

# Permit

*Environmental Protection Act 1994*

## Environmental authority P-EA-100130995

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

### Environmental authority number: P-EA-100130995

**Environmental authority takes effect on** the date that your related tenure (Petroleum Lease (PL) 1059) is granted. This is the take effect date.

The first annual fee is payable within 20 business days of the take effect date.

The anniversary date of this environmental authority is the same day each year as the take effect date. 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.

### Environmental authority holder(s)

Name(s)	Registered address
SANTOS CSG PTY LTD	Ground Floor, Santos Centre 60 Flinders Street ADELAIDE SA 5000
AUSTRALIA PACIFIC LNG (CSG) PTY LIMITED	Level 28, 180 Ann Street BRISBANE CITY QLD 4000
PAPL (Upstream) Pty Limited	c/- Addisons Commercial Lawyers Level 12, 60 Carrington Street SYDNEY NSW 2000
Total E & P Australia III	Level 13 BGC Centre 28 The Esplanade PERTH WA 6000
KGLNG E&P Pty Ltd	Level 11 28 The Esplanade PERTH WA 6000

### Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Schedule 3 - 03 - A petroleum activity that is likely to have a significant impact on a category A or B Environmentally Sensitive Area	PL1059

### 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](http://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.

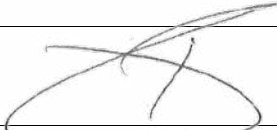
However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect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

20 September 2021

Date

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

**Enquiries:**  
GPO Box 2454, BRISBANE QLD 4001  
Email: [EnergyandExtractive@des.qld.gov.au](mailto:EnergyandExtractive@des.qld.gov.au)

**Privacy statement**

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

### **Obligations under the *Mining and Quarrying Safety and Health Act 1999***

If you are operating a quarry, other than a sand and gravel quarry where there is no crushing capability, you will be required to comply with the *Mining and Quarrying Safety and Health Act 1999*. For more information on your obligations under this legislation contact Mine Safety and Health at <https://www.rshq.qld.gov.au/>, or phone 13 QGOV ( 13 74 68 ) or your local Mines Inspectorate Office.

### **Development Approval**

This permit is not a development approval under the *Planning Act 2016*. The conditions of this environmental authority are separate, and in addition to, any conditions that may be on the development approval. If a copy of this environmental authority is attached to a development approval, it is for information only, and may not be current. If you are unsure that you have the most current version of the environmental authority relating to this site please visit <https://apps.des.qld.gov.au/env-authorities/> to access all environmental authorities currently approved.

**Conditions of environmental authority**

**Schedule A – General**

A1	<p>This environmental authority authorises the carrying out of the following resource activity(ies):</p> <p>(a) the petroleum activities listed in <i>Schedule A, Table 1 – Scale and Intensity for the Activities</i> to the extent they are carried out in accordance with the activity’s corresponding scale and intensity.</p> <p>(b) incidental activities, including but not limited to:</p> <ul style="list-style-type: none"> <li>(i) linear infrastructure;</li> <li>(ii) borrow pits / extracting, other than by dredging;</li> <li>(iii) compressor stations;</li> <li>(iv) sewage treatment - operating sewage treatment works, other than no release works with a total daily peak design capacity of <u>less than</u> 21 EP;</li> <li>(v) seismic surveys.</li> </ul> <p style="text-align: center;"><b>Schedule A, Table 1 – Scale and Intensity for the Activities</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Petroleum activities and infrastructure</th> <th style="text-align: center;">Scale (number of activities)</th> <th style="text-align: center;">Intensity (maximum size in total)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Coal seam gas exploration, appraisal and development wells</td> <td style="text-align: center;">111</td> <td style="text-align: center;">165ha</td> </tr> <tr> <td style="text-align: center;">Stimulation activities</td> <td colspan="2" style="text-align: center;">111 wells</td> </tr> </tbody> </table>	Petroleum activities and infrastructure	Scale (number of activities)	Intensity (maximum size in total)	Coal seam gas exploration, appraisal and development wells	111	165ha	Stimulation activities	111 wells	
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Coal seam gas exploration, appraisal and development wells	111	165ha								
Stimulation activities	111 wells									
A2	The resource activities in condition (A1) are authorised subject to the conditions of this environmental authority.									
A3	<p>This environmental authority authorises a relevant act<sup>1</sup> to occur only to the extent that:</p> <p>(a) the relevant act is an ordinary consequence of carrying out the resource activities authorised by this environmental authority in accordance with its conditions; or</p> <p>(b) the relevant act is specifically authorised by the conditions of this environmental authority and carrying out an activity which results in the relevant act does not contravene the conditions of this authority.</p> <p><sup>1</sup> See section 493A of the <i>Environmental Protection Act 1994</i></p>									
A4	<p><b>Monitoring</b></p> <p>All monitoring required must be undertaken by a suitably qualified person.</p>									
A5	If requested by the administering authority in relation to investigating a complaint, monitoring must be commenced within 10 business days.									
A6	The administering authority must be advised in writing of the results of the complaint investigation (including an analysis and interpretation of the monitoring results) and actions									

	proposed or undertaken to resolve the complaint within five (5) business days of completing the complaint investigation, unless a longer time is agreed to by the administering authority.
A7	All laboratory analyses and tests required must be undertaken by a laboratory that has NATA accreditation for such analyses and tests.
A8	Notwithstanding condition (A7), where there are no NATA accredited laboratories for a specific analyte or substance, then duplicate samples must be sent to at least two separate laboratories for independent testing or evaluation.
A9	<p>Monitoring and sampling must be carried out in accordance with the requirements of the following documents (as relevant to the sampling being undertaken), as amended from time to time:</p> <ul style="list-style-type: none"> <li>(a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual Environmental Protection (Water) Policy 2009;</li> <li>(b) for groundwater, the Australian Government's Groundwater Sampling and Analysis - A Field Guide and any applicable Australian Standard;</li> <li>(c) for noise, the latest Department of Environment and Science Noise Measurement Manual and any applicable Australian Standard;</li> <li>(d) for air, the Queensland Air Quality Sampling Manual and/or Australian Standard 4323.1:1995 Stationary source emissions method 1: Selection of sampling positions, as appropriate for the relevant measurement;</li> <li>(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, 3<sup>rd</sup> edition (National Committee on Soil and Terrain, 2009);</li> <li>(f) for dust, Australian Standard AS3580.</li> </ul>
A10	<p><b>Contingency Procedures for Emergency Environmental Incidents</b></p> <p>Petroleum activities involving significant disturbance to land cannot commence until the development of written contingency procedures for emergency environmental incidents which include, but are not necessarily limited to:</p> <ul style="list-style-type: none"> <li>(a) A clear definition of what constitutes an environmental emergency incident or near miss for the petroleum activity;</li> <li>(b) Consideration of the risks caused by the petroleum activity including the impact of flooding and other natural events on the petroleum activity;</li> <li>(c) Response procedures to be implemented to prevent or minimise the risks of environmental harm occurring;</li> <li>(d) The practices and procedures to be employed to restore the environment or mitigate any environmental harm caused;</li> <li>(e) Procedures to investigate causes and impacts including impact monitoring programs for releases to waters and/or land;</li> <li>(f) Training of staff to enable them to effectively respond;</li> <li>(g) Procedures to notify the administering authority, local government and any potentially impacted landholder.</li> </ul>
A11	<p><b>Maintenance of Plant and Equipment</b></p> <p>All plant and equipment must be maintained and operated in their proper and effective condition.</p>

A12	<p>The following infrastructure must be signed with a unique reference name or number in such a way that it is clearly observable:</p> <ul style="list-style-type: none"> <li>(a) low consequence dams;</li> <li>(b) exploration, appraisal and development wells; and</li> <li>(c) sewage treatment facilities.</li> </ul>
A13	<p>Measures to prevent fauna being harmed from entrapment must be implemented during the construction and operation of well infrastructure, dams and pipeline trenches.</p>
A14	<p><b>Documentation</b></p> <p>A certification must be prepared by a suitably qualified person within 30 business days of completing every plan, procedure, program and report required to be developed under this environmental authority, which demonstrates that:</p> <ul style="list-style-type: none"> <li>(a) relevant material, including current published guidelines (where available) have been considered in the written document</li> <li>(b) the content of the written document is accurate and true; and</li> <li>(c) the document meets the requirements of the relevant conditions of the environmental authority.</li> </ul>
A15	<p>All plans, procedures, programs, reports and methodologies required under this environmental authority must be written and implemented.</p>
A16	<p>All documents required to be developed under this environmental authority must be kept for five (5) years.</p>
A17	<p>All documents required to be prepared, held or kept under this environmental authority must be provided to the administering authority upon written request within the requested timeframe.</p>
A18	<p>A record of all complaints must be kept including the date, complaint's details, source, reason for the complaint, description of investigations and actions undertaken in resolving the complaint.</p>
A19	<p><b>Erosion and Sediment Control</b></p> <p>For activities involving significant disturbance to land, control measures that are commensurate to the site-specific risk of erosion, and risk of sediment release to waters must be implemented to:</p> <ul style="list-style-type: none"> <li>(a) preferentially divert stormwater around significantly disturbed land, or allow stormwater to pass through the site in a controlled manner and at non-erosive flow velocities;</li> <li>(b) minimise soil erosion resulting from wind, rain, and flowing water;</li> <li>(c) minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain, and flowing water;</li> <li>(d) minimise work-related soil erosion and sediment runoff; and</li> <li>(e) minimise negative impacts to land or properties adjacent to the activities (including roads).</li> </ul>

**Schedule B – Water**

B1	<p><b>General</b></p> <p>Contaminants must not be directly or indirectly released to any waters except as permitted under this environmental authority.</p>						
B2	<p>The extraction of groundwater as part of the petroleum activities from underground aquifers must not directly or indirectly cause environmental harm to any watercourse or wetland.</p>						
B3	<p>Petroleum activities must not occur within a wetland of high ecological significance.</p>						
B4	<p>Petroleum activities must not negatively impact a wetland of high ecological significance.</p>						
B5	<p><b>Works in Watercourses and Wetlands</b></p> <p>Only construction or maintenance of linear infrastructure is permitted in or within a general ecologically significant wetland or in a watercourse.</p>						
B6	<p>The construction or maintenance of linear infrastructure that will result in significant disturbance in or on the bed and banks of a watercourse or within a general ecologically significant wetland must be conducted in accordance with the following order of preference:</p> <p>(a) in times when there is no water present;</p> <p>(b) in times of no flow;</p> <p>(c) in times of flow but in a way that does not impede low flow.</p>						
B7	<p>The construction and maintenance of linear infrastructure authorised under condition (B3) must comply with the water quality limits specified in <i>Schedule B, Table 1 – Water Release Limits for Construction or Maintenance of Linear Infrastructure</i></p> <p style="text-align: center;"><b>Schedule B, Table 1 - Water Release limits for Construction or Maintenance of Linear Infrastructure.</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th style="text-align: center;">Water Quality Parameters</th> <th style="text-align: center;">Units</th> <th style="text-align: center;">Water Quality Limits</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Turbidity</td> <td style="text-align: center;">Nephelometric Turbidity Units (NTU)</td> <td> <p>For a general ecologically significant wetland, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within a 50m radius of the construction or maintenance activity.</p> <p>For a watercourse, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within 50m downstream of the construction or maintenance activity.</p> </td> </tr> </tbody> </table>	Water Quality Parameters	Units	Water Quality Limits	Turbidity	Nephelometric Turbidity Units (NTU)	<p>For a general ecologically significant wetland, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within a 50m radius of the construction or maintenance activity.</p> <p>For a watercourse, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within 50m downstream of the construction or maintenance activity.</p>
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Turbidity	Nephelometric Turbidity Units (NTU)	<p>For a general ecologically significant wetland, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within a 50m radius of the construction or maintenance activity.</p> <p>For a watercourse, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within 50m downstream of the construction or maintenance activity.</p>					



