Permit

Environmental Protection Act 1994

Environmental authority EPPG00694213

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

Environmental authority number: EPPG00694213

Environmental authority takes effect on 28 February 2020

Environmental authority holder(s)

Name(s)	Registered address
Armour Energy (Surat Basin) Pty Ltd	Level 27 111 Eagle Street BRISBANE CITY QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Ancillary 09 - Hydrocarbon gas refining 1: Hydrocarbon gas refining (the relevant activity) consists of refining natural gas or coal seam methane gas (c) Coal seam gas	PL21
Ancillary 08 - Chemical Storage 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	PL227, PPL20, PPL3, PL27, PL71, PPL63, PL70, PL14, PL53, PL511, PL22, PL21
Ancillary 09 - Hydrocarbon gas refining 1: Hydrocarbon gas refining (the relevant activity) consists of refining natural gas or coal seam methane gas (c) Coal seam gas	PL27, PL277, PPL20, PPL3, PL71, PPL63, PL70, PL14, PL53, PL511, PL22
Ancillary 10 - Gas Producing Manufacturing, processing or reforming 200t or more of hydrocarbon gas in a year	PL227, PPL20, PPL3, PL27, PL71, PPL63, PL70, PL14, PL53, PL511, PL22, PL21

ABN 46 640 294 485

Queensland Government

Ancillary 15 - Fuel burning Using fuel burning equipment that is capable of burning at least 500kg of fuel in an hour	PL227, PPL20, PPL3, PL27, PL71, PPL63, PL70, PL14, PL53, PL511, PL22, PL21
Ancillary 60 - Waste disposal 1: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(a) (a) less than 50,000t	PL27, PL21, PL22, PL511, PL53, PL14, PL70, PPL63, PL71, PPL3, PPL20, PL227
Ancillary 60 - Waste disposal 1: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(a) (d) more than 200,000t	PL27, PL21, PL22, PL511, PL53, PL14, PL70, PPL63, PL71, PPL3, PPL20, PL227
Ancillary 60 - Waste disposal 2: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(b) (a) less than 2000t	PPL63, PL71, PPL3, PPL20, PL227, PL27, PL21, PL22, PL511, PL53, PL14, PL70
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (c) category 2 regulated waste	PPL63, PL71, PPL3, PPL20, PL227, PL27, PL21, PL22, PL511, PL53, PL14, PL70
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (d) category 1 regulated waste	PPL63, PL71, PPL3, PPL20, PL227, PL27, PL21, PL22, PL511, PL53, PL14, PL70
Non-Scheduled Petroleum Activity Petroleum Pipeline Licence - PPL	PPL63, PL71, PPL3, PPL20, PL227, PL27, PL21, PL22, PL511, PL53, PL14, PL70
Schedule 3 03: A petroleum activity that is likely to have a significant impact on a category A or B environmentally sensitive area	PL227, PPL20, PPL3, PL27, PL71, PPL63, PL70, PL14, PL53, PL511, PL22, PL21
Schedule 3 06: A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam	PL227, PPL20, PPL3, PL27, PL71, PPL63, PL70, PL14, PL53, PL511, PL22, PL21
Schedule 3 08: A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	PL227, PPL20, PPL3, PL27, PL71, PPL63, PL70, PL14, PL53, PL511, PL22, PL21

Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority (EA) is issued is a restatement of the ERA as defined by legislation at the time the EA is issued. Where there is any

inconsistency between that description of an ERA and the conditions stated by an EA as to the scale, intensity or manner of carrying out an ERA, the conditions prevail to the extent of the inconsistency.

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

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

Contaminated land

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

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

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

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

Take effect

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

a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority-on the nominated day; or

b) if the authority states a day or an event for it to take effect-on the stated day or when the stated event happens; or

c) otherwise-on the day the authority is issued.

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

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

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

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

Date issued: 28 February 2020

Enquiries:
Energy and Extractive Resources
Department of Environment and Science

Phone: 3330 5715
Email: energyandextractive@des.qld.gov.au

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)

Legislative requirements and conditions of environmental authority

Conditions of environmental authority

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

Table 1 - Authorised Petroleum Activities

Authorised petroleum activity	Scale		Intensity
	Maximum size	Location	
Petroleum activities			
Conventional gas production and exploration wells	37 hectares (ha)	PL511	37
	44 ha	PL14	44
	9 ha	PL53	9
	1 ha	PL70	1
	23 ha	PL21	23
	32 ha	PL22	32

Authorised petroleum activity	Scale		Intensity
	Maximum size	Location	
	25 ha	PL27	25
	27 ha	PL227	27
	40 ha	PL71	40
Petroleum pipeline	NA	PPL3	1
	NA	PPL63	1
	NA	PPL20	1
Specified relevant activity			
Stimulation activities	NA	PL511, PL14, PL53, PL70, PL21, PL22, PL27, PL227, PL71	237 wells
Operating fuel burning equipment (permanent, in isolation or combined in operation, or interconnected) that is capable of burning more than 500kg of fuel in an hour	NA	PL14	NA
Waste disposal - operating a facility for disposing of, in a year, less than 50,000t of the waste mentioned in subsection (1) (a) of ERA60 in Schedule 2 of the *Environmental Protection Regulation 2019*	NA	PL227, PL71, , PL70, PL14, PL53, PL511, PL22, PL21, PL27	NA
Waste disposal - operating a facility for disposing of, in a year, more than 200,000t of the waste mentioned in subsection (1) (a) of ERA60 in Schedule 2 of the *Environmental Protection Regulation 2019*	NA	PL14	NA
Waste disposal - operating a facility for disposing of, in a year, less than 2,000t of the waste mentioned in subsection (2) (b) of ERA60 in Schedule 2 the *Environmental Protection Regulation 2019*	NA	PL227, PL71, , PL70, PL14, PL53, PL511, PL22, PL21, PL27	NA
Hydrocarbon gas refining consists of refining natural gas or coal seam methane gas	NA	PL14	NA

Authorised petroleum activity	Scale		Intensity
	Maximum size	Location	
Chemical storage - storing more than 500m3 of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3	NA	PL71, PPL63, PL70, PL14, PL53, PL511, PL22, PL21, PL27, PL227	NA
Resource recovery and transfer facility operation	NA	PL71, PPL63, PL70, PL14, PL53, PL511, PL22, PL21, PL27, PL227	NA
Gas producing, manufacturing, processing or reforming 200t or more of hydrocarbon gas in a year	NA	PL14	NA

