

Permit

Environmental Protection Act 1994

Environmental authority EPPG00839513

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

Environmental authority number: EPPG00839513

Environmental authority takes effect on 25 May 2022.

Environmental authority holder(s)

Name(s)	Registered address
BNG (SURAT) PTY. LTD.	Level 30 275 George Street BRISBANE CITY QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 - 08 - A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	ATP645
Ancillary 63 - Sewage Treatment - 1(a-ii) - Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of 21 to 100EP - otherwise	ATP645

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

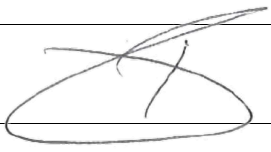
- a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority - on the nominated day; or
- b) if the authority states a day or an event for it to take effect-on the stated day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

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

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

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

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



Signature

25 May 2022

Date

Tristan Roberts
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:

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Privacy statement

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

Obligations under the *Environmental Protection Act 1994*

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

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

Other permits required

This permit only provides an approval under the *Environmental Protection Act 1994*. In order to lawfully operate you may also require permits / approvals from your local government authority, other business units within the department and other State Government agencies prior to commencing any activity at the site. For example, this may include permits / approvals with your local Council (for planning approval), the Department of Transport and Main Roads (to access state controlled roads), the Department of Resources (to clear vegetation), and the Department of Agriculture and Fisheries (to clear marine plants or to obtain a quarry material allocation).

Conditions of environmental authority

SCHEDULE A GENERAL CONDITIONS

Condition 1 – Authorised Petroleum Activities

This environmental authority authorises the carrying out of the following authorised resource activity(ies):

- (a) the petroleum activities for exploration and appraisal purposes:
 - i. coal seam gas wells and tight gas wells including incidental activities such as well pads, water pumps and generators associated with well operations, sumps for storing drilling muds, and flare pits;
 - ii. limited petroleum activities;
 - iii. low impact petroleum activities;
 - iv. low hazard dams;
 - v. dams other than those defined as low hazard or regulated dams;
 - vi. borrow pits;
 - vii. pipelines associated with production testing (excluding pipelines that require a pipeline licence);
 - viii. temporary structures such as accommodation camps and sewage treatment plants; and
 - ix. stimulation activities.
- (b) the following specified relevant activities”
 - i. Sewage treatment – operating sewage treatment works, other than no-release works, with a total daily peak design capacity of 21 to 100 equivalent persons if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme.

Condition 2

Schedule A, Table 1 – Authorised Petroleum Activities

Authorised Petroleum Activity	Scale		Intensity
	Maximum Size	Location	
Petroleum activities*			
Petroleum activities for exploration and appraisal purposes	N/A	ATP 645	20 wells
Specified relevant activities			
Sewage treatment – operating sewage treatment works, other than no-release works, with a total <u>daily peak design capacity</u> of 21 to 100 equivalent persons if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	N/A	ATP 645	Up to 100 equivalent persons (EP)

*Subject to the conditions of this authority, the holder may also carry out an activity (an incidental activity) in the area of the authority if carrying out the activity is reasonably necessary for, or incidental to, an authorised petroleum activity in Schedule A, Table 1.

Condition 3 – Environmentally Sensitive Areas

Petroleum activities must be carried out in accordance with *Schedule A, Table 2 – Petroleum Activities in Environmentally Sensitive Areas and Associated Primary and Secondary Protection Zones*.

Schedule A, Table 2 – Petroleum Activities in Environmentally Sensitive Areas and Associated Primary and Secondary Protection Zones

ESA Category	Within the ESA	Primary protection zone of the ESA	Secondary protection zone of the ESA
All <u>Category A ESAs</u>	No <u>petroleum activities</u> permitted	Only low impact petroleum activities permitted	Only <u>limited petroleum activities</u> permitted Subject to conditions 4 to 6 inclusive
<u>Category B or Category C ESAs</u> other than <u>Endangered or Of Concern Regional Ecosystems</u> , <u>State Forests</u> or <u>Timber Reserves</u>	Only <u>low impact petroleum activities</u> permitted	Only low impact petroleum activities permitted	
Category B or Category C ESA that is an <u>Endangered or Of Concern Regional Ecosystem</u>	Only low impact petroleum activities permitted; excepting access track upgrades subject to condition 7	Only low impact petroleum activities permitted; excepting access track upgrades subject to condition 7	
Category C ESAs that are <u>State Forests</u> or <u>Timber Reserves</u>	Only low impact petroleum activities permitted; excepting access track upgrades subject to condition 7	Only limited petroleum activities permitted Subject to conditions 4 to 6 inclusive	

Note: Approvals may be required under the Forestry Act 1959 where the petroleum activity(ies) is proposed to be carried out in ESAs that are State Forests or Timber Reserves. Indicative Environmentally Sensitive Area mapping is available on the Department of Environment and Heritage Protection website at: http://www.ehp.qld.gov.au/licences-permits/maps_of_environmentally_sensitive_areas.php

Condition 4

Limited petroleum activities carried out within a primary protection zone or secondary protection zone must not be conducted in those areas where there is overlap with another ESA or primary protection zone where limited petroleum activities are not authorised.

Condition 5

Limited petroleum activities carried out within a primary protection zone or secondary protection zone must be located in pre-existing areas of clearing or significant disturbance to the greatest practicable extent and must avoid the clearing of mature trees where possible.

Condition 6

For limited petroleum activities carried out within a primary protection zone or a secondary protection zone, vegetation clearing must not exceed any of the following areas:

- (a) 6 metres in width for access tracks not associated with a water or gas line; or
- (b) for linear infrastructure, including provision for a utility corridor and access track:
 - i. 12 metres width for a single water or gas gathering line; or

- ii. 18 metres width for a trench with one water gathering line and one parallel gas gathering pipeline; or
- iii. 25 metres width for multiple trenches where there are three (3) parallel gas or water gathering lines; and
- iv. seven (7) metres width for any additional trench for a water or gas line.