			<p>For a general ecologically significant wetland, if background water turbidity is equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within a 50m radius of the construction or maintenance activity.</p> <p>For a watercourse, if background water turbidity is equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within 50m downstream of the construction or maintenance activity.</p>
	Hydrocarbons	-	For a general ecological significant wetland, or watercourse, no visible sheen or slick.
B8	Monitoring must be undertaken at a reasonable frequency to ensure compliance with condition B7.		
B9	<p>A register must be kept of all linear infrastructure construction and maintenance activities in a wetland of other environmental value and watercourses, which must include:</p> <p>(a) location of the activity (e.g. GPS coordinates (GDA94) and watercourse name);</p> <p>(b) estimated flow rate or surface water at the time of the activity;</p> <p>(c) duration of work; and</p> <p>(d) results of impact monitoring carried out under condition B6.</p>		
B10	Linear infrastructure activities, other than linear infrastructure construction or maintenance activities, must not change the existing surface water hydrological regime of any general ecologically significant wetland.		
B11	<p>The construction or maintenance of linear infrastructure in any general ecologically significant wetland must not:</p> <p>(a) prohibit the flow of surface water in or out of the wetland;</p> <p>(b) impact surface water quality in the wetland unless specifically authorised by this environmental authority;</p> <p>(c) drain the wetland;</p> <p>(d) fill the wetland;</p> <p>(e) impact bank stability; or</p> <p>(f) result in the clearing of riparian vegetation outside of the required footprint.</p>		
B12	<p><b>Floodplains</b></p> <p>Petroleum activity(ies) on floodplains must be carried out in a way that does not:</p> <p>(a) concentrate flood flows in a way that will or may cause or threaten an adverse environmental impact; or</p> <p>(b) divert flood flows from natural drainage paths and alter flow distribution; or</p> <p>(c) increase the local duration of floods; or</p> <p>(d) increase the risk of detaining flood flows.</p>		

B13	<p><b>Seepage Monitoring Program</b></p> <p>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 following the effective date of this environmental authority.</p>
B14	<p>The seepage monitoring program required by condition (B13) must include but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>(a) identification of the containment facilities for which seepage will be monitored</li> <li>(b) identification of trigger parameters that are associated with the potential or actual contaminants held in the containment facilities .</li> <li>(c) identification of trigger concentration levels that are suitable for early detection of contaminant releases at the containment facilities</li> <li>(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</li> <li>(e) installation of seepage monitoring bores that: <ul style="list-style-type: none"> <li>i. are within formations potentially affected by the containment facilities authorised under this environmental authority (i.e. within the potential area of impact)</li> <li>ii. provide for the early detection of negative impacts prior to reaching groundwater dependent ecosystems bores, landholder's active groundwater bores or water supply bores</li> <li>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)</li> </ul> </li> <li>(f) monitoring of groundwater at each background and seepage monitoring bore at least quarterly for the trigger parameters identified in condition (B14(b))</li> <li>(g) seepage trigger action response procedures for when trigger parameters and trigger levels identified in conditions (B14(b)) and (B14(c)) trigger the early detection of seepage, or upon becoming aware of any monitoring results that indicate potential groundwater contamination</li> <li>(h) a rationale detailing the program conceptualisation including assumptions, determinations, monitoring equipment, sampling methods and data analysis; and</li> <li>(i) provides for annual updates to the program for new containment facilities constructed in each annual return period.</li> </ul>
B15	<p><b>Seepage Monitoring Bore Drill Log</b></p> <p>A bore drill log must be completed for each seepage monitoring bore in condition (B14) which must include:</p> <ul style="list-style-type: none"> <li>(a) bore identification reference and geographical coordinate location;</li> <li>(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;</li> <li>(c) standing groundwater level and water quality parameters including physical parameter and results of laboratory analysis for the possible trigger parameters;</li> </ul>

	<p>(d) lithological data, preferably a stratigraphic interpretation to identify the important features including the identification of any aquifers; and</p> <p>(e) target formation of the bore.</p>
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**SCHEDULE C – LAND**

C1	<p><b>General</b></p> <p>Contaminants must not be directly or indirectly released to land except as permitted under this environmental authority.</p>
C2	<p><b>Top Soil Management</b></p> <p>Top soil must be managed in a manner that preserves its biological and chemical properties.</p>
C3	<p><b>Land Management</b></p> <p>Land that has been significantly disturbed by the petroleum activities must be managed to ensure that erosion or subsidence do not occur on that land.</p>
C4	<p><b>Chemical Storage</b></p> <p>Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.</p>
C5	<p>Contaminants authorised to be released to land under conditions (C6), (C8) and (C12) must be carried out in a manner that ensures:</p> <ul style="list-style-type: none"> <li>(a) vegetation is not damaged;</li> <li>(b) soil quality and structure is not adversely impacted;</li> <li>(c) there is no surface ponding or runoff beyond the designated release area;</li> <li>(d) there is no aerosols or odours;</li> <li>(e) deep drainage below the root zone of any vegetation is minimised;</li> <li>(f) the quality of shallow aquifers is not adversely affected;</li> <li>(g) is not directly or indirectly released to waters.</li> </ul>
C6	<p><b>Pipeline Wastewater</b></p> <p>Contaminants that are hydrostatic test water from pipelines and contaminants from low point drains, may be released to land in accordance with condition (C5).</p>
C7	<p>Produced water may be re-used in:</p> <ul style="list-style-type: none"> <li>(a) drilling and well hole activities; or</li> <li>(b) stimulation activities.</li> </ul>
C8	<p>Produced water may be released to land for the following purposes:</p> <ul style="list-style-type: none"> <li>(a) dust suppression;</li> <li>(b) construction and operational purposes for the petroleum activity authorised by this environmental authority; and</li> <li>(c) irrigation.</li> </ul>
C9	<p>Produced water may be used for domestic or stock purposes provided the water quality complies with the criteria specified in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ 2000).</p>

C10	<p>Produced water may be transferred to a third party to be used for the following purposes, subject to condition (C11):</p> <ul style="list-style-type: none"> <li>(a) dust suppression;</li> <li>(b) construction and operational purposes; or</li> <li>(c) domestic or stock purposes provided the water quality complies with criteria specified in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ 2000).</li> </ul>
C11	<p>If the responsibility of produced water is given or transferred to a third party in accordance with condition (C9), the holder of the environmental authority must ensure:</p> <ul style="list-style-type: none"> <li>(a) the responsibility of the produced water is given or transferred in accordance with a written agreement (third party agreement);</li> <li>(b) the third party is made aware of the General Environmental Duty under section 319 of the <i>Environmental Protection Act 1994</i>.</li> </ul>
C12	<p><b>Sewage Treatment Works</b></p> <p>Greywater or treated sewage effluent from a treatment system with a daily peak design capacity of up to 21 EP may be:</p> <ul style="list-style-type: none"> <li>(a) released to land by sub-surface or spray irrigation provided it is to a fenced and signed contaminant release area that is: <ul style="list-style-type: none"> <li>(i) a minimum distance of 50 metres from any watercourse, wetland or protected area; and</li> <li>(ii) a minimum distance of 100 metres from any potable water supply or stock drinking water supply; and</li> <li>(iii) kept vegetation with groundcover that is not a prohibited or restricted pest species; and</li> <li>(iv) meets or exceeds secondary treated class C standard; or</li> </ul> </li> <li>(b) used for dust suppression and construction purposes subject to condition (C14).</li> </ul>
C13	<p>When circumstances prevent the irrigation of treated sewage effluent to land, the contaminants must be directed to on-site storage or lawfully disposed of off-site.</p>
C14	<p><b>Treated Sewage Effluent Use for Dust Suppression and Construction Purposes</b></p> <p>Treated sewage effluent may only be used for dust suppression and construction purposes provided that:</p> <ul style="list-style-type: none"> <li>(a) access by the general public can be restricted while effluent is in use;</li> <li>(b) on local government controlled roads, written approval from the relevant Local Government has been given to the holder of this environmental authority; and</li> <li>(c) the treated sewage effluent quality: <ul style="list-style-type: none"> <li>(i) is monitored at the location and frequency specified in <i>Schedule C, Table 1 - Treated Sewage Effluent Standards for Dust Suppression and Construction Purposes</i>; and</li> <li>(ii) meets the release limits for each quality characteristic specified in <i>Schedule C, Table 1 - Treated Sewage Effluent Standards for Dust Suppression and Construction Purposes</i>.</li> </ul> </li> </ul>

<b>Schedule C, Table 1 – Treated Sewage Effluent Standards for Dust Suppression and Construction Purposes</b>				
Quality Characteristic	Sampling and <i>In situ</i> Measurement	Limit type	Release Limit	Frequency
pH	Standpipe from the sewage treatment works	Range	6.0 to 8.5	Monthly
5-day Biochemical		Median	20 mg/L	
Electrical Conductivity		Maximum	1600 µS/cm	
Total Suspended Solids		Maximum	30 mg/L	
E.coli		80 <sup>th</sup> percentile based on at least 5 samples with not less than 30 minutes between samples	<100 cfu per 100 mL	
	Maximum	1000 cfu per 100mL		

**SCHEDULE D – BIODIVERSITY VALUES**

D1	<p><b>Confirming Biodiversity Values</b></p> <p>Prior to undertaking activities that result in significant disturbance to land in areas of native vegetation, confirmation of on-the-ground biodiversity values and wetlands at that location must be undertaken by a suitably qualified person.</p>
D2	<p>A suitably qualified person must develop and certify a methodology so that condition (D1) can be complied with and which is appropriate to confirm on-the-ground biodiversity values and wetlands.</p>
D3	<p>Where areas mapped as environmentally sensitive areas and wetlands differ from those confirmed under conditions (D1) and (D2), petroleum activities may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground values.</p>
D4	<p>All documentation, survey information, photographs, field data or any material associated with the field validation requirements in (D1) must be maintained for the life of the environmental authority to demonstrate to the administering authority that surveys were conducted in a manner consistent with requirements contained in condition (D2).</p>
D5	<p>The location of the petroleum activity must be selected in accordance with the following site planning principles:</p> <ul style="list-style-type: none"> <li>(a) maximise the use of areas of pre-existing disturbance;</li> <li>(b) in order of preference, avoid, minimise or mitigate any impacts, including cumulative impacts, on areas of native vegetation or other areas of ecological value;</li> <li>(c) minimise disturbance to land that may result in land degradation;</li> <li>(d) in order of preference, avoid then minimise isolation, fragmentation, edge effects or dissection of tracts of native vegetation; and</li> <li>(e) in order of preference, avoid then minimise clearing of native mature trees.</li> </ul>

D6

**Disturbance to Land – Environmentally Sensitive Areas**

Where petroleum activities are to be carried out in environmentally sensitive areas or their protection zones, the petroleum activities must be carried out in accordance with *Schedule D, Table 1 – Petroleum Activities in Environmentally Sensitive Areas* and any other relevant conditions of this environmental authority.