A4	**Monitoring Standards** All monitoring must be undertaken by a suitably qualified person.
A5	If requested by the administering authority in relation to investigating a complaint, monitoring must be commenced within 10 business days.
A6	All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests.
A7	Notwithstanding Condition A6, 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.
A8	Monitoring and sampling must be carried out in accordance with the requirements of the following documents (as relevant to the sampling being undertaken), or a later published version: a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual 2009 – *Environmental Protection (Water and Wetland Biodiversity) Policy 2019;* b) for groundwater, Groundwater Sampling and Analysis – A Field Guide (2009:27 GeoCat #6890.1); c) for noise, the *Environmental Protection Regulation 2019;*

	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; e) for soil, the Guidelines for Surveying Soil and Land Resources, 2nd edition (McKenzie et al. 2008), and/or the Australian Soil and Land Survey Handbook, 3rd edition (National Committee on Soil and Terrain, 2009); or f) for dust, Australian Standard AS3580.
A9	**Notification Requirements** In addition to the requirements under Chapter 7, Part 1, Division 2 of the Environmental Protection Act 1994, the administering authority must be notified through the Pollution Hotline and in writing, as soon as possible, but within 48 hours of becoming aware of any of the following events: a) any unauthorised significant disturbance to land; b) potential or actual loss of structural or hydraulic integrity of a dam; or c) potential or actual loss of structural or hydraulic integrity of a flow back water containment structure; d) when the level of the contents of any regulated dam reaches the mandatory reporting level; e) when a regulated dam will not have available storage to meet the design storage allowance on 1 November of any year; f) potential or actual loss of well integrity; g) when the seepage trigger action response procedure required under Condition G11(g) is or should be implemented; h) unauthorised releases of any volume of prescribed contaminants to waters. i) unauthorised releases of volumes of contaminants, in any mixture, to land greater than: i. 200 L of hydrocarbons; or ii. 200 L of stimulation additives; or iii. 500 L of stimulation fluids; or iv. 500L of flow back waters; or v. 1 000 L of brine; or vi. 5 000 L of raw sewage; or vii. 10 000 L of treated sewage effluent.

	j) the use of restricted stimulation fluids; k) groundwater monitoring results from a landholder's active groundwater bore monitored under the stimulation impact monitoring program which is a 10% or greater increase from a previous baseline value for that bore and which renders the water unfit for its intended use; or l) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.
A10	**Contingency Procedures** 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: a) a clear definition of what constitutes an environmental emergency incident or near miss for the petroleum activity; b) consideration of the risks caused by the petroleum activity including the impact of flooding and other natural events on the petroleum activity; c) response procedures to be implemented to prevent or minimise the risks of environmental harm occurring; d) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused; e) procedures to investigate causes and impacts including impact monitoring programs for releases to waters and/or land; f) training of staff to enable them to effectively respond; and g) procedures to notify the administering authority, local government and any potentially impacted landholder.
A11	**Maintenance of Plant and Equipment** All plant and equipment must be maintained and operated in their proper and effective condition.
A12	The following infrastructure must be signed with a unique reference name or number in such a way that it is clearly observable: a) regulated dams and low consequence dams; b) exploration, appraisal and development wells; c) water treatment facilities; d) brine encapsulation facilities; e) landfill cells;

	f) sewage treatment facilities; g) specifically authorised discharge points to air and waters; h) any chemical storage facility associated with the environmentally relevant activity of chemical storage; i) field compressor stations; j) central compressor stations; k) gas processing facilities; and l) pipeline compressor stations.
A13	Measures to prevent fauna being harmed from entrapment must be implemented during the construction and operation of well infrastructure, dams and pipeline trenches.
A14	**Erosion and Sediment Control** 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: a) allow stormwater to pass through the site in a controlled manner and at non-erosive flow velocities; b) minimise soil erosion resulting from wind, rain, and flowing water; c) minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain, and flowing water; d) minimise work-related soil erosion and sediment runoff; and e) minimise negative impacts to land or properties adjacent to the activities (including roads).
A15	The control measures required by Condition A14 must be in accordance, to the greatest practicable extent, with the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control (BPESC) document and/or the Australian Pipeline Industry Association (APIA) Code of Environmental Practice: Onshore Pipelines (2017).
A16	**Environmental Nuisance** Petroleum activities must not cause environmental nuisance at a sensitive place, other than where an alternative arrangement is in place.
A17	**Documentation**

	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: a) relevant material, including current published guidelines (where available) have been considered in the written document; b) the content of the written document is accurate and true; and c) the document meets the requirements of the relevant conditions of the environmental authority.
A18	All plans, procedures, programs, reports and methodologies required under this environmental authority must be written and implemented.
A19	All documents required to be developed under this environmental authority must be kept for five years.
A20	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.
A21	A record of all complaints must be kept including the date, complainant's details, source, reason for the complaint, description of investigations and actions undertaken in resolving the complaint.

Schedule B - Waste

Condition number	Condition
B1	**General Waste Management** Measures must be implemented so that waste is managed in accordance with the waste and resource management hierarchy and the waste and resource management principles
B2	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 a condition of this environmental authority, to be disposed of or used on site.
B3	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: a) an above ground container; or b) a structure which contains the wetting front.

B4	Green waste may be used on-site for either rehabilitation or sediment and erosion control, or both.
B5	Vegetation waste may be burned if it relates to a state forest, timber reserve or forest entitlement area administered by the *Forestry Act 1959* and a permit has been obtained under the *Fire and Rescue Service Act 1990.*
B6	**Pipeline Wastewater** Pipeline waste water may be released to land provided that it: a) can be demonstrated it meets the acceptable standards for release to land; and b) is released in a way that does not result in visible scouring or erosion or pooling or run-off or vegetation die-off
B7	**Authorised Uses of Produced Water** Produced water may be re-used in: a) drilling and well hole activities; or b) stimulation activities.
B8	Produced water may be used for dust suppression provided the following criteria are met: a) the amount applied does not exceed the amount required to effectively suppress dust; and b) the application: i. does not cause on-site ponding or runoff; ii. is directly applied to the area being dust suppressed; iii. does not harm vegetation surrounding the area being dust suppressed; and iv. does not cause visible salting.
B9	Produced water may be used for construction purposes provided the use: a) does not result in negative impacts on the composition and structure of soil or subsoils; b) is not directly or indirectly released to waters; c) does not result in runoff from the construction site; and d) does not harm vegetation surrounding the construction site.
B10	If there is any indication that any of the circumstances in Condition B8(b) or B9 is occurring the use must cease immediately and the affected area must be remediated without delay.