Condition 7

Access track upgrades are permitted within the primary protection zone of, or in endangered regional ecosystems and of concern regional ecosystems if:

- (a) there is no viable alternative access option that avoids the regional ecosystem; and
- (b) the access track is pre-existing; and
- (c) the upgrade of the existing access track will not:
 - i. negatively impact on the regional ecosystem; nor
 - ii. result in the clearing of native vegetation (other than grass, isolated immature individuals or branch lopping of isolated mature individuals); and
- (d) the width of upgraded access tracks is limited to:
 - i. 6 metres where the pre-existing access track is less than 6 metres in width; and
 - ii. the width of the pre-existing access track to a maximum width of 10 metres where the pre-existing access track is greater than 6 metres.

Condition 8

Pipelines must be preferentially located alongside existing linear infrastructure.

Condition 9

Measures to prevent fauna being harmed from entrapment must be implemented during the construction and operation of well infrastructure, dams and pipeline trenches.

SCHEDULE B PROTECTING ENVIRONMENTAL VALUES

Condition 10

Petroleum activities must not cause environmental nuisance at a sensitive place, other than where an alternative arrangement is in place.

Condition 11

Notwithstanding Condition 10, emission of noise from the petroleum activity(ies) at levels less than those specified in *Protection acoustic values, Table 1 – Noise nuisance limits* are not considered to be environmental nuisance.

Protecting acoustic values, Table 1 – Noise nuisance limits

Time Period	Metric	Short term noise event	Medium term noise event	Long term noise event
7:00am - 6:00pm	L _{Aeq,adj,15min}	45 dBA	43 dBA	40 dBA
6:00pm – 10:00pm	L _{Aeq,adj,15min}	40 dBA	38 dBA	35 dBA
10:00pm – 6:00am	L _{Aeq,adj,15min}	28 dBA	28 dBA	28 dBA
	Max L _{pA,15min}	55 dBA	55 dBA	55 dBA
6:00am – 7:00am	L _{Aeq,adj,15min}	40 dBA	38 dBA	35 dBA

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

7:00am – 6:00pm: 35 dBA

6:00pm – 10:00pm: 30 dBA

10:00pm – 6:00am: 25 dBA

6:00am – 7:00am: 30 dBA

Condition 12 – Contaminant Release

Contaminants must not be directly or indirectly released to any land or waters except as permitted under this environmental authority.

Condition 13 – Site planning

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; and
- Minimise clearing of mature or hollow bearing trees.

Condition 14

Records must be kept to demonstrate compliance with Condition 13.

Condition 15

Prior to undertaking activities that result in significant disturbance to land in areas of native vegetation, confirmation of on-the-ground biodiversity values of the native vegetation communities at that location must be undertaken by a suitably qualified person.

Condition 16

A suitably qualified person must develop and certify a methodology so that Condition 15 can be complied with and which is appropriate to confirm on-the-ground biodiversity values.

Condition 17

Where mapped biodiversity values differ from those confirmed under Condition 15 and Condition 16, petroleum activities may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity value.

SCHEDULE C OPERATING STANDARDS**Condition 18**

All plans and procedures required by a condition in this environmental authority must:

- (a) be certified by a suitably qualified person
- (b) be kept on record for a minimum of 5 years.

Condition 19

All plans and procedures required to be developed must be implemented.

Plant and Equipment**Condition 20**

All plant and equipment reasonably necessary to ensure compliance with the conditions of this environmental authority must be installed.

Condition 21

All plant and equipment must be maintained and operated in their proper and effective condition.

Condition 22

All measures reasonably necessary to ensure compliance with the conditions of this environmental authority must be implemented.

Contingency and Emergency Response**Condition 23**

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 standard conditions.

Condition 24

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 standard 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 non-compliance with Schedule B conditions.

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

Activities in wetlands, lakes, springs and watercourses**Condition 25**

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.

Condition 26

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.

Condition 27

Petroleum activities must not result in water turbidity increases of more than 10% in high ecological value waters outside contained construction or maintenance areas.

Condition 28

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*.

Condition 29

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

Condition 30

Measures to minimise stormwater entry onto significantly disturbed land must be implemented and maintained.

Condition 31

Sediment and erosion control measures to prevent soil loss and deposition beyond significantly disturbed land must be implemented and maintained.

Chemical Storage

Condition 32

Chemicals and fuels on the relevant tenures must be stored in, or serviced by, an effective containment system that meets Australian Standards, where such a standard is relevant.

Structures that are dams or levees

Condition 33

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 Hazard Categories and Hydraulic Performance of Dams*.

Condition 34

Low hazard 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.

Condition 35

All low hazard dams must be monitored for early signs of loss of structural or hydraulic integrity as specified in the initial hazard assessment.

Condition 36 – Decommissioning Dams

When no longer required all low hazard 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 use(s) by that landholder.

Waste Management

Condition 37 – Waste Management

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.

Condition 38

Waste including waste fluids but excluding waste gas, must be transported off site for lawful re-use, remediation, recycling or disposal unless the waste is specifically authorised by Condition 39, Condition 42, Condition 43, Condition 44 and Condition 46 to be disposed of or used on-site.

Condition 39

Sumps may be used for residual drilling material and drilling fluids only for the duration of drilling activities.

Condition 40

Regulated waste generated in carrying out the petroleum activities can be temporarily stored on the site awaiting removal provided:

- (a) it is stored in a place and circumstance in which there is minimal risk of causing contamination to land or waters or a fire hazard; and
- (b) each container of regulated waste stored awaiting movement off site is clearly marked to identify the contents.

Pipeline Waste Water

Condition 41

Pipeline waste water, may be released to land provided that it:

- (a) can be demonstrated it meets the acceptable standards for release to land; and
- (b) is released in a way that does not result in visible scouring or erosion or pooling or run-off or vegetation die-off.