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

Environmentally sensitive area	Within the environmentally sensitive area	Primary Protection Zone of the environmentally sensitive area	Secondary Protection Zone of the environmentally sensitive area
Category A environmentally sensitive areas	No petroleum activities permitted	Only low impact petroleum activities permitted.	Only the following: Limited petroleum activities permitted subject to condition D10.  Limited impact camps permitted subject to condition D10.  Limited impact petroleum activities permitted subject to condition (D10)
Category B environmentally sensitive areas excluding 'Endangered' Regional Ecosystems	Only low impact petroleum activities permitted	Only the following: Limited petroleum activities permitted subject to condition (D10)  Limited impact camps permitted subject to condition (D10)  Limited impact petroleum activities permitted subject to condition (D10)	N/A
Category C environmentally sensitive areas that are Nature Refuges, Koala Habitat and/or Declared Catchment Areas	Only low impact petroleum activities permitted	Only the following: Limited petroleum activities permitted subject to condition (D10)  Limited impact camps permitted subject to conditions (D7) and (D10)	N/A



	Category B environmentally sensitive areas that are 'Endangered' Regional Ecosystems	Only limited petroleum activities permitted subject to conditions (D11(a), D11(b) and D7)	<p>Only the following:</p> <p>Limited petroleum activities permitted subject to condition (D10)</p> <p>Limited impact camps permitted subject to condition (D10)</p> <p>Limited impact petroleum activities permitted subject to condition (D10)</p>	N/A
	Category C environmentally sensitive areas that are Essential Habitat and/or 'Of Concern' Regional Ecosystems	Only limited petroleum activities permitted subject to conditions (D11(a), D11(b) and D7)	<p>Only the following:</p> <p>Limited petroleum activities permitted subject to condition (D10)</p> <p>Limited impact camps permitted subject to conditions (D7) and (D10)</p> <p>Limited impact petroleum activities permitted subject to condition (D10)</p>	N/A
	Category C environmentally sensitive areas that are Regional Parks (Resource Use Area)	Only essential petroleum activities permitted	<p>Only the following:</p> <p>Limited petroleum activities permitted subject to condition (D10)</p> <p>Limited impact camps permitted subject to condition (D10)</p> <p>Limited impact petroleum activities permitted subject to condition (D10)</p>	N/A
	Category C environmentally sensitive areas that are State Forests and/or Timber Reserves	Only essential petroleum activities	N/A	N/A

D7	<p>Despite condition D6, limited petroleum activities must not clear:</p> <ul style="list-style-type: none"> <li>• more than 2 ha of Category B environmentally sensitive areas that are 'Endangered' Regional Ecosystems</li> <li>• more than 1 ha of Category C environmentally sensitive areas that are Essential Habitat and/or 'Of Concern' Regional Ecosystems.</li> </ul>
D8	Limited impact camps must not be located within a primary protection zone of Category C ESA (Essential Habitat) or Category C ESA (Nature Refuges).
D9	Limited impact petroleum activities must not be located within areas that contain commercial species.
D10	Despite condition (D6), decommissioning petroleum activities are authorised within all ESAs other than Category A ESAs, and within all ESA protection zones when conducted in accordance with the land disturbance planning principles provided in condition (D5).
D11	Limited petroleum activities, limited impact camps or limited impact petroleum activities located within a primary protection zone or secondary protection zone of an environmentally sensitive area in accordance with <i>Schedule D, Table 1 – Petroleum Activities in Environmentally Sensitive Area</i> must not negatively affect the adjacent environmentally sensitive area.
D12	<p>Prior to carrying out <u>limited petroleum activities</u> or <u>limited impact petroleum activities</u> undertaken within environmentally sensitive areas in accordance with <i>Schedule D, Table 1 Petroleum Activities in Environmentally Sensitive Areas</i>, it must be demonstrated that:</p> <ul style="list-style-type: none"> <li>(a) no reasonable or practicable alternative exists for carrying out the activities within the environmentally sensitive area; and</li> <li>(b) the activities are preferentially located in pre-existing areas of clearing or significant disturbance.</li> </ul>
D13	<p>In addition to condition (D11(a)), linear infrastructure construction corridors that are a <u>limited petroleum activity</u> or <u>limited impact petroleum activity</u> authorised in environmentally sensitive areas must:</p> <ul style="list-style-type: none"> <li>(a) maximise co-location,</li> <li>(b) be minimised in width to the greatest practicable extent, taking into account the following matters: <ul style="list-style-type: none"> <li>i. safe vehicle movement;</li> <li>ii. drainage devices installed are of a type that is appropriate for the access track / road type and location;</li> <li>iii. erosion and sediment control measures installed are in accordance condition (A19); and</li> <li>iv. power line stays have been preferentially located within the pipeline right of way where possible.</li> </ul> </li> <li>(c) be no greater than 40 m total width, and</li> <li>(d) where more than 2 linear infrastructure services are to be co-located in a linear infrastructure construction corridor in accordance with (a) and (c), an additional 11</li> </ul>

	m is authorised to be added to the construction corridor width for each additional co-located <u>linear infrastructure service</u> , up to a maximum corridor width of 62m.
D14	<u>Significant residual impacts to prescribed environmental matters</u> , are not authorised under this environmental authority or the <i>Environmental Offsets Act 2014</i> .
D15	Records demonstrating that each impact to a prescribed environmental matter, did not, or is not likely to, result in a significant residual impact to that matter must be: <ul style="list-style-type: none"> <li>(a) completed by an appropriately qualified person; and</li> <li>(b) kept for the life of the environmental authority.</li> </ul>

**SCHEDULE E – WASTE**

E1	<p><b>General Waste Management</b></p> <p>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.</p>
E2	<p>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 of this environmental authority to be disposed of or used on site.</p>
E3	<p>Unless otherwise authorised by the conditions of this environmental authority to be released to land, Waste fluids, other than flare precipitant stored in flare pits, or residual drilling material, or drilling fluids stored in sumps, must be contained in either:</p> <p>(a) an above ground container; or</p> <p>(b) a structure which contains the wetting front.</p>
E4	<p>Vegetation waste may be burned if it relates to a state forest, timber reserve or forest entitlement area administered by the <i>Forestry Act 1959</i> and a permit has been obtained under the <i>Fire and Rescue Service Act 1990</i>.</p>
E5	<p><b>Residual Drilling Material</b></p> <p>If sumps are used to store residual drilling material or drilling fluids, they must only be used for the duration of drilling activities.</p>
E6	<p>Residual drilling material can only be disposed of on-site:</p> <p>(a) by mix-bury-cover method if the residual drilling material meets the approved quality criteria; or</p> <p>(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.</p>
E7	<p>Records must be kept, to demonstrate compliance with condition (E5) and condition (E6).</p>

**SCHEDULE F – NOISE**

F1	Petroleum activities must not cause environmental nuisance at a sensitive place, other than where an alternative arrangement is in place.																													
F2	<p>Notwithstanding condition (F1), emission of noise from the petroleum activity at levels less than those specified in <i>Schedule F, Table 1 - Noise nuisance limits</i> are not considered to be environmental nuisance.</p> <p style="text-align: center;"><b>Schedule F, Table 1 - Noise nuisance limits</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Time period</th> <th style="width: 15%;">Metric</th> <th style="width: 15%;">Short term noise event</th> <th style="width: 15%;">Medium term noise event</th> <th style="width: 15%;">Long term noise event</th> </tr> </thead> <tbody> <tr> <td>7:00am - 6:00pm</td> <td>L<sub>Aeq,adj,15 min</sub></td> <td>45 dBA</td> <td>43 dBA</td> <td>40 dBA</td> </tr> <tr> <td>6:00pm - 10:00pm</td> <td>L<sub>Aeq,adj,15 min</sub></td> <td>40 dBA</td> <td>38 dBA</td> <td>35 dBA</td> </tr> <tr> <td rowspan="2">10:00pm - 6:00am</td> <td>L<sub>Aeq,adj,15 min</sub></td> <td>28 dBA</td> <td>28 dBA</td> <td>28 dBA</td> </tr> <tr> <td>Max L<sub>pA,15 min</sub></td> <td>55 dBA</td> <td>55 dBA</td> <td>55 dBA</td> </tr> <tr> <td>6:00am - 7:00am</td> <td>L<sub>Aeq,adj,15 min</sub></td> <td>40 dBA</td> <td>38 dBA</td> <td>35 dBA</td> </tr> </tbody> </table> <p>Note: The noise limits in Table 1 have been set based on the following deemed background noise levels (L<sub>ABG</sub>):</p> <p>7:00am - 6:00 pm: 35 dBA          6:00pm - 10:00 pm: 30 dBA          10:00pm - 6:00 am: 25 dBA          6:00am - 7:00 am: 30 dBA</p>	Time period	Metric	Short term noise event	Medium term noise event	Long term noise event	7:00am - 6:00pm	L <sub>Aeq,adj,15 min</sub>	45 dBA	43 dBA	40 dBA	6:00pm - 10:00pm	L <sub>Aeq,adj,15 min</sub>	40 dBA	38 dBA	35 dBA	10:00pm - 6:00am	L <sub>Aeq,adj,15 min</sub>	28 dBA	28 dBA	28 dBA	Max L <sub>pA,15 min</sub>	55 dBA	55 dBA	55 dBA	6:00am - 7:00am	L <sub>Aeq,adj,15 min</sub>	40 dBA	38 dBA	35 dBA
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F3	<p>If the noise subject to a valid complaint is tonal or impulsive, the adjustments detailed in <i>Schedule F, Table 2 - Adjustments to be added to noise levels at sensitive receptors</i> are to be added to the measured noise level(s) to derive L<sub>Aeq, adj, 15 min</sub>.</p> <p style="text-align: center;"><b>Schedule F, Table 2 - Adjustments to be Added to Noise Levels at Sensitive Receptors</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Noise characteristic</th> <th style="width: 40%;">Adjustment to noise</th> </tr> </thead> <tbody> <tr> <td>Tonal characteristic is just audible</td> <td>+ 2 dBA</td> </tr> <tr> <td>Tonal characteristic is clearly audible</td> <td>+ 5 dBA</td> </tr> <tr> <td>Impulsive characteristic is detectable</td> <td>+ 2 dBA to + 5 dBA</td> </tr> </tbody> </table>	Noise characteristic	Adjustment to noise	Tonal characteristic is just audible	+ 2 dBA	Tonal characteristic is clearly audible	+ 5 dBA	Impulsive characteristic is detectable	+ 2 dBA to + 5 dBA																					
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F4	<p>Notwithstanding condition (F2), emission of any low frequency noise must not exceed either (F4(a)) and (F4(b)), or (F4(c)) and (F4(d)) in the event of a valid complaint about low frequency noise being made to the administering authority:</p> <p>(a) 60 dB(C) measured outside the sensitive receptor; and</p>																													