B11	**Sewage Treatment** Treated sewage effluent or greywater can be released to land provided it: a) meets or exceeds secondary treated class B standards for a treatment system with a daily peak design capacity of between 150 EP and 1500 EP; or b) meets or exceeds secondary treated class C standards for a treatment system with a daily peak design capacity of less than 150 EP.
B12	The release of treated sewage effluent or greywater authorised in Condition B11 must: a) be to a fenced and signed contaminant release area(s) b) not result in pooling or run-off or aerosols or spray drift or vegetation die-off c) be to a contaminant release area(s) that is kept vegetated with groundcover, that is: i. not a declared pest species; ii. kept in a viable state for transpiration and nutrient uptake; and iii. grazed or harvested and removed from the contaminant release area as needed, but not less than every three months.
B13	**Residual Drilling Material** If sumps are used to store residual drilling material or drilling fluids, they must only be used for the duration of drilling activities.
B14	Residual drilling material can only be disposed of on-site: a) by mix-bury-cover method if the residual drilling material meets the approved quality criteria; or b) if it is certified by a suitably qualified third party as being of acceptable quality for disposal to land by the proposed method and that environmental harm will not result from the proposed disposal.
B15	Records must be kept to demonstrate compliance with Conditions B13 and B14.

Schedule C - Noise	
Condition number	**Condition**
C1	Notwithstanding condition A16, noise from the petroleum activity(ies) at levels less than those specified in Table 2 —Noise nuisance limits are not considered to be environmental nuisance

Table 2 - Noise nuisance limits

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

Note: The noise limits in Table 1 have been set based on the following deemed background noise levels (L_{ABG}).
7am-6pm – 35 dBA
6pm-10pm – 30 d BA
10pm-6am – 25 dBA
6am-7am – 30 dBA

C2

If the noise subject to a valid complaint is tonal or impulsive, the adjustments detailed in *Table 3 —Adjustments* to be added to noise levels at sensitive receptors are to be added to the measured noise level(s) to derive $L_{Aeq, adj, 15 min}$.

Table 3 - Adjustments

Noise characteristic	Adjustment to noise
Tonal characteristic is just audible	+2 d BA
Tonal characteristic is clearly audible	+5 d BA
Impulsiveness characteristic is detectable	+2 to +5 dBA

C3

Notwithstanding Condition C1, emission of any low frequency noise must not exceed the following in the event of a valid complaint about low frequency noise being made to the administering authority:

a) 60 dB(C) measured outside the sensitive receptor; and

b) the difference between the external A-weighted and C-weighted noise levels is no greater than 20 dB; or

c) 50 dB(Z) measured inside the sensitive receptor; and

	d) the difference between the internal A-weighted and Z-weighted (Max $L_{pZ,\ 15\ min}$) noise levels is no greater than 15 dB.
Schedule D – Air	
Condition number	**Condition**
D1	Unless venting is authorised under the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923*, waste gas must be flared in a manner that complies with the following: a) an automatic ignition system is used; and b) a flame is visible at all times while the waste gas is being flared; and c) there are no visible smoke emissions other than for a total period of no more than 5 minutes in any 2 hours; or d) it uses an enclosed flare.
D2	**Fuel Burning and Combustion Facilities – Ambient Air Quality Monitoring** The operation of fuel burning or combustion facilities must not result in ground level concentrations of contaminants exceeding the maximum limits specified in, *Table 4 —Maximum ground level concentration of contaminants to air.*

Table 4 — Maximum ground level concentration of contaminants to air

Contaminant	Maximum ground level concentration at 0ºC	Units	Averaging time
Nitrogen Dioxide	250	µg/m^3	1 hour
Nitrogen Dioxide	62	µg/m^3	1 year
Carbon Monoxide	11	mg/m^3	8 hours

D3	**Air Receiving Environment Monitoring Program** An air receiving environment monitoring program (AREMP) must be developed to demonstrate compliance with the limits in *Table 4 —Maximum ground level concentration of contaminants to air*.
D4	The AREMP must include, but not necessarily be limited to: a) the delineation of the relevant air shed(s);

	b) the identification of background reference sites and impact monitoring sites within the relevant air shed(s), including sensitive places; c) a monitoring program to be carried out annually that; i. includes background reference and impact monitoring sites; ii. includes an assessment of meteorological conditions (wind speed and direction); iii. is sufficient to determine compliance with the limits listed in, *Table 4- Maximum ground level concentration of contaminants to air;* iv. identifies the effects of the authorised contaminants released to air in the relevant air shed(s); v. is representative of when the fuel burning or combustion facilities are operating under maximum operating conditions for the annual period; d) an assessment of the condition of each fuel burning or combustion facility; and e) a description of other significant point sources in the air shed and surrounding land use including sensitive places.
D5	An AREMP report must be written annually which includes the information required by condition D4 and an assessment of the extent to which monitoring data for ground level concentrations complies with the air contaminant limits listed in *Table 4 — Maximum ground level concentration of contaminants to air.*
D6	Where monitoring data collected under condition D2 indicates that ground level concentrations listed in *Table 4 — Maximum ground level concentration of contaminants to air* have not been met, the AREMP report required by condition D5 must also include an assessment of: a) the extent to which the values of the air environment in the relevant air shed(s) are being protected; b) an assessment of whether contaminant releases to the air environment are consistent with the air management hierarchy in the Environmental Protection (Air) Policy 2019; and c) any corrective actions that have been implemented or proposed to be implemented to become consistent with the air management hierarchy and achieve compliance with *Table - 4 Maximum ground level concentration of contaminants to air*.
D7	A statement of compliance prepared by a suitably qualified person must accompany each AREMP report required by Condition D5 and if applicable, Condition D6 stating: a) whether the AREMP as most recently implemented complies with the requirements of Condition A4, Condition A8, Condition D4 and D5;

	b) that, to the best of the suitably qualified person's knowledge, the assessment required by condition D5 and if applicable, condition D6 is true, correct and complete; and c) that, to the best of the suitably qualified person's knowledge, all information provided as part of the statement of compliance, including attachments, is true, correct and complete.
D8	Where condition D6 applies, the documents required by Conditions D5, D6 and D7 must be given to the administering authority within 5 business days after the AREMP report is written.

Schedule E – Land	
Condition number	**Condition**
E1	**General** Contaminants must not be directly or indirectly released to land except for those releases authorised by a condition of this environmental authority.
E2	**Topsoil Management** Top soil must be managed in a manner that preserves its biological and chemical properties.
E3	**Land Management** Land that has been significantly disturbed by the petroleum activities must be managed to ensure that mass movement, gully erosion, rill erosion, sheet erosion and tunnel erosion do not occur on that land.
E4	**Acid Sulfate Soils** Acid sulfate soils must be treated and managed in accordance with the latest edition of the Queensland Acid Sulfate Soil Technical Manual.
E5	**Chemical Storage** Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.
E6	**Pipeline Operation and Maintenance** Pipeline operation and maintenance must be in accordance, to the greatest practicable extent, with the relevant section of the APIA Code of Environmental Practice: Onshore Pipelines (2009).
E7	**Pipeline Reinstatement and Revegetation** Pipeline trenches must be backfilled and topsoils reinstated within three months after pipe laying.

