process on a petroleum well.

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

“green waste” means waste that is grass cuttings, trees, bushes, shrubs, material lopped from trees, untreated timber or other waste that is similar in nature but does not include declared pest species.

“greywater” means wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Greywater does not include sewage.

“hazard category” means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in Manual for Assessing Hazard Categories and Hydraulic Performance of Dams, published by the Queensland Government, as amended from time to time.

“high ecological value waters” means waters in which the biological integrity of the water is effectively unmodified or highly valued as per the Environmental Protection (Water and Wetland Biodiversity) Policy 2019.

“holder” means:

- (a) where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or
- (b) where this document is a development approval, any person who is the registered operator for that development approval.

“hydraulic performance” means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635).

“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.

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

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

“**linear infrastructure**” means powerlines, pipelines, flowlines, roads and access tracks.

“**low consequence dam**” means any dam that is not classified as high or significant as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, published by the administering authority, as amended from time to time.

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

“**manual**” means the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* published by the administering authority.

“**mix-bury-cover**” means the stabilisation of residual drilling solids in the bottom of a sump by mixing with subsoil and which occurs in accordance with the following methodology:

- the base of the subsoil and residual solid mixture must be separated from the groundwater table by at least one metre of a continuous layer of impermeable subsoil material ($k_w=10^{-8}m/s$) or subsoil with a clay content of >20%; and
- the residual solids is mixed with subsoil in the sump and cover; and
- the subsoil and residual solids is mixed at least three parts subsoil to one part waste (v/v); and
- a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and
- topsoil is replaced.

“**modification or modifying**” see definition of 'construction'.

“**month**” has the meaning in the *Acts Interpretation Act 1954* and means a calendar month and is a period starting at the beginning of any day of one (1) of the 12 named months and ending—

- immediately before the beginning of the corresponding day of the next named month; or
- if there is no such corresponding day—at the end of the next named month.

“**NATA accreditation**” means accreditation by the National Association of Testing Authorities Australia.

“**oil-based**” in relation to a fluid, means where the base fluid is a petroleum product such as diesel fuel.

“operational plan” includes:

- (a) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA allowance);
- (b) contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure.

“outer bank” has the meaning in section 5A of the *Water Act 2000*.

“performance indicator(s)” means a quantitative measure against which success can be assessed and audited in a consistent, objective and repeatable manner.

“primary protection zone” means an area within 200 metres from the boundary of any Category A, B or C environmentally sensitive area.

“produced water” has the meaning in Section 15A of the *Petroleum and Gas (Production and Safety) Act 2004* and means CSG water or associated water for a petroleum tenure.

“production testing” has the meaning in section 73 of the *Petroleum and Gas (Production and Safety) Act 2004*.

“regulated dam(s)” means any dam in the significant or high consequence category as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635), published by the administering authority.

“regulated structure” includes land-based containment structures, levees, bunds and voids, but not a tank or container designed and constructed to an Australian Standard that deals with strength and structural integrity.

“rehabilitation or rehabilitated” means the process of reshaping and revegetating land to restore it to a stable landform and in accordance with acceptance criteria and, where relevant, includes remediation of contaminated land.

“release, releases or released” has the meaning in Schedule 4 of the *Environmental Protection Act 1994*.

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

“residual drilling material” means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.

“secondary protection zone” in relation to a Category A or Category B ESA means an area within 100 metres from the boundary of the primary protection zone.

“secondary treated class B standards” means treated sewage effluent or greywater which meets the following standards:

- total phosphorous as P, maximum 20mg/L
- total nitrogen as N, maximum 30mg/L
- 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L
- suspended solids, maximum 30mg/L
- pH, range 6.0 to 8.5
- e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 1000cfu per 100mL, maximum 10000cfu per 100mL

“secondary treated class C standards” means treated sewage effluent or greywater which meets the following standards:

- (a) total Phosphorous as P, maximum 20mg/L
- (b) total Nitrogen as N, maximum 30mg/L
- (c) 5-day Biochemical oxygen demand (inhibited) (e.g. Release pipe from sewage treatment plant), maximum 20mg/L
- (d) suspended solids, maximum 30mg/L
- (e) pH, range 6.0 to 8.5
- (f) e-Coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 10000cfu per 100mL, maximum 100000cfu per 100mL.

“sensitive place” means:

- a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel)
- a library, childcare centre, kindergarten, school, university or other educational institution
- a medical centre, surgery or hospital
- a protected area
- 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
- 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
- for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 2019.

“significantly disturbed or significant disturbance or significant disturbance to land or areas” means land is significantly disturbed if—

- (a) it is contaminated land; or
- (b) it has been disturbed and human intervention is needed to rehabilitate it—
 - (i) to a condition required under the relevant environmental authority; or
 - (ii) if the environmental authority does not require the land to be rehabilitated to a particular condition—to the condition it was in immediately before the disturbance.