Treated Sewage Effluent

Condition 42

Treated sewage effluent or greywater can be released to land provided it:

- (a) 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

- (b) meets or exceeds secondary treated class C standards for a treatment system with a daily peak design capacity of less than 150 EP; and
- (c) 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**Condition 43**

Produced water and stimulation flow black water may be reused in:

- (a) Drilling and well hole activities; or
- (b) Stimulation activities where its use will not result in negative effects on waters beyond the stimulation impact zone.

Condition 44

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:

- (a) pH between 6-9;
- (b) electrical conductivity (EC) not exceeding 3000µS/cm;
- (c) sodium adsorption ratio (SAR) not exceeding 8; and
- (d) bicarbonate ion concentration not exceeding 100mg/L.

Residual Drilling Material**Condition 45**

If sumps are used to store residual drilling material or drilling fluids, they must only be used for the duration of drilling activities.

Condition 46

Residual drilling material can only be disposed of on-site:

- (a) by mix-bury-cover method if the residual drilling material meets the approved quality criteria; or
- (b) if it is certified by a suitably qualified third party as being of acceptable quality for disposal to land by the proposed method and that environmental harm will not result from the proposed disposal.

Condition 47

Records must be kept to demonstrate compliance with Condition 45 and Condition 46.

Stimulation**Condition 48**

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.

Condition 49

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.

Condition 50

Oil based drilling muds must not be used in the carrying out of the petroleum activity(ies).

Condition 51

Synthetic based drilling muds must not be used in the carrying out of the petroleum activity(ies).

Condition 52

Additives that contain polycyclic aromatic hydrocarbon or products that contain polycyclic aromatic hydrocarbons, must not be used in stimulation fluids in concentrations above the reporting limit.

Condition 53

The holder of this authority must ensure the internal and external mechanical integrity of the well system prior to and during stimulation such that there is:

- (a) no significant leakage in the casing, tubing, or packer; and
- (b) there is no significant fluid movement into another aquifer through vertical channels adjacent to the well bore hole.

Condition 54

Practices and procedures must be in place to detect, as soon as practicable, any fractures that cause the connection of a target gas producing formation and another aquifer.

Condition 55

Rectification measures must be taken immediately if the holder of this environmental authority either becomes aware that stimulation activities have resulted in a change in water quality at any of the bores that are referred to in Condition 48, or that stimulation activities have caused the connection of the target gas producing formation and another aquifer.

Condition 56 – Stimulation Risk Assessment

Prior to undertaking well stimulation activities, the holder of this environmental authority must develop a risk assessment to ensure that stimulation activities are managed to prevent environmental harm.

Condition 57

The stimulation risk assessment must include, but not necessarily be limited to:

- (a) a process description of the stimulation activity to be applied, including equipment and a comparison to best international practice;
- (b) provide details of where, when and how often stimulation is to be undertaken on ATP645 under this environmental authority;
- (c) a geological model of the field to be stimulated including geological names, descriptions and depths of the target gas producing formation(s);
- (d) naturally occurring geological faults;
- (e) seismic history of the region (e.g. earth tremors, earthquakes);
- (f) proximity of overlying and underlying aquifers;
- (g) description of the depths that aquifers with environmental values occur, both above and below the target gas producing formation;
- (h) the environmental values of groundwater in the area;
- (i) description of overlying and underlying formations in respect of porosity, permeability, hydraulic conductivity, faulting and fracture propensity;

- (j) consideration of barriers or known direct connections between the target gas producing formation and the overlying and underlying aquifers;
- (k) a description of the well mechanical integrity testing program;
- (l) process control and assessment techniques to be applied for determining extent of stimulation activities (e.g. microseismic measurements, modelling etc);
- (m) practices and procedures to ensure that the stimulation activities are designed to be contained within the target gas producing formation;
- (n) locations of landholders' active groundwater bores;
- (o) groundwater transmissivity, flow rate, hydraulic conductivity and direction(s) of flow;
- (p) a description of the chemicals used in stimulation activities (including estimated total mass, estimated composition, chemical abstract service numbers and properties), their mixtures and the resultant compounds that are formed after stimulation;
- (q) a mass balance estimating the concentrations and absolute masses of chemicals that will be reacted, returned to the surface or left in the target gas producing formation subsequent to stimulation;
- (r) an environmental hazard assessment of the chemicals used including their mixtures and the resultant chemicals that are formed after stimulation including:
 - i. toxicological and ecotoxicological information of chemicals used;
 - ii. information on the persistence and bioaccumulation potential of the chemicals used;
 - iii. identification of the stimulation fluid chemicals of potential concern derived from the risk assessment;
- (s) an environmental hazard assessment of use, formation of, and detection of polycyclic aromatic hydrocarbons in stimulation activities;
- (t) identification of whether radioactive tracer beads are proposed to be used in the stimulation activity and if so, provide an environmental hazard assessment of using radioactive tracer beads in stimulation activities;
- (u) an environmental hazard assessment of leaving stimulation chemicals in the target gas producing formation for extended periods subsequent to stimulation;
- (v) human health exposure pathways to operators and the regional population;
- (w) risk characterisation of environmental impacts based on the environmental hazard assessment;
- (x) potential impacts to landholder bores as a result of stimulation activities; and
- (y) potential environmental or health impacts which may result from stimulation activities including but not limited to water quality, air quality (including suppression of dust and other airborne contaminants), noise and vibration.

Condition 58

The stimulation risk assessment must be carried out for every well to be stimulated prior to stimulation activities being carried out at that well.

Condition 59 – Stimulation Baseline Monitoring

Prior to undertaking any stimulation activity, the holder of this environmental authority must undertake a baseline bore assessment of the water quality of:

- (a) all landholders' active groundwater bores (subject to access being permitted by the landholder) that are spatially located within a two (2) kilometre horizontal radius from the location of the stimulation initiation point within the target gas producing formation; and
- (b) all landholders' active groundwater bores (subject to access being permitted by the landholder) in any aquifer that is within 200 metres above or below the target gas producing formation and is spatially located with a two (2) kilometre radius from the location of the stimulation initiation point; and

- (c) any other bore that could potentially be adversely impacted by the stimulation activity(ies) in accordance with the findings of the risk assessment required by Condition 56 and Condition 57.