E8	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.
E9	Backfilled, reinstated and revegetated pipeline trenches and right of ways must be: a) a stable landform; b) re-profiled to a level consistent with surrounding soils; c) re-profiled to original contours and established drainage lines; and d) vegetated with groundcover which is not a declared pest species, and which is established and growing.

Schedule F - Biodiversity	
Condition number	**Condition**
F1	**Confirming Biodiversity Values** Prior to undertaking activities that result in significant disturbance to land in areas of native vegetation, confirmation of on-the-ground biodiversity values of the native vegetation communities at that location must be undertaken by a suitably qualified person.
F2	A suitably qualified person must develop and certify a methodology so that Condition F1 can be complied with and which is appropriate to confirm on-the-ground biodiversity values.
F3	For Conditions F4 to F6, where mapped biodiversity values differ from those confirmed under Conditions F1 and F2 petroleum activities may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity values.
F4	**Planning for Land Disturbance** The location of the petroleum activity(ies) must be selected in accordance with the following site planning principles: a) maximise the use of areas of pre-existing disturbance; 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; c) minimise disturbance to land that may result in land degradation; d) in order of preference, avoid then minimise isolation, fragmentation, edge effects or dissection of tracts of native vegetation; and e) in order of preference, avoid then minimise clearing of native mature trees.

F5

Linear infrastructure construction corridors must:

a) maximise co-location;

b) be minimised in width to the greatest practicable extent; and

c) for linear infrastructure that is an essential petroleum activity authorised in an environmentally sensitive area or its protection zone, be no greater than 40m in total width.

F6

Authorised Disturbance to ESAs

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 *Table 5 — Authorised petroleum activities in environmentally sensitive areas and their protection zones.*

Table 5 - Authorised petroleum activities in ESAs and their protection zones

ESA	Within the ESA	Within the primary protection zone of the ESA	Within the secondary protection zone of the ESSA
Category A ESA	No petroleum activities permitted	Only low impact petroleum activities permitted	Only essential petroleum activities permitted
Category B ESAs that are other than 'endangered' regional ecosystems	Only low impact petroleum activities permitted	Only low impact petroleum activities permitted	Only essential petroleum activities permitted
Category B ESAs that are 'endangered' regional ecosystems	Only low impact petroleum activities permitted	Only essential petroleum activities permitted	Only essential petroleum activities permitted
Category C ESAs that are 'nature refuges' or 'koala habitat'	Only low impact petroleum activities permitted	Only low impact petroleum activities permitted	
Category C ESAs that are 'essential habitat', 'essential regrowth habitat', or 'of concern' regional ecosystems	Only low impact petroleum activities permitted	Only essential petroleum activities permitted	

	Category C ESAs that are 'regional parks' (previously known as 'resources reserves')	Only essential petroleum activities permitted	Only essential petroleum activities permitted
	Category C ESAs that are 'state forests' or 'timber reserves'	Only essential petroleum activities permitted	Petroleum activities permitted
	Areas of vegetation that are 'critically limited'	Only low impact petroleum activities permitted	Only essential petroleum activities permitted
F7	Despite Condition F6 of this environmental authority, the infrastructure (and associated activities necessary for construction, operation and maintenance purposes) listed below are permitted within the secondary protection zone of Category B Environmentally Sensitive Areas and within a Category C Environmentally Sensitive Area at the locations specified in *Table 6 – Authorised Resource Activity(ies) Disturbance.*		

Table 6 – Authorised Resource Activity(ies) Disturbance.

PL / PPL	Asset Type	Asset name	ESA Type	RE/Veg Type	Total area of disturbance within ESA (ha)
	Pipeline	Carbean 5 to Carbean 4	ESA B - ERE	11.4.3	0.06
	Pipeline	Digger 1 to North Colgoon 1	ESA C - OCRE	11.5.13	0.13
	Pipeline	Newstead 1 Compressor Station to Kincora Terminal	ESA B - ERE	11.4.3	0.22
	Pipeline	Newstead 1 Compressor Station to Kincora Terminal	ESA C - OCRE	11.5.13	1.59
	Pipeline	Wilga 2 to Wilga 2 Tank Farm	ESA C - OCRE	11.3.25/11.3.28	0.63
	Pipeline	Yarrabend 1 to Kincora Terminal	ESA C - OCRE	11.3.28/11.3.25	1.72
PL14	Well	Digger 1	ESA C - OCRE	11.5.13	1
	Facility	Beldene Facility	ESA B - ERE	11.5.13	0.18
	Pipeline	Avondale North 1 to Beldene Facility	ESA B - ERE	11.9.5	1.97
PL21	Pipeline	Beldene 1 to Beldene Facility	ESA B - ERE	11.9.5	0.39

	Pipeline	Beldene 12 to Belden 7	ESA B - ERE	11.9.5	0.36
	Pipeline	Beldene Facility to Kincora Terminal	ESA B - ERE	11.9.5	0.23
	Pipeline	Beldene Facility to Kincora Terminal	ESA C - OCRE	11.9.5	0.23
	Pipeline	Cogoon River 2 to Royston 1	ESA B - ERE	11.5.13	0.34
	Pipeline	Royston 1 to Beldene Facility	ESA B - ERE	11.9.5	0.54
	Well	Beldene 2	ESA B - ERE	11.9.5	1
	Pipeline	Beranga South to Kincora Terminal	ESA B - ERE	11.9.5	0.04
	Pipeline	Beranga South to Kincora Terminal	ESA C - OCRE	11.4.7	1.06
	Well	Taralga 1	ESA C - OCRE	11.3.25/11.3.19	1
PL22	Well	Yuranigh 1	ESA C - OCRE	11.5.3	1
PL 227	Pipeline	Horseshoe 3 to Ogilvie Creek 2	ESA C - OCRE	11.5.13	0.29
	Pipeline	Broadway 1 to Kanaloo 1	ESA B - ERE	11.5.3	0.18
	Pipeline	Newstead 1 Compressor Station to Kincora Terminal	ESA B - ERE	11.3.25/11.3.28	0.22
	Pipeline	Newstead 2 to Newstead 1 Withdrawal	ESA B - ERE	11.3.3	0.2
	Pipeline	Yarrabend 1 to Kincora Terminal	ESA B - ERE	11.9.10	0.08
	Pipeline	Yarrabend 1 to Kincora Terminal	ESA B - ERE	11.4.3	0.14
	Pipeline	Yarrabend 1 to Kincora Terminal	ESA C - OCRE	11.9.10	0.79
PL27	Pipeline	Yarrabend 2 to Yarrabend 1	ESA C - OCRE	11.9.10	0.02
	Drill Camp	Frith Drill Camp	ESA C - OCRE	11.4.3	1
	Pipeline	Horseshoe 3 to Ogilvie Creek 2	ESA C - OCRE	11.3.28/11.3.25	0.41
	Pipeline	Myall Creek 3 to Myall Creek Facility	ESA C - OCRE	11.3.28/11.3.25	0.07
	Pipeline	Myall Creek 4A to Myall Creek Facility	ESA C - OCRE	11.3.28/11.3.25	0.15
	Pipeline	Myall Creek 5A to Myall Creek Facility	ESA C - OCRE	11.3.3	0.19
	Pipeline	Myall Creek 8 to Myall Creek Facility	ESA C - OCRE	11.3.3	0.45
	Pipeline	Riverside 1 to Myall Creek Facility	ESA C - OCRE	11.3.3	0.08
	Well	Myall Creek 3	ESA C - OCRE	11.3.3	1
PL511	Well	Myall Creek 4A	ESA C - OCRE	11.3.3	0.05
PL71	Pipeline	Parknook 3 to Parknook 4	ESA B - ERE	11.3.3	1.89