	<ul style="list-style-type: none"><li>(b) the difference between the external A-weighted and C-weighted noise levels is no greater than 20 dB; or</li><li>(c) 50 dB(Z) measured inside the sensitive receptor; and</li><li>(d) the difference between the internal A-weighted and Z-weighted (Max <math>L_{pZ, 15 \text{ min}}</math>) noise levels is no greater than 15 dB.</li></ul>
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**SCHEDULE G – DAMS**

G1	<p>The consequence category of any structure, other than flare pits and sumps, must be assessed by a suitably qualified and experienced person in accordance with the latest version of 'Manual for Assessing Consequence Categories and Hydraulic Performance of Structures' (ESR/2016/1933) at the following times:</p> <ul style="list-style-type: none"><li>(a) following the design and prior to construction of the structure, if it is not an existing structure; or</li><li>(b) if it is an existing structure, 20 September 2021; or</li><li>(c) prior to any change in its purpose or the nature of its stored contents.</li></ul>
G2	<p>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.</p>
G3	<p>Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the latest version of 'Manual for Assessing Consequence Categories and Hydraulic Performance of Structures' (ESR/2016/1933).</p>
G4	<p>Regulated Structures are not authorised by this environmental authority.</p>

**SCHEDULE H – WELL CONSTRUCTION, MAINTENANCE AND STIMULATION ACTIVITIES**

H1	<p><b>Drilling Activities</b></p> <p>Oil based or synthetic based drilling muds must not be used in the carrying out of the petroleum activity(ies).</p>
H2	Drilling activities must not result in the connection of the target gas producing formation and another aquifer.
H3	Practices and procedures must be in place to detect, as soon as practicable, any fractures that have or may result in the connection of a target gas producing formation and another aquifer as a result of drilling activities.
H4	<p><b>Stimulation Activities</b></p> <p>Polycyclic aromatic hydrocarbons or products that contain polycyclic aromatic hydrocarbons must not be used in stimulation fluids in concentrations above the reporting limit.</p>
H5	Stimulation activities must not negatively affect water quality, other than that within the stimulation impact zone of the target gas producing formation.
H6	Stimulation activities must not cause the connection of the target gas producing formation and another aquifer.
H7	<p>The <i>internal</i> and external mechanical integrity of the well system prior to and during well stimulation must be ensured such that there is:</p> <p>(a) no significant leakage in the casing, tubing, or packer; and</p> <p>(b) there is no significant fluid movement into another aquifer through vertical channels adjacent to the well bore hole.</p>
H8	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.
H9	<p><b>Stimulation Risk Assessment</b></p> <p>Prior to undertaking well stimulation activities, a risk assessment must be developed to ensure that stimulation activities are managed to prevent environmental harm.</p>
H10	<p>The stimulation risk assessment must be carried out for every well to be stimulated prior to stimulation activities being carried out at that well and address issues at a relevant geospatial scale such that changes to features and attributes are adequately described and must include, but not necessarily be limited to:</p> <p>(a) a process description of the stimulation activity to be applied, including equipment and a comparison to best international practice;</p> <p>(b) provide details of where, when and how often stimulation is to be undertaken on the tenures covered by this environmental authority;</p> <p>(c) a geological model of the field to be stimulated including geological names, descriptions and depths of the target gas producing formation(s);</p> <p>(d) naturally occurring geological faults;</p> <p>(e) seismic history of the region (e.g. earth tremors, earthquakes);</p> <p>(f) proximity of overlying and underlying aquifers;</p> <p>(g) description of the depths that aquifers with environmental values occur, both above and below the target gas producing formation;</p>



	<ul style="list-style-type: none"> <li>(h) identification and proximity of landholders' active groundwater bores in the area where stimulation activities are to be carried out;</li> <li>(i) the environmental values of groundwater in the area;</li> <li>(j) an assessment of the appropriate limits of reporting for all water quality indicators relevant to stimulation monitoring in order to accurately assess the risks to environmental values of groundwater;</li> <li>(k) description of overlying and underlying formations in respect of porosity, permeability, hydraulic conductivity, faulting and fracture propensity;</li> <li>(l) consideration of barriers or known direct connections between the target gas producing formation and the overlying and underlying aquifers;</li> <li>(m) a description of the well mechanical integrity testing program;</li> <li>(n) process control and assessment techniques to be applied for determining extent of stimulation activities (e.g. microseismic measurements, modelling etc);</li> <li>(o) practices and procedures to ensure that the stimulation activities are designed to be contained within the target gas producing formation;</li> <li>(p) groundwater transmissivity, flow rate, hydraulic conductivity and direction(s) of flow;</li> <li>(q) 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;</li> <li>(r) 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;</li> <li>(s) an environmental hazard assessment of the chemicals used including their mixtures and the resultant chemicals that are formed after stimulation including: <ul style="list-style-type: none"> <li>i. toxicological and ecotoxicological information of chemicals used;</li> <li>ii. information on the persistence and bioaccumulation potential of the chemicals used;</li> <li>iii. identification of the stimulation fluid chemicals of potential concern derived from the risk assessment;</li> </ul> </li> <li>(t) an environmental hazard assessment of use, formation of, and detection of polycyclic aromatic hydrocarbons in stimulation activities;</li> <li>(u) if used, identification and an environmental hazard assessment of using radioactive tracer beads in stimulation activities;</li> <li>(v) an environmental hazard assessment of leaving stimulation chemicals in the target gas producing formation for extended periods subsequent to stimulation;</li> <li>(w) human health exposure pathways to operators and the regional population;</li> <li>(x) risk characterisation of environmental impacts based on the environmental hazard assessment;</li> <li>(y) potential impacts to landholder bores as a result of stimulation activities;</li> <li>(z) the determination of the likelihood of causing interconnectivity and/or negative water quality as a result of stimulation activities undertaken in close proximity or each other; and</li> <li>(aa) 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.</li> </ul>
H11	<p><b>Water Quality Baseline Monitoring</b></p> <p>Prior to undertaking any stimulation activity, a baseline bore assessment must be undertaken of the water quality of:</p> <ul style="list-style-type: none"> <li>(a) all landholders' active groundwater bores (subject to access being permitted by the landholder) that are spatially within a two (2) kilometre horizontal radius from the</li> </ul>

	<p>location of the stimulation initiation point within the target gas producing formation; and</p> <p>(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</p> <p>(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 conditions (H9) and (H10).</p>
H12	<p>Prior to undertaking stimulation activities at a well, there 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 (H13).</p>
H13	<p>Baseline bore and well assessments must include relevant analytes and physicochemical parameters to be monitored in order to establish baseline water quality and must include, but not necessarily be limited to:</p> <p>(a) pH;</p> <p>(b) electrical conductivity [<math>\mu\text{S}/\text{m}</math>];</p> <p>(c) turbidity [NTU];</p> <p>(d) total dissolved solids [mg/L];</p> <p>(e) temperature [<math>^{\circ}\text{C}</math>];</p> <p>(f) dissolved oxygen [mg/L];</p> <p>(g) dissolved gases (methane, chlorine, carbon dioxide, hydrogen sulfide) [mg/L];</p> <p>(h) alkalinity (bicarbonate, carbonate, hydroxide and total as <math>\text{CaCO}_3</math>) [mg/L];</p> <p>(i) sodium adsorption ratio (SAR);</p> <p>(j) anions (bicarbonate, carbonate, hydroxide, chloride, sulphate) [mg/L];</p> <p>(k) cations (aluminium, calcium, magnesium, potassium, sodium) [mg/L];</p> <p>(l) dissolved and total metals and metalloids (including but not necessarily being limited to: aluminium, arsenic, barium, borate (boron), cadmium, total chromium, copper, iron, fluoride, lead, manganese, mercury, nickel, selenium, silver, strontium, tin and zinc) [<math>\mu\text{g}/\text{L}</math>];</p> <p>(m) total petroleum hydrocarbons [<math>\mu\text{g}/\text{L}</math>];</p> <p>(n) BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para- and meta-xylene, and total xylene) [<math>\mu\text{g}/\text{L}</math>];</p> <p>(o) polycyclic aromatic hydrocarbons (including but not necessarily being limited to: naphthalene, phenanthrene, benzo[a]pyrene) [<math>\mu\text{g}/\text{L}</math>];</p> <p>(p) sodium hypochlorite [mg/L];</p> <p>(q) sodium hydroxide [mg/L];</p> <p>(r) formaldehyde [mg/L];</p> <p>(s) ethanol [mg/L]; and</p> <p>(t) gross alpha + gross beta or radionuclides by gamma spectroscopy [Bq/L].</p>
H14	<p>A stimulation impact monitoring program must be developed prior to the carrying out of stimulation activities which 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 (H9) and (H10) that relate to stimulation activities and must include, as a minimum, monitoring of:</p>

	<ul style="list-style-type: none"> <li>(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;</li> <li>(b) flow back waters from stimulation activities at sufficient frequency and which sufficiently represents the quality of that flow back water;</li> <li>(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</li> <li>(d) all bores in accordance with condition (H11).</li> </ul>
H15	<p>The Stimulation Impact Monitoring Program must provide for monitoring of:</p> <ul style="list-style-type: none"> <li>(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 (H13); and</li> <li>(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 coal seam materials during stimulation activities.</li> </ul>
H16	<p>The results of the Stimulation Impact Monitoring Program must be made available to any potentially affected landholders upon request by that landholder.</p>
H17	<p>The stimulation impact monitoring program must provide for monitoring of the bores in condition (H14(d)) at the following minimum frequency:</p> <ul style="list-style-type: none"> <li>(a) monthly for the first six (6) months subsequent to stimulation activities being undertaken; then</li> <li>(b) annually for the first five (5) years subsequent to stimulation being undertaken or until analytes and physico-chemical parameters listed in condition (H13(a)) to (H13(t)) inclusive, are not detected in concentrations above baseline bore monitoring data on two (2) consecutive monitoring occasions.</li> </ul>

**SCHEDULE 9 – REHABILITATION**

11	<p><b>Rehabilitation Planning</b></p> <p>A Rehabilitation Plan must be developed by a suitably qualified person and must include the:</p> <ul style="list-style-type: none"> <li>(a) rehabilitation goals; and</li> <li>(b) procedures to be undertaken for rehabilitation that will: <ul style="list-style-type: none"> <li>(i). achieve the requirements of conditions (12) to (18) inclusive; and</li> <li>(ii). provide for appropriate monitoring and maintenance.</li> </ul> </li> </ul>
12	<p><b>Transitional Rehabilitation</b></p> <p>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:</p> <ul style="list-style-type: none"> <li>(a) contaminated land resulting from petroleum activities is remediated and rehabilitated;</li> <li>(b) the areas are: <ul style="list-style-type: none"> <li>(i). non-polluting;</li> <li>(ii). a stable landform;</li> <li>(iii). re-profiled to contours consistent with the surrounding landform</li> </ul> </li> <li>(c) surface drainage lines are re-established;</li> <li>(d) top soil is reinstated; and</li> <li>(e) either: <ul style="list-style-type: none"> <li>(i). groundcover, that is not prohibited or restricted pest species, is growing; or</li> <li>(ii). an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained.</li> </ul> </li> </ul>
13	<p><b>Remaining Dams</b></p> <p>Where there is a dam, (including a low consequence dam) that is being or intended to be used by the landholder or overlapping tenure holder, the dam must be decommissioned to no longer accept inflow from the petroleum activity(ies) and the contained water must be of a quality suitable for the intended ongoing uses(s) by the landholder or overlapping tenure holder.</p>
14	<p><b>Pipeline Activities</b></p> <p>Pipeline trenches must be backfilled, and topsoils reinstated within three months after pipe laying.</p>
15	<p>Reinstatement and revegetation of the pipeline right of way must commence within 6 months after cessation of petroleum activities for the purpose of pipeline construction.</p>
16	<p>Backfilled, reinstated, and revegetated pipeline trenches and right of ways must be:</p> <ul style="list-style-type: none"> <li>(a) a stable landform;</li> <li>(b) re-profiled to a level consistent with surrounding soils;</li> <li>(c) re-profiled to original contours and established drainage lines; and</li> <li>(d) vegetated with groundcover which is not a prohibited or restricted pest species, and which is established and growing.</li> </ul>
17	<p><b>Final Rehabilitation Acceptance Criteria</b></p> <p>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</p>