Condition 60

Prior to undertaking stimulation activities at a well, the holder of this environmental authority must have sufficient water quality data to accurately represent the water quality in the well to be stimulated. The data must include as a minimum the results of analyses for the parameters in Condition 61.

Condition 61

Baseline bore and well assessments must include relevant analytes and physico-chemical parameters to be monitored in order to establish baseline water quality and must include, but not necessarily be limited to:

- (a) pH;
- (b) electrical conductivity [$\mu\text{S/m}$];
- (c) total suspended solids [mg/L];
- (d) evolved (produced) gas (i.e. methane, carbon dioxide, hydrogen sulphide) [mg/L];
- (e) alkalinity (bicarbonate, carbonate, hydroxide and total as CaCO_3) [mg/L];
- (f) sodium adsorption ratio (SAR);
- (g) anions (chloride, fluoride, sulphate) [mg/L];
- (h) cations (aluminium, calcium, magnesium, potassium, sodium) [mg/L];
- (i) dissolved metals (including but not necessarily being limited to: aluminium, barium, borate (boron), cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver and zinc) [$\mu\text{g/L}$];
- (j) total arsenic [$\mu\text{g/L}$];
- (k) total petroleum hydrocarbons [$\mu\text{g/L}$];
- (l) BTEX (as benzene, toluene, ethylbenzene and total xylene) [$\mu\text{g/L}$];
- (m) polycyclic aromatic hydrocarbons (including but not necessarily being limited to: naphthalene, phenanthrene, benzo[a]pyrene) [$\mu\text{g/L}$];
- (n) sodium hypochlorite [mg/L];
- (o) sodium hydroxide [mg/L];
- (p) formaldehyde [mg/L];
- (q) ethanol [mg/L]; and
- (r) gross alpha or gross beta or radionuclides by gamma spectroscopy [Bq/L].

Condition 62

If the analysis required by Condition 61(l) indicates that total xylene exceeds 75ppb then the holder of this environmental authority must undertake further analysis for levels of ortho-xylene, para-xylene, and meta-xylene.

Condition 63 – Stimulation Impact Monitoring Program

A Stimulation Impact Monitoring Program which has been certified by a suitably qualified person must be developed prior to the carrying out of stimulation activities.

Condition 64

The Stimulation Impact Monitoring Program must be able to detect adverse impacts to water quality from stimulation activities and must consider the findings of the risk assessment required by Conditions 56 and 57 that relate to stimulation activities and must include, as a minimum, monitoring of:

- (a) the stimulation fluids to be used in stimulation activities at sufficient frequency and which sufficiently represents the quantity and quality of the fluids used; and
- (b) flow back waters from stimulation activities at sufficient frequency and which sufficiently represents the quality of that flow back water; and
- (c) flow back waters from stimulation activities at sufficient frequency and accuracy to demonstrate that 150% of the volume used in stimulation activities has been extracted from the stimulated well; and
- (d) all bores in accordance with Condition 59.

Condition 65

The Stimulation Impact Monitoring Program must provide for monitoring of:

- (a) analytes and physico-chemical parameters relevant to baseline bore and well assessments to enable data referencing and comparison including, but not necessarily being limited to the analytes and physico-chemical parameters in Condition 61; and
- (b) any other analyte or physico-chemical parameters that will enable detection of adverse water quality impacts and the inter-connection with a non-target aquifer as a result of stimulation activities including chemical compounds that are actually or potentially formed by chemical reactions with each other or target formation materials during stimulation activities.

Condition 66

The Stimulation Impact Monitoring Program must provide for monitoring of the bores in (Condition 59) at the following minimum frequency:

- (a) monthly for the first six (6) months subsequent to the stimulation activities being undertaken; then
- (b) annually for the first five (5) years subsequent to the stimulation activities being undertaken or until analytes and physico-chemical parameters listed in Condition 61(b), Condition 61(l) – Condition 61(r) are not detected in concentrations above baseline bore monitoring data on two (2) consecutive monitoring occasions.

Condition 67

The holder of this environmental authority must implement the Stimulation Impact Monitoring Program.

Condition 68

The results of the Stimulation Impact Monitoring Program must be made available to any potentially affected landholder upon request by that landholder.

Condition 69

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

SCHEDULE D REHABILITATION

Condition 70 – Progressive Rehabilitation for Significantly Disturbed Land

Pipeline trenches must be backfilled immediately after pipe laying and rehabilitated as soon as practicable but not longer than three (3) months after completion.

Condition 71

Backfilled and rehabilitated pipeline trenches must:

- (a) be a stable landform; and
- (b) exhibit no subsidence or erosion gullies for the life of the operational pipeline; 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 surrounding land features; and
- (f) be vegetated with groundcover as a minimum to ensure that erosion is minimised; and
- (g) be free of any declared pest plants.

Condition 72

Significantly disturbed areas that are no longer required for the on-going petroleum activities, must be rehabilitated within 12 months (unless an exceptional circumstance in the area to be rehabilitated (e.g. a flood event) prevents this timeframe being met) and be maintained to meet the following acceptance criteria:

- (a) contaminated land resulting from petroleum activities is remediated and rehabilitated
- (b) the areas are:
 - i. non-polluting
 - ii. a stable landform
 - iii. re-profiled to contours consistent with the surrounding landform
- (c) surface drainage lines are re-established
- (d) top soil is reinstated; and
- (e) either:
 - i. groundcover, that is not a declared pest species is growing; or
 - ii. an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained.