Without limiting subsection (1)(b), land requires human intervention to rehabilitate it if—

- (a) the disturbance has made the land more susceptible to erosion; or
- (b) the land use capability or suitability of the land is diminished; or
- (c) the quality of water in a watercourse downstream of the land has been significantly reduced.

“**species richness**” means the number of different species in a given area.

“**species diversity**” means the diversity within an ecological community that incorporates both species richness and the evenness of species' abundances.

“**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(s)**” has the meaning in Schedule 4 of the *Water Act 2000*.

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

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

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

“**stimulation fluid**” means the fluid injected underground to increase permeability of a natural underground reservoir. For clarity, the term stimulation fluid only applies to fluid injected down well post-perforation.

“**stimulation impact zone**” means a 100m maximum radial distance from the stimulation target location within a gas producing formation.

“**stimulation management procedures**” means procedures for the management of stimulation activities that include, but is not necessarily limited to information on:

- the local stratigraphy including aquifers, faults, linear features, hydraulic conductivity, porosity, seismic risk and groundwater dependent assets.
- the impacts of applied stresses including aquifer drawdown, on connectivity to aquifers above and below the fractured zone subsequent to the stimulation activity
- the extent to which there are vertically impermeable formations between the fractured zone and other aquifers
- methods to ensure isolation of hydrocarbon bearing formations from aquifers and internal and external mechanical integrity of well(s)
- process control techniques incorporating real-time analysis, fracture modelling and formation understanding utilising techniques such as micro-seismic measurements quantity and quality monitoring of flow back water.

“**stock purposes**” has the meaning in Schedule 2 of the *Petroleum and Gas (Production and Safety) Act 2004* and section 86 of the *Petroleum Act 1923*.

“**structure**” means a dam or levee.

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

- for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design.
- for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments.

Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.

“suitably qualified person” means a person who has professional qualifications, training or skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis about performance relevant to the subject matters using relevant protocols, standards, methods or literature.

“suitably qualified third party” means a person who:

- (a) has qualifications and experience relevant to performing the function including but not limited to:
 - i. a bachelor’s degree in science or engineering; and
 - ii. 3 years’ experience in undertaking soil contamination assessments; and
- (b) is a member of at least one organisation prescribed in Schedule 14 of the Environmental Protection Regulation 2019; and
- (c) not be an employee of, nor have a financial interest or any involvement which would lead to a conflict of interest with the holder(s) of the environmental authority.

“synthetic oil-based” means a mud where the base fluid is a synthetic oil, consisting of chemical compounds which are artificially made or synthesised by chemically modifying petroleum components or other raw materials rather than the whole crude oil.

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

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

“valid complaint” means all complaints unless considered by the administering authority to be frivolous, vexatious or based on mistaken belief.

“void” means any constructed, open excavation in the ground.

“waste and resource management hierarchy” has the meaning provided in section 9 of the *Waste Reduction and Recycling Act 2011* and is the following precepts, listed in the preferred order in which waste and resource management options should be considered—

- (a) AVOID unnecessary resource consumption
- (b) REDUCE waste generation and disposal

- (c) RE-USE waste resources without further manufacturing
- (d) RECYCLE waste resources to make the same or different products
- (e) RECOVER waste resources, including the recovery of energy
- (f) TREAT waste before disposal, including reducing the hazardous nature of waste
- (g) DISPOSE of waste only if there is no viable alternative.

“**waste and resource management principles**” has the meaning provided in section 4(2)(b) of the *Waste Reduction and Recycling Act 2011* and means the:

- (a) polluter pays principle
- (b) user pays principle
- (c) proximity principle
- (d) product stewardship principle.

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

“**watercourse**” has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means:

- 1) 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.
- 2) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

“**well infrastructure**” means infrastructure required for the construction, completion and operation of a well including but not limited to cellar pits, dams and drill sumps.

“**well site**” means a maximum area of land disturbance for the purposes of constructing, installing and operating an exploration well or such wells as part of a multi-well arrangement and includes well lease infrastructure.

“**wetland**” for the purpose of this environmental authority, wetland means an area shown as a wetland on the map of Queensland Wetland Environmental Values.

Note: The Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Schedule 2, Map of Queensland Wetland Environmental Values means the document ‘Map of Queensland Wetland Environmental Values’ made by the Chief Executive and published on the website.

Environmental values in section 8 of the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 apply to wetland areas on the map, which are categorised as wetlands of high or general ecological significance.

“**year(s)**” has the meaning in s36 of the *Acts Interpretation Act 1954*.

END OF CONDITIONS