	<p>meet the following final acceptance criteria measured either against the highest ecological value adjacent land use or the pre-disturbed land use:</p> <ul style="list-style-type: none"> <li>(a) greater than or equal to 70 per cent of native ground cover species richness</li> <li>(b) greater than or equal to the total per cent ground cover</li> <li>(c) less than or equal to the per cent species richness of prohibited or restricted pest species</li> <li>(d) where the adjacent land use contains, or the pre-clearing land use contained, one or more regional ecosystem(s), then: <ul style="list-style-type: none"> <li>(i). at least one Regional Ecosystem(s) from the same broad vegetation group, as demonstrated by the predominant species in the ecologically dominant layer, must be present; and,</li> <li>(ii). the Regional Ecosystem present in (17)(d)(i) must possess an equivalent or higher conservation value (biodiversity status) than the Regional ecosystem(s) in either the adjacent land or pre-disturbed land.</li> </ul> </li> </ul>
18	<p><b>Final Rehabilitation Acceptance Criteria in Environmentally Sensitive Areas</b></p> <p>Where significant disturbance to land has occurred in an environmentally sensitive area, the following final rehabilitation criteria as measured against the pre-disturbance biodiversity values assessment (required by conditions (D1) and (D2)) must be met:</p> <ul style="list-style-type: none"> <li>(a) greater than or equal to 70% of native ground cover species richness;</li> <li>(b) greater than or equal to the total per cent ground cover;</li> <li>(c) less than or equal to the per cent species richness of Prohibited or restricted pest species;</li> <li>(d) greater than or equal to 50% of organic litter cover;</li> <li>(e) greater than or equal to 50% of total density of coarse woody material; and</li> <li>(f) all predominant species in the ecologically dominant layer, that define the pre-disturbance regional ecosystem(s) are present.</li> </ul>

**SCHEDULE J – NOTIFICATION**

J1	<p>The administering authority must be notified through the Pollution Hotline as soon as reasonably practicable, but within 48 hours after becoming aware of:</p> <ul style="list-style-type: none"> <li>(a) any unauthorised significant disturbance to land;</li> <li>(b) potential or actual loss of structural or hydraulic integrity of a dam;</li> <li>(c) when the level of the contents of any regulated dam reaches the mandatory reporting level;</li> <li>(d) when a regulated dam will not have available storage to meet the design storage allowance on 1 November of any year;</li> <li>(e) potential or actual loss of well integrity;</li> <li>(f) when the seepage trigger action response procedure required under condition (B14(g)) is or should be implemented;</li> <li>(g) unauthorised releases of volumes of contaminants, in any mixture, to land greater than: <ul style="list-style-type: none"> <li>i. 200 L of hydrocarbons; or</li> <li>ii. 200 L of stimulation additives; or</li> <li>iii. 500 L of stimulation fluids; or</li> <li>iv. 1 000 L of brine; or</li> <li>v. 5 000 L of untreated coal seam gas water; or</li> <li>vi. 5 000 L of raw sewage; or</li> <li>vii. 10 000 L of treated sewage effluent.</li> </ul> </li> <li>(h) the use of restricted stimulation fluids;</li> <li>(i) 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;</li> <li>(j) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.</li> </ul>
J2	<p>The notification of emergencies or incidents as required by condition (J1) must include but not be limited to the following information:</p> <ul style="list-style-type: none"> <li>(a) the environmental authority number and name of the holder;</li> <li>(b) the tenure type and number where the emergency or incident occurred;</li> <li>(c) the name and telephone number of the designated contact person;</li> <li>(d) the location of the emergency or incident (GDA94);</li> <li>(e) the date and time that the emergency or incident occurred;</li> <li>(f) the date and time the holder of this environmental authority became aware of the emergency or incident;</li> <li>(g) details of the nature of the event and the circumstances in which it occurred;</li> <li>(h) the estimated quantity and type of any contaminants involved in the incident;</li> <li>(i) the actual or potential suspected cause of the emergency or incident;</li> <li>(j) a description of the land use at the site of the emergency or incident (e.g. grazing, pasture, forest etc.) and/or the name of any relevant waters and other environmentally sensitive features;</li> <li>(k) a description of the possible impacts from the emergency or incident;</li> <li>(l) a description of whether stock and/or wildlife were exposed to any contaminants released and measures taken to prevent access for the duration of the emergency or incident;</li> <li>(m) any sampling conducted or proposed, relevant to the emergency or incident;</li> </ul>

	<ul style="list-style-type: none"> <li>(n) landholder details and details of landholder consultation;</li> <li>(o) immediate actions taken to control the impacts of the emergency or incident and how environmental harm was mitigated at the time of the emergency or incident; and</li> <li>(p) whether further examination/root cause analysis is required and if so, the expected date by when this examination will be completed and reported to the administering authority.</li> </ul>
J3	<p>Within 10 business days following the initial notification under conditions (J1) and (J2)) unless a longer time is agreed to by the administering authority, a written report must be provided to the administering authority, including the following (where relevant to the emergency or incident):</p> <ul style="list-style-type: none"> <li>(a) the root cause of the emergency or incident;</li> <li>(b) the confirmed quantities and types of any contaminants involved in the incident;</li> <li>(c) results and interpretation of any analysis of samples taken at the time of the emergency or incident (including the analysis results of any impact monitoring);</li> <li>(d) a final assessment of the impacts from the emergency or incident including any actual or potential environmental harm that has occurred or may occur in the longer term as a result of the release;</li> <li>(e) the success or otherwise of actions taken at the time of the incident to prevent or minimise environmental harm;</li> <li>(f) results and current status of landholder consultation, including commitment to resolve any outstanding issues / concerns; and</li> <li>(g) actions and / or procedural changes to prevent a recurrence of the emergency or incident.</li> </ul>

## SCHEDULE K – DEFINITIONS

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

<p>“<b>Adjacent Land Use(s)</b>” 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.</p>
<p>“<b>Administering Authority</b>” means:</p> <ul style="list-style-type: none"> <li>(a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the <i>Environmental Protection Act 1994</i> the local government; or</li> <li>(b) for all other matters the Chief Executive of the Department of Environment and Science; or</li> <li>(c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.</li> </ul>
<p>“<b>Alternative Arrangement</b>” 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.</p>
<p>“<b>Analogue Site</b>” 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.</p>
<p>“<b>Analytes</b>” means a chemical parameter determined by either physical measurement in the field or by laboratory analysis.</p>
<p>“<b>Annual Exceedance Probability or AEP</b>” the probability that at least one event in excess of a particular magnitude will occur in any given year.</p>
<p>“<b>Appraisal Well</b>” means a petroleum well to test the potential of one (1) or more natural underground reservoirs for producing or storing petroleum. For clarity, an appraisal well does not include an exploration well.</p>
<p>“<b>Appropriately qualified person / suitably qualified person</b>” 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.</p>



“**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	20 dS/m (20,000 µS/cm)
Chloride*	8000 mg/L

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

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

Parameter	Maximum concentration
Arsenic	20 mg/kg
Selenium	5 mg/kg
Boron	100 mg/kg
Cadmium	3 mg/kg
Chromium	400 mg/kg
Copper	100 mg/kg
Lead	600 mg/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	170 mg/kg
C10 – C16	150 mg/kg
C16 – C34	1300 mg/kg
C34 – C40	5600 mg/kg
Total Polycyclic Aromatic Hydrocarbons (PAHs)	20 mg/kg
Phenols (halogenated)	1 mg/kg
Phenols (non-halogenated)	60 mg/kg

Monocyclic aromatic hydrocarbons  (Total sum of benzene, toluene, ethyl benzene, xylenes including otho, para and meta xylenes) and styrene)	7 mg/kg
Benzene	1 mg/kg

**“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 Water”** means underground water taken or interfered with, if the taking or interference happens during the course of, or results from, the carrying out of another authorised activity under a petroleum authority, such as a petroleum well, and includes waters also known as produced formation water. The term includes all contaminants suspended or dissolved within the water.

**“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.

**“Australian Standard 3580”** means any of the following publications:

- AS3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method.
- AS3580.9.6 Methods for sampling and analysis of ambient air Determination of suspended particulate matter PM10 high volume sampler with size-selective inlet Gravimetric method
- AS3580.9.9 Methods for sampling and analysis of ambient air Determination of suspended particulate matter PM10 low volume sampler Gravimetric sampler.

<p><b>“Authority “</b> means an environmental authority.</p>
<p><b>“Background Noise Level”</b> means the sound pressure level, measured in the absence of the noise under investigation, as the <math>L_{A90,T}</math> being the A-weighted sound pressure level exceeded for 90 per cent of the measurement time period T of not less than 15 minutes, using Fast response.</p>
<p><b>“Bed and Banks”</b> for a watercourse or wetland means land over which the water of the watercourse or wetland normally flows or that is normally covered by the water, whether permanently or intermittently; but does not include land adjoining or adjacent to the bed or banks that is from time to time covered by floodwater.</p>
<p><b>“Being or Intended to be Utilised by the Landholder or Overlapping Tenure Holder”</b> 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.</p> <p>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.</p>
<p><b>“Biodiversity values”</b> for the purposes of this environmental authority, means environmentally sensitive areas, prescribed environmental matters and wetlands.</p>
<p><b>“Bore”</b> means a water observation bore or a water supply bore that is either sub-artesian or artesian.</p>
<p><b>“Brine”</b> means saline water with a total dissolved solid concentration greater than 40,000 mg/l.</p>
<p><b>“BTEX”</b> means benzene, toluene, ethylbenzene, ortho-xylene, paraxylene, meta-xylene and total xylene.</p>
<p><b>“Bund or banded”</b> in relation to spill containment systems for fabricated or manufactured tanks or containers designed to a recognised standard means an embankment or wall of brick, stone, concrete or other impervious material which may form part or all of the perimeter of a compound and provides a barrier to retain liquid. Since the bund is the main part of a spill containment system, the whole system (or banded area) is sometimes colloquially referred to within industry as the bund. The bund is designed to contain spillages and leaks from liquids used, stored or processed above ground and to facilitate clean-up operations. As well as being used to prevent pollution of the receiving environment, bunds are also used for fire protection, product recovery and process isolation.</p>
<p><b>“Business Day”</b> has the meaning in the <i>Acts Interpretation Act 1954</i> and <i>Environmental Protection Act 1994</i> and means a day that is not—</p> <ul style="list-style-type: none"> <li>• a Saturday or Sunday; or</li> <li>• public holiday, special holiday or bank holiday in the place in which any relevant act is to be or may be done; or</li> <li>• a business day that occurs during the period starting on 20 December in a year and ending on 5 January in the following year.</li> </ul>