Condition 73

All significantly disturbed areas caused by petroleum activities which are not being or intended to be utilised by the landholder or overlapping tenure holder, must be rehabilitated to meet the following final acceptance criteria measured either against the highest ecological value adjacent land use or the pre-disturbed land use:

- (a) greater than or equal to 70% of native ground cover species richness
- (b) greater than or equal to the total per cent of ground cover
- (c) less than or equal to the per cent species richness of declared plant pest species; and
- (d) where the adjacent land use contains, or the pre-clearing land use contained, one or more regional ecosystem(s), then at least one regional ecosystem(s) from the same broad vegetation group, and with the equivalent biodiversity status or a biodiversity status with a higher conservation value as any of the regional ecosystem(s) in either the adjacent land or pre-disturbed land, must be present.

Condition 74

Monitoring of performance indicators must be carried out on rehabilitation activities until final acceptance criteria in Condition 73 have been met for the rehabilitated area.

SCHEDULE E MONITORING AND REPORTING CONDITIONS**Monitoring****Condition 75**

All monitoring must be undertaken by a suitably qualified person.

Condition 76

If requested by the administering authority in relation to investigating a valid complaint, monitoring must be commenced within 10 business days.

Condition 77

All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests, except as otherwise authorised in writing by the administering authority.

Condition 78

Notwithstanding standard Condition 77, 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.

Sampling**Condition 79**

Noise must be measured in accordance with the prescribed standards in the *Environmental Protection Regulation 2019*.

Notification**Condition 80**

In addition to the requirements under Chapter 7, Part 1, Division 2 of the *Environmental Protection Act 1994*, the administering authority must be notified through the Pollution Hotline and in writing, as soon as possible, but within 48 hours of becoming aware of any of the following events:

- (a) any unauthorised significant disturbance to land;
- (b) potential or actual loss of structural or hydraulic integrity of a dam;
- (c) when the level of the contents of any regulated dam reaches the mandatory reporting level;
- (d) when a regulated dam will not have available storage to meet the design storage allowance on 1 November of any year;
- (e) potential or actual loss of well integrity;
- (f) when any seepage trigger action response procedure required under the conditions of this environmental authority is or should be implemented;
- (g) unauthorised releases of any volume of prescribed contaminants to waters;
- (h) unauthorised releases of volumes of contaminants, in any mixture, to land greater than:
 - i. 200 L of hydrocarbons; or
 - ii. 200 L of stimulation additives; or
 - iii. 500 L of stimulation fluids; or
 - iv. 1 000 L of brine; or
 - v. 5 000 L of untreated coal seam gas water; or
 - vi. 5 000 L of raw sewage; or
 - vii. 10 000 L of treated sewage effluent;

- (i) the use of restricted stimulation fluids;
- (j) groundwater monitoring results from a landholder's active groundwater bore monitored under the stimulation impact monitoring program which is a 10% or greater increase from a previous baseline value for that bore and which renders the water unfit for its intended use; or
- (k) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.

Reporting**Condition 81**

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.

APPENDIX A DEFINITIONS

Key terms and/or phrases underlined in this environmental authority are defined in this section. Where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

Term	Definition																
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.																
adjacent land use(s)	means the ecosystem function adjacent to an area of significant disturbance, or where there is no ecosystem function, the use of the land. An adjacent land use does not include an adjacent area that shows evidence of edge effect.																
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.																
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 2 anniversary dates.																
approved quality criteria	for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards: <u>Part A</u> In all cases: <table border="1"> <thead> <tr> <th>Parameter</th><th>Maximum concentration</th></tr> </thead> <tbody> <tr> <td>pH</td><td>6–10.5 (range)</td></tr> <tr> <td>Electrical Conductivity</td><td>20dS/m (20,000µS/cm)</td></tr> <tr> <td>Chloride*</td><td>8000mg/L</td></tr> </tbody> </table> *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. <u>Part B</u> If any of the following metals are a component of the drilling fluids, then for that metal: <table border="1"> <thead> <tr> <th>Parameter</th><th>Maximum concentration</th></tr> </thead> <tbody> <tr> <td>Arsenic</td><td>20mg/kg</td></tr> <tr> <td>Selenium</td><td>5mg/kg</td></tr> <tr> <td>Boron</td><td>100mg/kg</td></tr> </tbody> </table>	Parameter	Maximum concentration	pH	6–10.5 (range)	Electrical Conductivity	20dS/m (20,000µS/cm)	Chloride*	8000mg/L	Parameter	Maximum concentration	Arsenic	20mg/kg	Selenium	5mg/kg	Boron	100mg/kg
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	Cadmium	3mg/kg
	Chromium (total)	400mg/kg
	Copper	100mg/kg
	Lead	600mg/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 <i>(Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene)</i>	7mg/kg	
Benzene	1mg/kg	
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% of the measurement time period T of not less than 15 minutes (or $L_{A 90, adj, 15 mins}$), using Fast response.	
being or intended to be utilised by the landholder or overlapping tenure holder	for significantly disturbed land, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use of the land such that rehabilitation standards for revegetation by the holder of the environmental authority are not required. For dams, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use for the dam such that rehabilitation standards for revegetation by the holder of the environmental authority are not required.	
biodiversity values	for the purposes of this environmental authority, means environmentally sensitive areas, prescribed environmental matters and wetlands.	