	Pipeline	Parknook 5 to Parknook 5 Tie-in	ESA B - ERE	11.3.3	0.53
	Pipeline	Parknook 6H to Parknook 6H Tie-in	ESA B - ERE	11.3.3	0.33
	Pipeline	Parknook Compressor Station to Namarah Parknook Junction	ESA B - ERE	11.9.5	0.07
	Pipeline	Parknook Compressor Station to Namarah Parknook Junction	ESA C - OCRE	11.7.1/11.9.5	0.15
	Pipeline	Namarah 1 to Yarrabend 1	ESA B - ERE	11.7.1	1.62
PPL20	Pipeline	Namarah 1 to Yarrabend 1	ESA C - OCRE	11.7.1/11.9.5	1.37
	Pipeline	Kincora to Wallumbilla	ESA B - ERE	11.7.1	0.42
	Pipeline	Kincora to Wallumbilla	ESA C - OCRE	11.7.1	0.74
PPL3	Pipeline	Kincora to Wallumbilla	ESA C - SF	117.1/11.7.2/11.7.4	2.91
	Pipeline	Myall Creek Facility to Beranga South Facility	ESA B - ERE	11.9.5/11.9.10/11.9.14	0.02
PPL63	Pipeline	Myall Creek Facility to Beranga South Facility	ESA C - OCRE	11.9.5	1.26

F8	A report must be prepared for each annual return period for all petroleum activities that involved clearing of any environmentally sensitive area or protection zone which includes: a) records able to demonstrate compliance with Conditions F4, F5 and F6; b) a description of the works; c) a description of the area and its pre-disturbance values (which may include maps or photographs, but must include GPS coordinates for the works); and d) based on the extent of environmentally sensitive areas and primary protection zones on the relevant resource authority(ies), the proportion of native vegetation cleared per environmentally sensitive area and primary protection zone, including regional ecosystem type, over the annual return period.
F9	**Impacts to Prescribed Environmental Matters** Significant residual impacts to prescribed environmental matters are not authorised under this environmental authority or the *Environmental Offsets Act 2014.*
F10	Records demonstrating that each impact to a prescribed environmental matter that is not likely to, result in a significant residual impact to that matter must be: a) completed by an appropriately qualified person; and b) kept for the life of the environmental authority.

Schedule G – Water	
Condition number	**Condition**
G1	**Authorised Impacts to Waters** The extraction of groundwater as part of the petroleum activity(ies) from underground aquifers must not directly or indirectly cause environmental harm to any spring, wetland or other surface waters.
G2	The extraction of groundwater as part of the petroleum activity(ies) from underground aquifers must not directly or indirectly cause environmental harm to a terrestrial groundwater dependent ecosystem.
G3	**Contaminant Release** Contaminants must not be directly or indirectly released to any waters except as permitted under this environmental authority.
G4	**Authorised Activities in Waters** Petroleum activities must not occur in or within 200m of a: a) wetland of high ecological significance; b) Great Artesian Basin Spring; or c) subterranean cave GDE.
G5	Only construction or maintenance of linear infrastructure is permitted in or within any wetland of other environmental value or in a watercourse.
G6	The construction or maintenance of linear infrastructure in a wetland of other environmental value must not result in the: a) clearing of riparian vegetation outside of the minimum area practicable to carry out the works; or b) ingress of saline water into freshwater aquifers; or c) draining or filling of the wetland beyond the minimum area practicable to carry out the works.
G7	After the construction or maintenance works for linear infrastructure in a wetland of other environmental value are completed, the linear infrastructure must not: a) drain or fill the wetland;

<table>
<tr><td></td><td>b) prohibit the flow of surface water in or out of the wetland;
c) lower or raise the water table and hydrostatic pressure outside the bounds of natural variability that existed before the activities commenced;
d) result in ongoing negative impacts to water quality;
e) result in bank instability; or
f) result in fauna ceasing to use adjacent areas for habitat, feeding, roosting or nesting.</td></tr>
<tr><td>G8</td><td>The construction or maintenance of linear infrastructure activities in a watercourse must be conducted in the following preferential order:
a) firstly, in times where there is no water present;
b) secondly, in times of no flow;
c) thirdly, in times of flow, providing a bankfull situation is not expected and that flow is maintained.</td></tr>
<tr><td>G9</td><td>The construction or maintenance of linear infrastructure authorised under condition G5 must comply with the water quality limits as specified in Table 7—Release limits for construction or maintenance of linear infrastructure.

Table 7 - Release limits for construction or maintenance of linear infrastructure
<table>
<tr><th>Water quality parameter</th><th>Units</th><th>Water Quality Limits</th></tr>
<tr><td rowspan="2">Turbidity</td><td rowspan="2">Nephelometric Turbidity Units (NTU)</td><td>For a wetland of other environmental value, 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.
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.</td></tr>
<tr><td>For a wetland of other environmental value, 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.
For a watercourse, if background water turbidity is equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td></td><td></td><td>applies, measured within 50m downstream of the construction or maintenance activity.</td></tr>
<tr><td>Hydrocarbons</td><td>-</td><td>For a wetland of other environmental value, or watercourse, no visible sheen or slick.</td></tr>
</table>
</td></tr>
<tr><td>G10</td><td>Monitoring must be undertaken at a frequency that is appropriate to demonstrate compliance with Condition G9.</td></tr>
<tr><td>G11</td><td>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:
a) location of the activity (e.g. GPS coordinates (GDA94) and watercourse name);
b) estimated flow rate of surface water at the time of the activity;
c) duration of works, and
d) results of impact monitoring carried out under Condition G10.</td></tr>
<tr><td>G12</td><td>Petroleum activity(ies) on floodplains must be carried out in a way that does not:
a) concentrate flood flows in a way that will or may cause or threaten a negative environmental impact; or
b) divert flood flows from natural drainage paths and alter flow distribution; or
c) increase the local duration of floods; or
d) increase the risk of detaining flood flows.</td></tr>
<tr><td>G13</td><td>Seepage Monitoring Program
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 the detection, and management of any seepage of contaminants to groundwater as a result of storing contaminants.</td></tr>
<tr><td>G14</td><td>The seepage monitoring program required by Condition G13 must include but not necessarily be limited to:
a) identification of the containment facilities for which seepage will be monitored;
b) identification of trigger parameters that are associated with the potential or actual contaminants held in the containment facilities;
c) identification of trigger concentration levels that are suitable for early detection of contaminant releases at the containment facilities;</td></tr>
</table>