<p><b>“Category A Environmentally Sensitive Area”</b> means any area listed in Schedule 19, Section 1 of the <i>Environmental Protection Regulation 2019</i>.</p>
<p><b>“Category B Environmentally Sensitive Area”</b> means any area listed in Schedule 19, Section 2 of the <i>Environmental Protection Regulation 2019</i>.</p>
<p><b>“Category C Environmentally Sensitive Area”</b> means any of the following areas:</p> <ul style="list-style-type: none"> <li>• Nature Refuges as defined under the <i>Nature Conservation Act 1992</i>;</li> <li>• Koala Habitat Areas as defined under the <i>Nature Conservation (Koala) Conservation Plan 2006</i>;</li> <li>• State Forests or Timber Reserves as defined under the <i>Forestry Act 1959</i>;</li> <li>• Regional parks (resource use area) under the <i>Nature Conservation Act 1992</i>;</li> <li>• 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>;</li> <li>• Of Concern Regional Ecosystems that are remnant vegetation identified in the database called ‘RE description database’ containing Regional Ecosystem numbers and descriptions.</li> </ul>
<p><b>“Certifying or Certify or Certified or Certification”</b> in relation to a dam, 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))</p>
<p><b>“Certifying or Certify or Certified or Certification”</b> 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:</p> <ul style="list-style-type: none"> <li>• The person’s qualifications and experience relevant to the function;</li> <li>• that the person has not knowingly included false, misleading or incomplete information in the document;</li> <li>• that the person has not knowingly failed to reveal any relevant information or document to the administering authority;</li> <li>• that the document addresses the relevant matters for the function and is factually correct; and</li> <li>• that the opinions expressed in the document are honestly and reasonably held.</li> </ul>
<p><b>“Clearing”</b> for vegetation:</p> <p>(a) means remove, cut down, ringbark, push over, poison or destroy in any way including by burning, flooding or draining; but</p> <p>(b) does not include destroying standing vegetation by stock, or lopping a tree.</p>
<p><b>“Closed-Loop Systems”</b> means using waste on site in a way that does not release waste or contaminants in the waste to the environment.</p>
<p><b>“Coal Seam Gas Water”</b> means underground water brought to the surface of the earth, or moved underground in connection with exploring for, or producing coal seam gas.</p>

<p>“<b>Commercial species</b>” means species as listed in parts 1, 2 and 3 of Schedule 6 of the <i>Vegetation Management Regulation 2012</i>, which are above the diameters / sizes specified in this Schedule for each listed species.</p>
<p>“<b>Consequence</b>” 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.</p>
<p>“<b>Construction or Constructed</b>” 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.</p>
<p>“<b>Control Measure</b>” has the meaning in section 31 of the <i>Environmental Protection Regulation 2008</i> and means a device, equipment, structure, or management strategy used to prevent or control the release of a contaminant or waste to the environment.</p>
<p>“<b>Daily Peak Design Capacity</b>” for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the <i>Environmental Protection Regulation 2008</i> as the higher equivalent person (EP) for the works calculated using each of the formulae found in the definition for EP.</p>
<p>“<b>Dam(s)</b>” means a land-based structure or a <b>void</b> that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and <b>associated works</b>.</p>
<p>“<b>Design Plan</b>” is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.</p>
<p>“<b>Design Storage Allowance or DSA</b>” means an available volume, estimated in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) 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.</p>
<p>“<b>Development Well</b>” means a petroleum well which produces or stores petroleum. For clarity, a development well does not include an appraisal well.</p>
<p>“<b>Document</b>” has the meaning in the <i>Acts Interpretation Act 1954</i> and means:</p> <ul style="list-style-type: none"> <li>• any paper or other material on which there is writing; and</li> <li>• any paper or other material on which there are marks; and</li> <li>• figures, symbols or perforations having a meaning for a person qualified to interpret them; and</li> <li>• 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).</li> </ul>
<p>“<b>Ecologically Dominant Layer</b>” has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means the layer making the greatest contribution to the overall biomass of the site and the vegetation community (NLWRA 2001). This is also referred to as the ecologically dominant stratum or the predominant canopy in woody ecosystems.</p>

<p><b>“Ecosystem Function”</b> 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.</p>
<p><b>“Environmental Harm”</b> 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.</p> <p>Environmental harm may be caused by an activity</p> <p>(a) whether the harm is a direct or indirect result of the activity; or</p> <p>(b) whether the harm results from the activity alone or from the combined effects of the activity and other activities or factors.</p>
<p><b>“Environmental Nuisance”</b> 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</p> <p>(a) aerosols, fumes, light, noise, odour, particles or smoke; or</p> <p>(b) an unhealthy, offensive or unsightly condition because of contamination; or</p> <p>(c) another way prescribed by regulation.</p>
<p><b>“Environmentally sensitive area”</b> means Category A, B or C environmentally sensitive areas (ESAs).</p>
<p><b>“Equivalent Person”</b> or <b>“EP”</b> 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 <i>Environmental Protection Regulation 2008</i> where:</p> <ul style="list-style-type: none"> <li>• EP = <math>V/200</math> 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</li> <li>• EP = <math>M/2.5</math> 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.</li> </ul>
<p><b>“Essential petroleum activities”</b> means activities that are essential to bringing the resource to the surface and are only the following:</p> <ul style="list-style-type: none"> <li>• Low impact petroleum activities;</li> <li>• Geophysical, geotechnical, geological, topographic and cadastral surveys (including seismic, sample / test/ geotechnical pits, core holes);</li> <li>• Single well site not exceeding 1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance</li> <li>• Well sites with monitoring equipment (including monitoring bores): <ul style="list-style-type: none"> <li>○ For single well sites, not exceeding 1.25 hectares disturbance</li> <li>○ For multi-well sites, not exceeding 1.75 hectares disturbance</li> </ul> </li> <li>• Well sites with monitoring equipment (including monitoring bores) and tanks (minimum 1ML) for above ground fluid storage: <ul style="list-style-type: none"> <li>○ For single well sites, not exceeding 1.5 hectares disturbance</li> <li>○ For multi-well sites, not exceeding 2.0 hectares disturbance</li> </ul> </li> </ul>

- Associated infrastructure located on a well site necessary for the construction and operations of wells:
  - Water pumps and generators;
  - Flare pits;
  - Chemical / fuel storages;
  - Sumps for residual drilling material and drilling fluids;
  - Tanks, or dams which are not significant or high consequence dams to contain wastewater (e.g. stimulation flow back waters, produced water)
  - Pipe laydown areas;
  - Soil and vegetation stockpile areas;
  - A temporary camp associated with a drilling rig that may involve sewage treatment works that are no release works;
  - Temporary administration sites and warehouses;
  - Dust suppression activities using water that meets the quality and operational standards approved under the environmental authority
- 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;
- Supporting access tracks;
- Gathering / flow pipelines from a well head to the initial compression facility;
- Activities necessary to achieve compliance with the conditions of the environmental authority in relation to another essential petroleum activity (e.g. sediment and erosion control measures, rehabilitation).

**“Existing structure” means a structure that is constructed, or the construction of a structure has substantially commenced, prior to 20 September 2021.**

**“Exploration Well”** means a petroleum well that is drilled to:

- explore for the presence of petroleum or natural underground reservoirs suitable for storing petroleum; or
- obtain stratigraphic information for the purpose of exploring for petroleum.

For clarity, an exploration well does not include an appraisal or development well.

**“Flare Pit”** has the meaning in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)*, 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.

**“Flare Precipitant”** means waste fluids which result from the operation of a flare.

**“Floodplains”** has the meaning in the *Water Act 2000* and means an area of reasonably flat land adjacent to a watercourse that:

- is covered from time to time by floodwater overflowing from the watercourse; and
- does not, other than in an upper valley reach, confine floodwater to generally follow the path of the watercourse; and

<ul style="list-style-type: none"> <li>• has finer sediment deposits than the sediment deposits of any bench, bar or in-stream island of the watercourse.</li> </ul>
<p><b>“Flowable Substance”</b> 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.</p>
<p><b>“Fuel Burning or Combustion Facility”</b> means a permanent fuel burning or combustion equipment which in isolation, or combined in operation, or which are interconnected, is, or are capable of burning more than 500 kg of fuel in an hour.</p>
<p><b>“GDA”</b> means Geocentric Datum of Australia.</p>
<p><b>“Geophysical survey”</b> means a systematic collection of geophysical data.</p>
<p><b>“Greywater”</b> means wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Greywater does not include sewage.</p>
<p><b>“Groundwater Dependent Ecosystems (GDE)”</b> means ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services.</p> <p>For the purposes of the environmental authority, groundwater dependent ecosystems do not include those mapped as “unknown”.</p>
<p><b>“Growing”</b> means to increase by natural development, as any living organism or part thereof by assimilation of nutriment; increase in size or substance.</p>
<p><b>“High value regrowth”</b> vegetation means vegetation located—</p> <ol style="list-style-type: none"> <li>(a) on freehold land, indigenous land, or land subject of a lease issued under the <i>Land Act 1994</i> for agriculture or grazing purposes or an occupation licence under that Act; and</li> <li>(b) in an area that has not been cleared (other than for relevant clearing activities) for at least 15 years, if the area is— <ol style="list-style-type: none"> <li>i. an endangered regional ecosystem; or</li> <li>ii. an of concern regional ecosystem; or</li> <li>iii. a least concern regional ecosystem.</li> </ol> </li> </ol>
<p><b>“Holder”</b> means any person who is the holder of, or is acting under, that environmental authority.</p>
<p><b>“Hydraulic fracturing”</b> means a technique used to create cracks in underground coal seams to increase the flow and recovery of gas or oil out of a well. It involves pumping a fluid, comprised largely of water and sand, under pressure, into a coal seam. This action fractures the coal seam which provides a pathway that increases the ability for gas to flow through the coal.</p>
<p><b>“Hydraulic Performance”</b> 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 <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i>.</p>
<p><b>“Hydraulic Testing”</b> means the testing of a geological formation to evaluate the hydrogeological characteristics of the formation.</p>