bore	means a water observation bore or a water supply bore that is either sub-artesian or artesian.
BTEX	means benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene and total xylene.
business day	has the meaning in the <i>Acts Interpretation Act 1954</i> and means a day that is not— • a Saturday or Sunday; or • a public holiday, special holiday or bank holiday in the place in which any relevant act is to be or may be done.
Category A environmentally sensitive area	means any area listed in Schedule 12, Section 1 of the Environmental Protection Regulation 2008.
Category B environmentally sensitive area	means any area listed in Schedule 12, Section 2 of the Environmental Protection Regulation 2008.
Category C environmentally sensitive area	means any of the following areas: • nature refuges as defined in the conservation agreement for that refuge under the <i>Nature Conservation Act 1992</i> • 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 <i>Nature Conservation Act 1992</i> • an area validated as 'essential habitat' from ground-truthing surveys in accordance with the <i>Vegetation Management Act 1999</i> for a species of wildlife listed as endangered or vulnerable under the <i>Nature Conservation Act 1992</i> • 'of concern regional ecosystems' that are remnant vegetation and identified in the database called 'RE description database' containing regional ecosystem numbers and descriptions.
certified or certification	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	means: (a) 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—

	i. the flattening or compaction of vegetation by vehicles if the vegetation remains living; or ii. the slashing or mowing of vegetation to facilitate access tracks; or iii. the clearing of noxious or introduced plant species; and (b) in relation to trees - cutting down, ringbarking, pushing over, poisoning or destroying in any way.
daily peak design capacity	for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the Environmental Protection Regulation 2008 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.
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.
declared plant pest species	has the meaning in the Land Protection (Pest and Stock Route Management) Regulation 2003 and is a 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 plant.
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, as amended from time to time, that must be provided in a dam to an annual exceedance probability specified in that Manual.
document	has the meaning in the <i>Acts Interpretation Act 1954</i> and means: • any paper or other material on which there is writing; and • any paper or other material on which there are marks; and • figures, symbols or perforations having a meaning for a person qualified to interpret them; and • any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).
ecological connectivity	is a measure of ecological condition and means the flow or connection of organisms and ecological processes across landscapes at multiple scales. Ecological connectivity has a positive relationship with landscape connectivity and habitat connectivity and effects vary between species. It includes connectivity by stepping stone or contiguous bioregional/local corridor networks.
ecosystem function	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.

environmental harm	has the meaning in section 14 of the <i>Environmental Protection Act 1994</i> 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(s)	has the meaning in section 9 of the <i>Environmental Protection Act 1994</i> .
environmental nuisance	has the meaning in section 15 of the <i>Environmental Protection Act 1994</i> 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.
flare pit	means a containment area where any hydrocarbon that is discovered in an over-pressured reservoir during the drilling operation is diverted to, and combusted. The flare pit is only used during the drilling and workover process.
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.
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 Queensland waters that are scheduled waters under the Environmental Protection (Water) Policy 2009 as high value ecological waters.
hydraulic integrity	refers to the capacity of a dam to contain or safely pass flowable substances based on its design.
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, pipelines and assets that have been decommissioned, rehabilitated and lawfully recognised as being subject to subsequent transfer with ownership of the land.
L _A 90, adj, 15 mins	means the A-weighted sound pressure level, adjusted for tonal character that is equal to or exceeded for 90% of any 15 minutes sample period equal, using Fast response.

L _{Aeq} , adj, 15 mins	means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within any 15-minute period has the same square sound pressure as a sound level that varies with time.
lake	means: • a lagoon, swamp or other natural collection of water, whether permanent or intermittent; and • the bed and banks and any other element confining or containing the water.
landholder's active groundwater bore	means bores that are able to continue to provide a reasonable yield of water in terms of quantity for the bores authorised purpose or use. This term does not include monitoring bores owned by the administering authority of the <i>Water Act 2000</i> .
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.
limited petroleum activities	mean only the following petroleum activities: • well sites not exceeding 1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance. Well sites may include the following infrastructure: ○ well pads; ○ water pumps and generators associated with well operations; ○ sumps for storing drilling muds; ○ flare pits; ○ ponds used to contain and / or store stimulation fluid; • geophysical surveys (including seismic petroleum activities); • ecological geological surveys (including seismic petroleum activities); • gathering / flow pipelines from a well head to the initial compression facility; • supporting access tracks; and • communication and power lines that are necessary for the undertaking of petroleum activities and that are located within well sites, well pads and pipeline right of ways without increasing the disturbance area of petroleum activities. For clarity, limited petroleum activities exclude and exclusions are not necessarily limited to: • the construction of infrastructure for processing or storing petroleum or by-products; • low hazard dams (that do not meet the limitations prescribed above); • regulated dams; • borrow pits; • compressor stations; • campsites / workforce accommodation; • pipelines which are used to transport gas after the initial compression facility (e.g., trunk pipelines, transmission pipelines or pipelines that require a pipeline

	licence) except for those pipelines authorized under the conditions of Schedule D of the Environmental Authority; • waste disposal; or • other supporting infrastructure for the project (e.g., sewage treatment plants).
linear infrastructure	means powerlines, pipelines, flowlines, roads and access tracks.
long term noise event	means a noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five (5) days, even when there are respite periods when the noise is inaudible within those five (5) days.
lopping	a tree, means cutting or pruning its branches, but does not include— • removing its trunk; and • cutting or pruning its branches so severely that it is likely to die.
low hazard dam	means any dam that is not classified as high or significant as assessed using the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams, published by the Queensland Government and which contains contaminants in concentrations which exceed or will exceed, during the dam's operational life, the values or range shown in Table 3 of the manual.
low impact petroleum activities	means limited petroleum activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation or result in significant disturbance to land. Examples of such activities include but are not necessarily limited to soil surveys, topographic surveys, cadastral surveys and ecological surveys and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.
medium term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than five (5) days and does not re-occur for a period of at least four (4) weeks. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.
mix-bury-cover method	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 ($k_w=10-8\text{m/s}$) or subsoil with a clay content of greater than 20%; and • the residual solids are mixed with subsoil in the sump and cover; and • the subsoil and residual solids are mixed at least three parts subsoil to one part waste (v/v); and • a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and • topsoil is replaced.
month	has the meaning in the <i>Acts Interpretation Act 1954</i> 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.
of concern regional ecosystem	means an of concern regional ecosystem identified in the database maintained by the administering authority called <i>Regional Ecosystem Description Database</i> containing regional ecosystem numbers and descriptions. The database is available for inspection on the Department of Environment and Heritage Protection's website at https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/ . u/
oil-based drilling mud	means mud where the base fluid is a petroleum product such as diesel fuel.
outer bank	has the meaning in section 5A of the <i>Water Act 2000</i> .
performance indicator(s)	means a quantitative measure against which success can be assessed and audited in a consistent, objective and repeatable manner.
petroleum activity(ies)	means: (a) activities that, under the <i>Petroleum Act 1923</i>, are authorised activities for a 1923 Act petroleum tenure under that Act; or (b) activities that, under the <i>Petroleum and Gas (Production and Safety) Act 2004</i>, are authorised activities for a petroleum authority under that Act; or (c) exploring for, exploiting or conveying petroleum resources under a licence, permit, pipeline licence, primary licence, secondary licence or special prospecting authority granted under the <i>Petroleum (Submerged Lands) Act 1982</i>; or (d) rehabilitating or remediating environmental harm because of an activity mentioned in paragraphs (a) to (c); (e) actions taken to prevent environmental harm because of activities mentioned in paragraphs (a) to (d); (f) activities required under a condition of an environmental authority for activities mentioned in paragraphs (a) to (e); or (g) activities required under a condition of an environmental authority mentioned in paragraphs (a) to (e) that has ended or ceased to have effect, if the condition- i. continues to apply after the authority has ended or ceased to have effect, and ii. has not been complied with.
petroleum authority	is: (a) a 1923 Act petroleum tenure granted under the <i>Petroleum Act 1923</i>; or (b) a petroleum authority granted under the <i>Petroleum and Gas (Production and Safety) Act 2004</i>; or (c) a licence, permit, pipeline licence, primary licence, secondary licence or special prospecting authority granted under the <i>Petroleum (Submerged Lands) Act 1982</i>.
pre-disturbed land use	means the function or use of the land as documented prior to significant disturbance occurring at that location.