	d) installation of background seepage monitoring bores where groundwater quality will not have been affected by the petroleum activities authorised under this environmental authority to use as reference sites for determining impacts; e) installation of seepage monitoring bores that: i. are within formations potentially affected by the containment facilities authorised under this environmental authority (i.e. within the potential area of impact); ii. provide for the early detection of negative impacts prior to reaching groundwater dependent ecosystems, landholder's active groundwater bores, or water supply bores; and iii. provide for the early detection of negative impacts prior to reaching migration pathways to other formations (i.e. faults, areas of unconformities known to connect two or more formations); f) monitoring of groundwater at each background and seepage monitoring bore at least quarterly for the trigger parameters identified in Condition G14(b); g) seepage trigger action response procedures for when trigger parameters and trigger levels identified in Conditions G14(b) and G43(c) trigger the early detection of seepage, or upon becoming aware of any monitoring results that indicate potential groundwater contamination; h) a rationale detailing the program conceptualisation including assumptions, determinations, monitoring equipment, sampling methods and data analysis; and i) provides for annual updates to the program for new containment facilities constructed in each annual return period.
G15	**Seepage Monitoring Bore Drill Logs** A bore drill log must be completed for each seepage monitoring bore in Condition G14 which must include: a) bore identification reference and geographical coordinate location; b) specific construction information including but not limited to depth of bore, depth and length of casing, depth and length of screening and bore sealing details; c) standing groundwater level and water quality parameters including physical parameter and results of laboratory analysis for the possible trigger parameters; d) lithological data, preferably a stratigraphic interpretation to identify the important features including the identification of any aquifers; and e) target formation of the bore.

Schedule H - Rehabilitation	
Condition number	**Condition**
H1	**Rehabilitation Planning** A Rehabilitation Plan must be developed by a suitably qualified person and must include the: a) rehabilitation goals; and b) procedures to be undertaken for rehabilitation that will: i. achieve the requirements of Conditions H2 to H5, inclusive; and ii. provide for appropriate monitoring and maintenance
H2	**Transitional Rehabilitation** Significantly disturbed areas that are no longer required for the on-going petroleum activities, must be rehabilitated within 12 months (unless an exceptional circumstance in the area to be rehabilitated (e.g. a flood event) prevents this timeframe being met) and be maintained to meet the following acceptance criteria: a) contaminated land resulting from petroleum activities is remediated and rehabilitated b) the areas are: i. non-polluting; ii. a stable landform; iii. re-profiled to contours consistent with the surrounding landform; c) surface drainage lines are re-established; d) top soil is reinstated; and e) either: i. groundcover, that is not a declared pest species, is growing; or ii. an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained.
H3	**Final Rehabilitation Acceptance Criteria – Non ESAs** All significantly disturbed areas caused by petroleum activities which are not being or intended to be utilised by the landholder or overlapping tenure holder, must be rehabilitated to meet the following final acceptance criteria measured either against the highest ecological value adjacent land use or the pre-disturbed land use: a) greater than or equal to 70% of native ground cover species richness; b) greater than or equal to the total per cent of ground cover;

	c) less than or equal to the per cent species richness of declared plant pest species; and d) where the adjacent land use contains, or the pre-clearing land use contained, one or more regional ecosystem(s), then at least one regional ecosystem(s) from the same broad vegetation group, and with the equivalent biodiversity status or a biodiversity status with a higher conservation value as any of the regional ecosystem(s) in either the adjacent land or pre-disturbed land, must be present.
H4	**Final Acceptance Criteria - ESAs** 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 F1 and F2) must be met: a) greater than or equal to 70% of native ground cover species richness; b) greater than or equal to the total per cent ground cover; c) less than or equal to the per cent species richness of declared plant pest species; d) greater than or equal to 50% of organic litter cover; e) greater than or equal to 50% of total density of coarse woody material; and f) all predominant species in the ecologically dominant layer, that define the pre-disturbance regional ecosystem(s) are present.
H5	**Remaining Dams** Where there is a dam (including a low consequence dam) that is being or intended to be utilised 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 on-going uses(s) by the landholder or overlapping tenure holder.

Schedule I – Well Activities	
Condition number	**Condition**
I1	**Drilling Activities** Oil based or synthetic based drilling muds must not be used in the carrying out of the petroleum activity(ies).
I2	Drilling activities must not result in the connection of the target gas producing formation and another aquifer.

I3	Practices and procedures must be in place to detect, as soon as practicable, any fractures that have or may result in the connection of a target formation and another aquifer as a result of drilling activities.
I4	**Stimulation Activities** Polycyclic aromatic hydrocarbons or products that contain polycyclic aromatic hydrocarbons must not be used in stimulation fluids in concentrations above the reporting limit.
I5	Stimulation activities must not negatively affect water quality, other than that within the stimulation impact zone of the target gas producing formation.
I6	Stimulation activities must not cause the connection of the target gas producing formation and another aquifer.
I7	The internal and external mechanical integrity of the well system prior to and during stimulation must be ensured such that there is: a) no significant leakage in the casing, tubing, or packer; and b) there is no significant fluid movement into another aquifer through vertical channels adjacent to the well bore hole
I8	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.
I9	**Stimulation Risk Assessment** Prior to undertaking stimulation activities, a risk assessment must be developed to ensure that stimulation activities are managed to prevent environmental harm.
I10	The stimulation risk assessment must be carried out for every well to be stimulated prior to stimulation 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: a) a process description of the stimulation activity to be applied, including equipment and a comparison to best international practice; b) provide details of where, when and how often stimulation is to be undertaken on the tenures covered by this environmental authority; c) a geological model of the field to be stimulated including geological names, descriptions and depths of the target gas producing formation(s); d) naturally occurring geological faults; e) seismic history of the region (e.g. earth tremors, earthquakes); f) proximity of overlying and underlying aquifers;