<p><b>“Incidental Activity”</b> for this environmental authority means an activity that is not a specified relevant activity and is necessary to carry out the activities listed in Schedule A, Table 1 – Scale and Intensity for the Activities.</p>
<p><b>“Infrastructure”</b> means plant or works including for example, communication systems, compressors, powerlines, pumping stations, reservoirs, roads and tracks, water storage dams, evaporation or storage ponds and tanks, equipment, buildings and other structures built for the purpose and duration of the conduct of the petroleum activity(ies) including temporary structures or structures of an industrial or technical nature, including, for example, mobile and temporary camps.</p> <p>Infrastructure does not include other facilities required for the long term management of the impact of those petroleum activities or the protection of potential resources. Such other facilities include dams other than water storage dams (e.g. evaporation dams), pipelines and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.</p>
<p><b>“Impulsive”</b> means sound characterised by brief excursions of sound pressure (acoustic impulses) that significantly exceed the background sound pressure. The duration of a single impulsive sound is usually less than one second.</p>
<p><b>“<math>L_{Aeq,adj, 15mins}</math>”</b> 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.</p>
<p><b>“Lake” means:</b></p> <ul style="list-style-type: none"> <li>○ a lagoon, swamp or other natural collection of water, whether permanent or intermittent; and</li> <li>○ the bed and banks and any other element confining or containing the water.</li> </ul>
<p><b>“Land Degradation”</b> has the meaning in the <i>Vegetation Management Act 1999</i> and means the following:</p> <ul style="list-style-type: none"> <li>● soil erosion</li> <li>● rising water tables</li> <li>● the expression of salinity</li> <li>● mass movement by gravity of soil or rock</li> <li>● stream bank instability</li> <li>● a process that results in declining water quality.</li> </ul>
<p><b>“Landholders’ Active Groundwater Bores”</b> 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>.</p>
<p><b>“Levee”</b> 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.</p>
<p><b>“Limited Impact Camps”</b> mean accommodation camps that:</p> <ul style="list-style-type: none"> <li>● are temporary (no more than 6 months);</li> <li>● are located within pre-existing areas of clearing or significant disturbance;</li> </ul>

<ul style="list-style-type: none"> <li>• are up to 2 ha or located within well sites; and</li> <li>• may involve sewage treatment works that are no release works or release works that involve an irrigation release within pre-existing areas of clearing or significant disturbance.</li> </ul>
<p><b>“Limited Impact Petroleum Activities”</b> means petroleum activities that are located within areas that are not a regional ecosystem and:</p> <ul style="list-style-type: none"> <li>• are single well sites (includes observation, pilot, injection and production wells) greater than 1 ha; or</li> <li>• are multi-well sites greater than 1 ha; and</li> <li>• may involve construction of new access tracks that are required as part of the construction or servicing a petroleum activity that can be lawfully carried out within an ESA or its protection zone; and</li> <li>• may involve upgrading or maintenance of existing roads or tracks; and</li> <li>• may include power and communication lines; and</li> <li>• may include gas gathering lines from a well site to the initial compression facility; and</li> <li>• may include water gathering lines from a well site to the initial water storage or dam.</li> </ul>
<p><b>“Limited petroleum activities”</b> mean any low impact petroleum activity, and:</p> <ul style="list-style-type: none"> <li>• single well sites (includes observation, pilot, injection and production wells) up to 1 ha and associated infrastructure (water pumps and generators, sumps, flare pits or dams) located on the well site or up to 1.25 ha if the well pad includes the use of a tank (minimum 1ML) for above ground fluid storage;</li> <li>• multi-well sites up to an additional (in addition to single well site above) 0.25 ha per additional well and associated infrastructure (water pumps and generators, sumps, flare pits, dams or tanks) located on the well site to a maximum of 3 ha;</li> <li>• well sites &gt;1 ha when the well site intersects a slope of &gt;4 %;</li> <li>• construction of new access tracks that are required as part of the construction or servicing a petroleum activity that can be lawfully carried out within an ESA or its protection zone;</li> <li>• upgrading or maintenance of existing roads or tracks;</li> <li>• power and communication lines;</li> <li>• gas gathering lines from a well site to the initial compression facility;</li> <li>• water gathering lines from a well site to the initial water storage or dam;</li> <li>• camps within well site that may involve sewage treatment works that are a no release works,</li> <li>• activities necessary to achieve compliance with the conditions of the EA in relation to another limited petroleum activity (e.g. sediment and erosion control measures, rehabilitation);</li> <li>• geophysical, geotechnical, geological, topographic and cadastral surveys (including seismic, sample /test / geotechnical pits, core holes).</li> </ul>
<p><b>“Linear Infrastructure”</b> means powerlines, pipelines, flowlines, roads and access tracks.</p>
<p><b>“Linear Infrastructure Services”</b> means powerlines, power line stays, communication lines, pipelines, flowlines, roads and access tracks, turnaround bays, and other work areas necessary for linear infrastructure construction</p>

<p>“<b>Liquid</b>” means a substance which is flowing and offers no permanent resistance to changes of shape.</p>
<p>“<b>Long Term Noise Event</b>” 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.</p>
<p>“<b>Lopping</b>” a tree, means cutting or pruning its branches, but does not include —</p> <ul style="list-style-type: none"> <li>• removing its trunk; and</li> <li>• cutting or pruning its branches so severely that it is likely to die.</li> </ul>
<p>“<b>Low Consequence Dam</b>” means any dam that is not a high or significant consequence category as assessed using the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i>.</p>
<p>“<b>Low flow</b>” means flow up to the one month average recurrence interval.</p>
<p>“<b>Low Impact Petroleum Activities</b>” means petroleum activities which do not result in the clearing of native vegetation, earthworks or excavation work that cause either, a significant disruption to the soil profile or permanent damage to vegetation that cannot be easily rehabilitated immediately after the activity is completed. Examples of such activities include but are not necessarily limited to:</p> <ul style="list-style-type: none"> <li>• chipholes</li> <li>• coreholes</li> <li>• geophysical surveys</li> <li>• seismic surveys</li> <li>• soil surveys</li> <li>• topographic surveys</li> <li>• cadastral surveys</li> <li>• ecological surveys</li> <li>• installation of environmental monitoring equipment (including surface water)</li> </ul>
<p>“<b>Mandatory Reporting Level or MRL</b>” means a warning and reporting level determined in accordance with the criteria in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> published by the administering authority.</p>
<p>“<b>Manual</b>” in reference to dams means the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> published by the administering authority, as amended from time to time.</p>
<p>“<b>Map of Queensland wetland environmental values</b>” means the statutory map under the Environmental Protection (Water and Wetland Biodiversity) Policy 2019. It identifies wetlands of high ecological significance (HES) and general ecological significance (GES) across the state.</p>
<p>“<b>Max L<sub>pA, 15 min</sub></b>” means the absolute maximum instantaneous A-weighted sound pressure level, measured over 15 minutes.</p>
<p>“<b>Max L<sub>pZ, 15 min</sub></b>” means the maximum value of the Z-weighted sound pressure level measured over 15 minutes.</p>

<p><b>“Medium Term Noise Event”</b> 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. Reoccurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a difference source or source location.</p>
<p><b>“Methodology”</b> means the science of method, especially dealing with the logical principles underlying the organisation of the various special sciences, and the conduct of scientific inquiry.</p>
<p><b>“Mix-Bury-Cover Method”</b> 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:</p> <ul style="list-style-type: none"> <li>• 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 (<math>k_w=10^{-8}</math> m/s) or subsoil with a clay content of greater than 20%; and</li> <li>• the residual solids is mixed with subsoil in the sump and cover; and</li> <li>• the subsoil and residual solids is mixed at least three parts subsoil to one part waste (v/v); and</li> <li>• a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and</li> <li>• topsoil is replaced.</li> </ul>
<p><b>“Month”</b> 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:</p> <ul style="list-style-type: none"> <li>• immediately before the beginning of the corresponding day of the next named month; or</li> <li>• if there is no such corresponding day at the end of the next named month.</li> </ul>
<p><b>“NATA Accreditation”</b> means accreditation by the National Association of Testing Authorities Australia.</p>
<p><b>“Operational Plan”</b> includes:</p> <ol style="list-style-type: none"> <li>(a) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA);</li> <li>(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.</li> </ol>
<p><b>“Pipeline Waste Water”</b> means hydrostatic testing water, flush water or water from low point drains.</p>
<p><b>“Pre-Disturbed Land Use”</b> means the function or use of the land as documented prior to significant disturbance occurring at that location.</p>
<p><b>“Predominant Species”</b> has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means a species that contributes most to the overall above-ground biomass of a particular stratum.</p>
<p><b>“Prescribed environmental matters”</b> has the meaning in section 10 of the <i>Environmental Offsets Act 2014</i>, limited to the matters of State environmental significance listed in schedule 2 of the Environmental Offsets Regulation 2014.</p>

<p><b>“Primary Protection Zone”</b> means an area within 200m from the boundary of any Category A, B or C Environmentally Sensitive Area.</p>
<p><b>“Produced Water”</b> has the meaning in Section 15A of the <i>Petroleum and Gas (Production and Safety) Act 2004</i> and means CSG water or associated water for a petroleum tenure.</p>
<p><b>“Protection Zone”</b> means the primary protection zone of any Category A, B or C ESA or the secondary protection zone of any Category A or B ESA.</p>
<p><b>“Prohibited or Restricted Pest Species”</b> means any pest that is:</p> <p>(a) a plant or animal, other than a native species of plant or animal, that is</p> <p style="padding-left: 40px;">(i) invasive biosecurity matter under the Biosecurity Act 2014 (Qld); or</p> <p>Notes—</p> <p style="padding-left: 40px;">1 See the Biosecurity Act 2014, schedule 1, part 3 or 4 or schedule 2, part 2; and</p> <p style="padding-left: 40px;">2 See the note to the Biosecurity Act 2014, schedules 1 and 2.</p> <p style="padding-left: 80px;">ii. controlled biosecurity matter or regulated biosecurity matter under the Biosecurity Act 2014 (Qld)</p> <p style="padding-left: 80px;">iii. tramp ants listed in schedule 1 and schedule 2 of the Biosecurity Act 2014 (Qld)</p> <p>(b) a pest declared under a local law by the local government for the Land to be a pest because the pest is causing, or has the potential to cause, an adverse environmental, economic or social impact in all or part of the local government area.</p>
<p><b>“Regional ecosystem(s)”</b> has the meaning in the <i>Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland</i> (Version 3.2 August 2012) and means a vegetation community in a bioregion that is consistently associated with a particular combination geology, landform and soil. Regional ecosystems of Queensland were originally described in Sattler and Williams (1999). The Regional Ecosystems Description Database (Queensland Herbarium 2013) is maintained by Queensland Herbarium and contains the current descriptions of regional ecosystems.</p>
<p><b>“Regulated dam”</b> means any dam in the significant or high consequence category as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/19339), published by the administering authority, as amended from time to time.</p>
<p><b>“Regulated Structure”</b> means any structure in the significant or high consequence category as assessed using the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (ESR/2016/1933) published by the administering authority. A regulated structure does not include:</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities;</li> <li>• a flare pit.</li> </ul>
<p><b>“Rehabilitation or Rehabilitated”</b> 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. For the purposes of pipeline rehabilitation, rehabilitation includes reinstatement, revegetation and restoration.</p>