primary protection zone	means an area within 200m from the boundary of any Category A, B or C ESA.
produced water	has the meaning in Section 15A of the <i>Petroleum and Gas (Production and Safety) Act 2004</i> and means CSG water or <u>associated water</u> for a petroleum tenure.
regulated dam	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, as amended from time to time.
regulated waste	means non-domestic waste mentioned in Schedule 7 of the <i>Environmental Protection Regulation 2008</i> (whether or not it has been treated or immobilised), and includes— (a) for an element – any chemical compound containing the element; and (b) anything that has contained the waste.
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.
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.
residual drilling material	means waste drilling materials including muds, cuttings and cement returns from well holes and which have been left behind after the drilling fluids are pumped out.
restricted stimulation fluids	has the meaning in section 206 of the <i>Environmental Protection Act 1994</i> and means fluids used for the purpose of stimulation, including fracturing, that contain the following chemicals in more than the maximum amount prescribed under a regulation— (a) petroleum hydrocarbons containing benzene, ethylbenzene, toluene or xylene (b) chemicals that produce, or are likely to produce, benzene, ethylbenzene, toluene or xylene as the chemical breaks down in the environment.
secondary protection zone	in relation to a Category A Environmentally Sensitive Area means an area within an 800 metre buffer from the boundary of a primary protection zone.
secondary protection zone	in relation to a Category B or C Environmentally Sensitive Area means an area within a 300 metre buffer from the boundary of a primary protection zone.
secondary treated class b standards	means treated sewage effluent or greywater which meets the following standards: • total phosphorous as P, maximum 20mg/L • total nitrogen as N, maximum 30mg/L • 5-day biochemical oxygen demand (inhibited) (e.g., release pipe from sewage treatment plant), maximum 20mg/L • suspended solids, maximum 30mg/L • pH, range 6.0 to 8.5 • e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 1000cfu per 100mL, maximum 10 000cfu per 100mL.