	g) description of the depths that aquifers with environmental values occur, both above and below the target gas producing formation; h) identification and proximity of landholder' active groundwater bores in the area where stimulation activities are to be carried out; i) the environmental values of groundwater in the area; 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; k) description of overlying and underlying formations in respect of porosity, permeability, hydraulic conductivity, faulting and fracture propensity; l) consideration of barriers or known direct connections between the target gas producing formation and the overlying and underlying aquifers; m) a description of the well mechanical integrity testing program; n) process control and assessment techniques to be applied for determining extent of stimulation activities (e.g. microseismic measurements, modelling etc.); o) practices and procedures to ensure that the stimulation activities are designed to be contained within the target gas producing formation; p) groundwater transmissivity, flow rate, hydraulic conductivity and direction(s) of flow; q) a description of the chemical compounds 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; r) a mass balance estimating the concentrations and absolute masses of chemical compounds that will be reacted, returned to the surface or left in the target gas producing formation subsequent to stimulation; s) an environmental hazard assessment of the chemicals used including their mixtures and the resultant chemicals that are formed after stimulation including: i. toxicological and ecotoxicological information of chemical compounds used; ii. information on the persistence and bioaccumulation potential of the chemical compounds used; and iii. identification of the chemicals of potential concern in stimulation fluids derived from the risk assessment; t) an environmental hazard assessment of use, formation of, and detection of polycyclic aromatic hydrocarbons in stimulation activities; u) identification and an environmental hazard assessment of using radioactive tracer beads in stimulation activities;

	v) an environmental hazard assessment of leaving chemical compounds in stimulation fluids in the target gas producing formation for extended periods subsequent to stimulation; w) human health exposure pathways to operators and the regional population; x) risk characterisation of environmental impacts based on the environmental hazard assessment; y) potential impacts to landholder bores as a result of stimulation activities; z) an assessment of cumulative underground impacts, spatially and temporally of the stimulation activities to be carried out on the tenures covered by this environmental authority; and 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.
I11	A summary of each stimulation risk assessment must be submitted to the administering authority upon request.
I12	**Water Quality Baseline Monitoring** Prior to undertaking any stimulation activity, a baseline bore assessment must be undertaken of the water quality of: a) all landholder's active groundwater bores (subject to access being permitted by the landholder) that are spatially located within a two (2) kilometre horizontal radius from the location of the stimulation initiation point within the target gas producing formation; and b) all landholders' active groundwater bores (subject to access being permitted by the landholder) in any aquifer that is within 200m above or below the target gas producing formation and is spatially located with a two (2) kilometre radius from the location of the stimulation initiation point; and c) any other bore that could potentially be adversely impacted by the stimulation activities in accordance with the findings of the risk assessment required by condition I9.
I13	Prior to undertaking stimulation activities at a well, there must be 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 I14.
I14	Baseline bore and well assessments must include relevant analytes and physico-chemical parameters to be monitored in order to establish baseline water quality and must include, but not necessarily be limited to: a) pH;

	b) electrical conductivity [µS/m]; c) turbidity [NTU]; d) total dissolved solids [mg/L]; e) temperature [ºC]; f) dissolved oxygen [mg/L]; g) dissolved gases (methane, chlorine, carbon dioxide, hydrogen sulfide) [mg/L]; h) alkalinity (bicarbonate, carbonate, hydroxide and total as CaCO3) [mg/L]; i) sodium adsorption ratio (SAR); j) anions (bicarbonate, carbonate, hydroxide, chloride, sulphate) [mg/L]; k) cations (aluminium, calcium, magnesium, potassium, sodium) [mg/L]; 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) [µg/L]; m) total petroleum hydrocarbons [µg/L]; n) BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para- and meta-xylene, and total xylene) [µg/L]; o) polycyclic aromatic hydrocarbons (including but not necessarily being limited to: naphthalene, phenanthrene, benzo[a]pyrene) [µg/L]; p) sodium hypochlorite [mg/L]; q) sodium hydroxide [mg/L]; r) formaldehyde [mg/L]; s) ethanol [mg/L]; and t) gross alpha + gross beta or radionuclides by gamma spectroscopy [Bq/L]
I15	**Stimulation Impact Monitoring Program** 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 Condition I9 that relate to stimulation activities and must include, as a minimum, monitoring of: a) the stimulation fluids to be used in stimulation activities at sufficient frequency and which sufficiently represents the quantity and quality of the fluids used; b) flow back waters from stimulation activities at sufficient frequency and which sufficiently represents the quality of that flow back water;

	c) flow back waters from stimulation activities at sufficient frequency and accuracy to demonstrate that 150% of the volume used in stimulation activities has been extracted from the stimulated well; and d) all bores in accordance with Condition I12.
I16	The stimulation impact monitoring program must provide for monitoring of: a) analytes and physico-chemical parameters relevant to baseline bore and well assessments to enable data referencing and comparison including, but not necessarily being limited to the analytes and physico-chemical parameters in Condition I14; and b) any other analyte or physico-chemical parameters that will enable detection of adverse water quality impacts and the inter-connection with a non-target aquifer as a result of stimulation activities including chemical compounds that are actually or potentially formed by chemical reactions with each other or coal seam materials during stimulation activities
I17	The stimulation impact monitoring program must provide for monitoring of the bores in condition I15(d) at the following minimum frequency: a) monthly for the first six (6) months subsequent to stimulation activities being undertaken; then b) annually for the first five (5) years subsequent to stimulation being undertaken or until analytes and physico-chemical parameters listed in Condition I14, are not detected in concentrations above baseline bore monitoring data on two (2) consecutive monitoring occasions.
I18	The results of the stimulation impact monitoring program must be made available to any potentially affected landholder upon request by that landholder