<p><b>“Reinstate or Reinstatement”</b> for pipelines, means the process of bulk earth works and structural replacement of pre-existing conditions of a site (i.e. soil surface typography, watercourses, culverts, fences and gates and other landscape(d) features) and is detailed in the APGA Code of Environmental Practice: Onshore Pipelines Revision 4 (2017).</p>
<p><b>“Remnant vegetation”</b> means vegetation, part of which forms the predominant canopy of the vegetation—</p> <ul style="list-style-type: none"> <li>• covering more than 50 per cent of the undisturbed predominant canopy; and</li> <li>• averaging more than 70 per cent of the vegetation’s undisturbed height; and</li> <li>• composed of species characteristic of the vegetation’s undisturbed predominant canopy cover.</li> </ul>
<p><b>“Reporting Limit”</b> 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 ug/L 0.02 ug/L.</p>
<p><b>“Residual Drilling Material”</b> 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.</p>
<p><b>“Restoration”</b> means the replacement of structural habitat complexity, ecosystems processes, services and function from a disturbed or degraded site to that of a pre-determined or analogue site. For the purposes of pipelines, restoration applies to final rehabilitation after pipeline decommissioning.</p>
<p><b>“Restricted stimulation fluids”</b> means fluids used for the purpose of stimulation, including fracturing, that contain the following chemicals in more than the maximum amounts prescribed under section 70 of the Environmental Protection Regulation 2008:</p> <ul style="list-style-type: none"> <li>• petroleum hydrocarbons containing benzene, ethylbenzene, toluene or xylene; or</li> <li>• chemicals that produce, or are likely to produce, benzene, ethylbenzene, toluene or xylene as the chemical breaks down in the environment.</li> </ul> <p>The amount of any chemical is not measured in relation to water included in the restricted stimulation fluid. For clarity, the term restricted stimulation fluids only applies to fluids injected down well post-perforation.</p>
<p><b>“Revegetation or Revegetating or Revegetate”</b> means to actively re-establish vegetation through seeding or planting techniques in accordance with site specific management plans.</p>
<p><b>“Secondary treated class C standards</b> means treated sewage effluent or greywater which meets the following standards:</p> <ul style="list-style-type: none"> <li>• total phosphorous as P, maximum 20mg/L;</li> <li>• total nitrogen as N, maximum 20mg/L</li> <li>• 5-day biochemical oxygen deman (inhibited) (e.g. Release pipe from sewage treatment plant), maximum 20mg/L</li> <li>• Suspended solids, maximum 30mg/L</li> <li>• pH, range 6.0 to 8.5</li> </ul>

<ul style="list-style-type: none"> <li>e-Coli, 80<sup>th</sup> percentile based on at least 5 samples with not less than 30 minutes between samples, 10,000 cfu per 100mL, maximum 100,000 cfu per 100m.</li> </ul>
<p><b>“Secondary Protection Zone”</b> in relation to a Category A or Category B ESA means an area within 100 metres from the boundary of the primary protection zone.</p>
<p><b>“Sensitive Place”</b> means:</p> <ul style="list-style-type: none"> <li>a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel);</li> <li>a library, childcare centre, kindergarten, school, university or other educational institution;</li> <li>a medical centre, surgery or hospital;</li> <li>a protected area;</li> <li>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;</li> <li>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; and</li> <li>for noise, a place defined as a sensitive receptor for the purposes of the <i>Environmental Protection (Noise) Policy 2019</i>.</li> </ul>
<p><b>“Sensitive Receptor”</b> is defined in Schedule 2 of the <i>Environmental Protection (Noise) Policy 2019</i>, and means an area or place where noise is measured.</p>
<p><b>“Short Term Noise Event”</b> 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. Reoccurrence 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.</p>
<p><b>“Significantly Disturbed or Significant Disturbance or Significant Disturbance to Land or Areas”</b> Land is significantly disturbed if:</p> <ol style="list-style-type: none"> <li>it is contaminated land; or</li> <li>it has been disturbed and human intervention is needed to rehabilitate it <ol style="list-style-type: none"> <li>to a condition required under the relevant environmental authority; or</li> <li>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.</li> </ol> </li> </ol>
<p><b>“Significant residual impact”</b> has the meaning in section 8 of the <i>Environmental Offsets Act 2014</i>.</p>
<p><b>“Site”</b> means the relevant petroleum activity(ies) to which the environmental authority relates.</p>
<p><b>“Species Richness”</b> means the number of different species in a given area.</p>
<p><b>“Specified Relevant Activities”</b> for this environmental activity means an activity that:</p> <ol style="list-style-type: none"> <li>but for being carried out as a resource activity, would otherwise be an activity prescribed under section 19 of the <i>Environmental Protection Act 1994</i> as an environmentally relevant activity; or</li> <li>stimulation activities; or</li> <li>extracting material other than by dredging</li> </ol>

<p><b>“Spillway”</b> 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.</p>
<p><b>“Stable”</b> has the meaning in Schedule 8 of the <i>Environmental Protection Regulation 2019</i> and, for a site, means the rehabilitation and restoration of the site is enduring or permanent so that the site is unlikely to collapse, erode or subside.</p>
<p><b>“Stimulation”</b> means a technique used to increase the permeability of a natural underground reservoir that is undertaken above the formation pressure and involves the addition of chemicals. It includes hydraulic fracturing / hydrofracking, fracture acidizing and the use of proppant treatments.</p>
<p><b>“Stimulation Fluid”</b> means the fluid injected underground to increase permeability. For clarity, the term stimulation fluid only applies to fluid injected down well post-perforation.</p>
<p><b>“Stimulation Impact Zone”</b> means a 100m maximum radial distance from the stimulation target location within a gas producing formation.</p>
<p><b>“Structure”</b> for the purpose of Schedule H of this environmental authority means dam or levee.</p>
<p><b>“Suitably Qualified and Experienced Person”</b> in relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the <i>Professional Engineers Act 2002</i>, and has demonstrated competency and relevant experience:</p> <ul style="list-style-type: none"> <li>• for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design</li> <li>• for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments. <i>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.</i></li> </ul>
<p><b>“Suitably Qualified Person”</b> 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 to performance relative to the subject matters using the relevant protocols, standards, methods or literature.</p>
<p><b>“Suitably Qualified Third Party”</b> means a person who:</p> <p>(a) has qualifications and experience relevant to performing the function including but not limited to:</p> <ol style="list-style-type: none"> <li>i. a bachelor’s degree in science or engineering; and</li> <li>ii. 3 years’ experience in undertaking soil contamination assessments; and</li> </ol> <p>(b) is a member of at least one organisation prescribed in Schedule 8 of the <i>Environmental Protection Regulation 2008</i>; and</p> <p>(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.</p>
<p><b>“Sump”</b> means a pit in which waste residual drilling material or drilling fluids are stored only for the duration of drilling activities.</p>
<p><b>“Synthetic Based Drilling Mud”</b> 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.</p>



<p><b>“System Design Plan”</b> means a plan that manages an integrated containment system that shares the required DSA and/or ESS volume across the integrated containment system.</p>
<p><b>“Top Soil”</b> 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.</p>
<p><b>“Total Density of Coarse Woody Material”</b> means the total length of logs on the ground greater than or equal to 10cm diameter per hectare and number of logs on the ground greater than or equal to 10cm diameter per hectare.</p>
<p><b>“Transmissivity”</b> 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.</p>
<p><b>“Valid complaint”</b> means all complaints unless considered by the administering authority to be frivolous, vexatious or based on mistaken belief.</p>
<p><b>“Void”</b> means any constructed, open excavation in the ground.</p>
<p><b>“Waste and Resource Management Hierarchy”</b> has the meaning provided in section 9 of the <i>Waste Reduction and Recycling Act 2011</i> and is the following precepts, listed in the preferred order in which waste and resource management options should be considered:</p> <ul style="list-style-type: none"> <li>(a) AVOID unnecessary resource consumption;</li> <li>(b) REDUCE waste generation and disposal</li> <li>(c) RE-USE waste resources without further manufacturing</li> <li>(d) RECYCLE waste resources to make the same or different products</li> <li>(e) RECOVER waste resources, including the recovery of energy</li> <li>(f) TREAT waste before disposal, including reducing the hazardous nature of waste</li> <li>(g) DISPOSE of waste only if there is no viable alternative.</li> </ul>
<p><b>“Waste and Resource Management Principles”</b> has the meaning provided in section 4(2)(b) of the <i>Waste Reduction and Recycling Act 2011</i> and means the:</p> <ul style="list-style-type: none"> <li>(a) polluter pays principle</li> <li>(b) user pays principle</li> <li>(c) proximity principle</li> <li>(d) product stewardship principle.</li> </ul>
<p><b>“Waste Fluids”</b> has the meaning in section 13 of the <i>Environmental Protection Act 1994</i> in conjunction with the common meaning of “fluid” which is “a substance which is capable of flowing and offers no permanent resistance to changes of shape”. Accordingly, to be a waste fluid, the waste must be a substance which is capable of flowing and offers no permanent resistance to changes of shape.</p>
<p><b>“Watercourse”</b> has the meaning in Schedule 4 of the <i>Environmental Protection Act 1994</i> and means:</p> <ul style="list-style-type: none"> <li>1) a river, creek or stream in which water flows permanently or intermittently <ul style="list-style-type: none"> <li>a) in a natural channel, whether artificially improved or not; or</li> <li>b) in an artificial channel that has changed the course of the watercourse.</li> </ul> </li> </ul>

2) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.
<p><b>“Waters”</b> 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.</p>
<p><b>“Well infrastructure”</b> means infrastructure required for the construction and completion of a well including but not limited to cellar pits, dams and drill sumps.</p>
<p><b>“Well integrity”</b> the ability of a well to contain the substances flowing through it.</p>
<p><b>“Well Site”</b> means a maximum area of land disturbance for the purposes of constructing, installing and operating an exploration, appraisal or development well or such wells as part of a multi-well arrangement and includes well lease infrastructure.</p>
<p><b>“Wetland”</b> for the purpose of this environmental authority, wetland means:</p> <ul style="list-style-type: none"> <li>• areas shown on the Map of Queensland wetland environmental values, which is a statewide statutory map under the Environmental Protection (Water and Wetland Biodiversity) Policy 2019; and</li> <li>• areas defined under the Queensland Wetlands Program as permanent or periodic / intermittent inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six (6) metres, and possess one or more of the following attributes: <ul style="list-style-type: none"> <li>○ 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</li> <li>○ the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers, or</li> <li>○ the substratum is not soil and is saturated with water, or covered by water at some time.</li> </ul> </li> </ul> <p>The term wetland includes riverine, lacustrine, estuarine, marine and palustrine wetlands; and it does not include a Great Artesian Basin Spring or a subterranean wetland that is a cave or aquifer.</p>
<p><b>“Wetland of General Ecological Significance or general ecologically significant wetland”</b> is a wetland that meets the definition of a wetland and that is shown as a wetland of ‘general ecological significance’ on the Map of Queensland wetland environmental values.</p>
<p><b>“Wetland of High Ecological Significance”</b> otherwise known as “high conservation value wetland”, is a wetland that meets the definition of a wetland and that is shown as a High Ecological Significance wetland on the Map of Queensland wetland environmental values.</p>
<p><b>“Wet Season”</b> means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.</p>
<p><b>“year”</b> means a period of 12 months.</p>
<p><b>“80th percentile”</b> in relation to release limits means that not more than one (1) of the measured values is to exceed the stated release limit for any five (5) consecutive samples where:</p> <ul style="list-style-type: none"> <li>○ the consecutive samples are taken over a five (5) month period; and</li> <li>○ the consecutive samples are taken at approximately equal periods.</li> </ul>

**END OF ENVIRONMENTAL AUTHORITY**