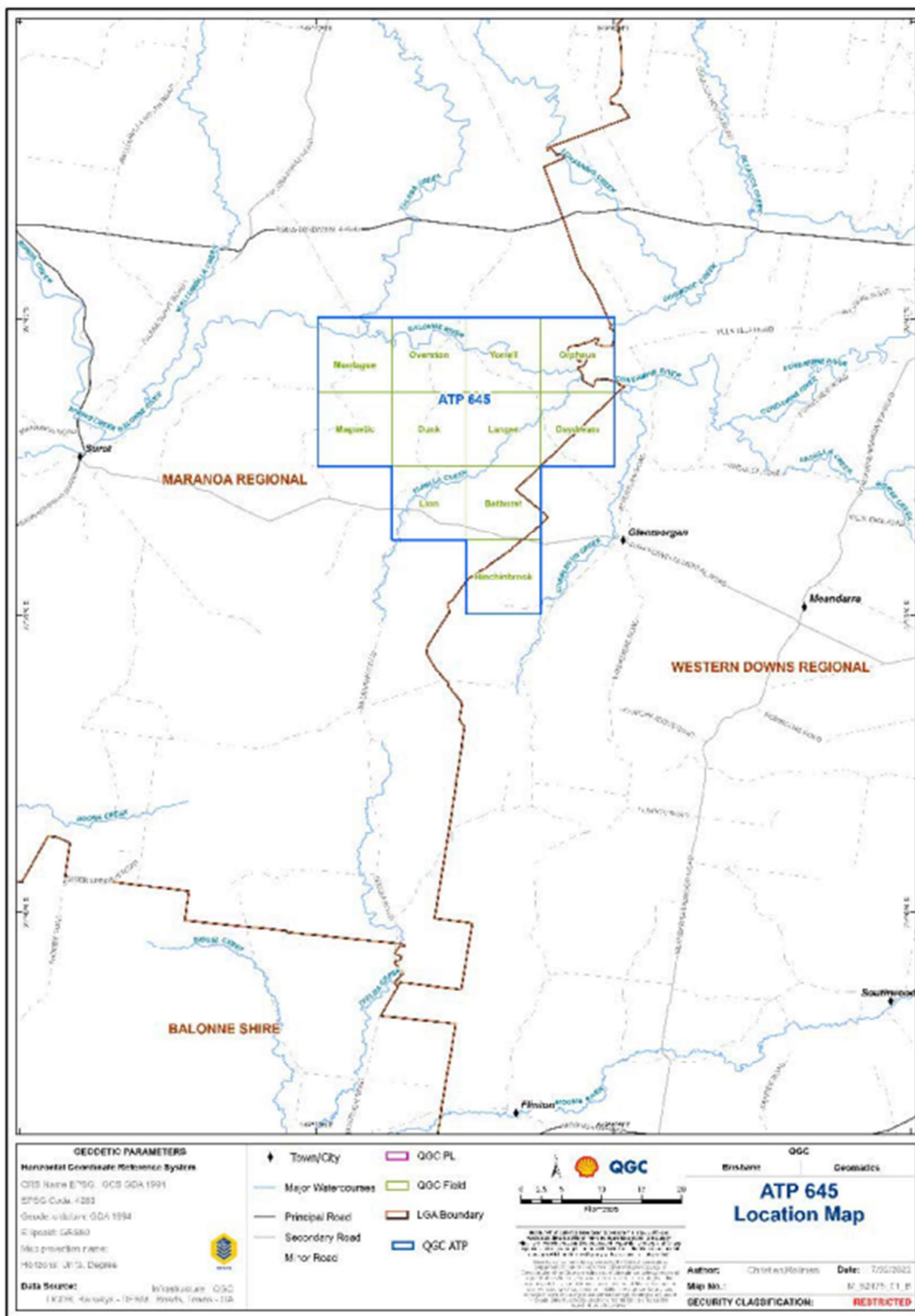
secondary treated class c standards	means treated sewage effluent or greywater which meets the following standards: • total phosphorous as P, maximum 20mg/L • total nitrogen as N, maximum 30mg/L • 5-day biochemical oxygen demand (inhibited) (e.g., Release pipe from sewage treatment plant), maximum 20mg/L • 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, 10 000cfu per 100mL, maximum 100 000cfu 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 employee accommodation or public roads • for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 2008.
short term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven (7) days. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.
significantly disturbed or significant disturbance or significant disturbance to land	has the meaning in Schedule 12, section 4 of the Environmental Protection Regulation 2008. Land is significantly disturbed if— - to a condition required under the relevant environmental authority; or - 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.
site	means the area within the petroleum authority or authorities to which the environmental authority relates.
species richness	means the number of different species in a given area.
specified relevant activity	for this environmental authority means an activity that, but for being carried out as a resource activity, would otherwise be a prescribed ERA.
spring(s)	has the meaning in Schedule 4 of the <i>Water Act 2000</i>.

stable	has the meaning in Schedule 5 of the Environmental Protection Regulation 2008 and, for a site, means the rehabilitation and <u>restoration</u> of the site is enduring or permanent so that the site is unlikely to collapse, erode or subside.
stimulation	means a technique used to increase the permeability of a natural underground reservoir, using processes that change the formation pressure and /or involve the addition of chemicals. For the purposes of the environmental authority, stimulation includes hydraulic fracturing / hydrofracturing, fracture acidizing and the use of proppant treatments. For the purposes of the environmental authority, stimulation activities do not include mechanical processes alone such as underbalanced drilling and/or perforating, under-reaming, well deepening, perforation, sand or gravel packing, well washing and formation opening using existing surface, formation, and/or council water with no added chemicals, mechanical cleaning or cavitation.
stimulation fluid	means the fluid injected underground to increase permeability. 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.
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 8 of the Environmental Protection Regulation 2008; and (c) not be an employee of, nor have a financial interest or any involvement which would lead to a conflict of interest with the holder(s) of the environmental authority.
synthetic based drilling mud	means a mud where the base fluid is a synthetic oil, consisting of chemical compounds which are artificially made or synthesised by chemically modifying petroleum components or other raw materials rather than the whole crude oil.
top soil	means the surface (top) layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from the natural surface.
transmissivity	means the rate of flow of water through a vertical strip of aquifer which is one unit wide and which extends the full saturated depth of the aquifer.
valid complaint	means a complaint that is not considered by the administering authority or holder of the environmental authority to be frivolous, vexatious or based on mistaken belief.
waste and resource	has the meaning provided in section 9 of the <i>Waste Reduction and Recycling Act 2011</i> .

management hierarchy	
waste and resource management principles	has the meaning provided in section 4(2)(b) of the <i>Waste Reduction and Recycling Act 2011</i> .
waters	means all or any part of a creek, river, stream, lake, lagoon, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.
watercourse	has the meaning provided in Schedule 4 of the <i>Environmental Protection Act 1994</i> .
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	means a wetland as defined under the Queensland Wetlands Program and are areas of permanent or periodic/intermittent inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed 6 metres. To be classified as a wetland, the area must have one or more of the following attributes: • at least periodically, the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle; or • the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers; or • the substratum is not soil and is saturated with water or covered by water at some time. For the purposes of petroleum activities, wetlands do not include springs and watercourses and those wetlands that are defined in the <i>Wetland Mapping and Classification Methodology</i> (2005) published by the Queensland Government as: • H2M1 Riverine or ex-riverine (lacustrine) water bodies associated with dams and weirs located in a channel • H2M3p Ponded pastures • H2M5 Palustrine/lacustrine water bodies where ecological character has changed due to gross mechanical disturbance (e.g. cropping) • H2M6 Palustrine/lacustrine water bodies that have been converted, completely or mostly, to a ring tank or other controlled storage • H2M7 Riverine water bodies that have been converted mostly to canals or irrigation channels • H3C1 Artificial stand-alone water storages not within a natural water body or channel; or • H3C2 Artificial Channel drain/canal – bore drains, swales, bores and irrigation channel overflows/ponding. Explanatory note: This definition has been amended from the Queensland Wetlands Program definition so that low value wetlands and man-made water bodies are excluded.
year(s)	means a period of 12 months.

APPENDIX A

MAP of ATP 645



END OF ENVIRONMENTAL AUTHORITY