Schedule J – Regulated Structures	
Condition number	**Condition**
J1	**Assessment of Consequence Category** The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the "Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)", at the following times: a) prior to the design and construction of the structure, if it is not an existing structure; or b) prior to any change in its purpose or the nature of its stored contents.
J2	A consequence assessment report and certification must be prepared for each structure assessed under Condition J1 and the report may include a consequence assessment for more than one structure.
J3	Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the "Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)."
J4	**Design and Construction of a Regulated Structure** Conditions J5 to J9 inclusive do not apply to structures existing at 28 February 2020.
J5	All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933).
J6	Construction of a regulated structure is prohibited unless: a) the holder has submitted a consequence category assessment report and certification to the administering authority; and b) certification for the design, design plan and the associated operating procedures has been certified by a suitably qualified and experienced person in compliance with the relevant condition of this authority.
J7	Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan in the form set out in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933), and must be recorded in the Register of Regulated Structures.
J8	Regulated structures must:

	a) be designed and constructed in compliance with the "Manual for assessing consequence categories and hydraulic performance of structures ESR/2016/1933); b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of: i. floodwaters from entering the regulated dam from any watercourse or drainage line; and ii. wall failure due to erosion by floodwaters arising from any watercourse or drainage line.
J9	Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that: a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure b) construction of the regulated structure is in accordance with the design plan.
J10	**Notification of Affected Persons** All affected persons must be provided with a copy of the emergency action plan in place for each regulated structure a) for existing structures that are regulated structures, within 10 business days of this condition taking effect; b) prior to the operation of the new regulated structure; and c) if the emergency action plan is amended, within 5 business days of it being amended.
J11	**Operation of a Regulated Structure** Operation of a regulated structure, except for an existing structure as at 28 February 2020, is prohibited unless the holder has submitted to the administering authority in respect of regulated structure, all of the following: a) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition J5; b) a set of 'as constructed' drawings and specifications; c) certification of the 'as constructed drawings and specifications' in accordance with condition J9; d) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan;

	e) the requirements of this authority relating to the construction of the regulated structure have been met; f) the holder has entered the details required under this authority, into a Register of Regulated Structures; and g) there is a current operational plan for the regulated structure.
J12	For existing structures as at 28 February 2020 that are regulated structures: a) where the existing structure that is a regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the holder must submit to the administering authority within 12 months of the commencement of this condition a copy of the certified system design plan including that structure; and b) there must be a current operational plan for the existing structures.
J13	Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in compliance with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.
J14	**Mandatory Reporting Level** Conditions J15 to J18 inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
J15	The Mandatory Reporting Level (the MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.
J16	The holder must, as soon as practicable but within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.
J17	The holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.
J18	The holder must record any changes to the MRL in the Register of Regulated Structures.
J19	The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.
J20	**Design Storage Allowance** By 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the dam or network of linked containment systems).

J21	The holder must, as soon as practicable but within forty-eight (48) hours of becoming aware that the regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.
J22	The holder must, immediately on becoming aware that a regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.
J23	**Annual Inspection Report** Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
J24	At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include a recommendations section, with any recommended actions to ensure the integrity of the regulated structure or a positive statement that no recommendations are required.
J25	The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933).
J26	The holder must within 20 business days of receipt of the annual inspection report, provide to the administering authority: a) The recommendations section of the annual inspection report; and b) If applicable, any actions being taken in response to those recommendations; and c) If, following receipt of the recommendations and (if applicable) recommended actions, the administering authority requests a copy of the annual inspection report from the holder, provide this to the administering authority within 10 business days of receipt of the request.
J27	**Transfer Arrangements** The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.
J28	**Decommissioning and Rehabilitation** Regulated structures must not be abandoned but be either:

	a) decommissioned and rehabilitated to achieve compliance with Condition J29; or b) be left in-situ for a use by the landholder provided that: i. it no longer contains contaminants that will migrate into the environment; and ii. it contains water of a quality that is demonstrated to be suitable for its intended use(s); and c) the holder of the environmental authority and the landholder agree in writing that the; i. dam will be used by the landholder following the cessation of the environmentally relevant activity(ies); and ii. landholder is responsible for the dam, on and from an agreed date.
J29	Before surrendering this environmental authority the regulated structure must be rehabilitated to achieve a safe, stable, non-polluting landform.
J30	**Register of Regulated Structures** A Register of Regulated Structures must be established and maintained by the holder for each regulated structure.
J31	The holder must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated dam is submitted to the administering authority.
J32	The holder must make a final entry of the required information in the Register of Regulated Structures once compliance with Condition J11 and J12 has been achieved.
J33	The holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
J34	All entries in the Register of Regulated Structures must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.
J35	The holder must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Structures, in the electronic format required by the administering authority.
J36	**Transitional Arrangements** All existing structures that have not been assessed in accordance with either the Manual or the former Manual for Assessing Hazard Categories and Hydraulic Performance of Dams must be assessed and certified in accordance with the Manual within 6 months of amendment of the authority adopting this schedule.
J37	All existing structures must subsequently comply with the timetable for any further assessments in accordance with the Manual specified in *Table 8 -Transitional hydraulic performance requirements*

for existing structures, depending on the consequence category for each existing structure assessed in the most recent previous certification for that structure.

Table 8 - Transitional hydraulic performance requirements for existing structures

Compliance with criteria	High Consequence	Significant Consequence	Low Consequence
>90% and a history of good compliance performance in last 5 years	No transition required	No transition required	No transition conditions apply. Review consequence assessment every 7 years
>70% - <90%	Within 7 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases	Within 10 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases	No transition conditions apply. Review consequence assessment every 7 years
>50% - <70%	Within 5 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases	Within 7 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases	Review consequence assessment every 7 years
<50%	Within 5 years or as per compliance requirements (e.g. TEP timing)	Within 5 years or as per compliance requirements (e.g. TEP timing)	Review consequence assessment every 7 years

J38	*Table 8 -Transitional hydraulic performance requirements for existing structures* ceases to apply for a structure once any of the following events has occurred: a) it has been brought into compliance with the hydraulic performance criteria applicable to the structure under the Manual; or b) it has been decommissioned; or c) it has been certified as no longer being assessed as a regulated structure
J39	Certification of the transitional assessment required by condition J36 and J37 (as applicable) must be provided to the administering authority within 6 months of amendment of the authority adopting this schedule.

Schedule K – Gas Injection

Condition number	Condition
K1	**Underground Gas Storage** The only gas to be stored underground is natural gas and coal seam gas.
K2	The authorised gas must only be injected at the location(s) and within the formation(s) and impact zones listed in *Table 9 - Details of Authorised Storage Formation.* **Table 9 - Details of authorised storage formation** **Well location on PL27 (latitude and longitude)** / **Well number / reference** / **Target formation** / **Gas injection impact zone** 27°11'30.2"S 149°53'03.0"E / 9 / Basal Evergreen / 1432.0 – 1437.0 m 27°11'0.76"S 148°53'22.21"E / 10 / Basal Evergreen / 1442.0 – 1448.0 m 27°10'53.02"S 148°53'48.47"E / 11 / Basal Evergreen / 1444.4 – 1450.4 m
K3	Gas injection must not result in: a) fracturing the target formation; or b) surface migration of the injected gas; or c) loss of containment from within the impact zones; or

	d) ingress to building and structures; or e) fugitive emissions
K4	If the holder of this environmental authority becomes aware that environmental harm is caused or threatened to be caused, as a result of gas injection activities, the holder of this authority must immediately implement appropriate measures to prevent or minimise the harm.
K5	The maximum quantity of gas authorised to be stored underground under the environmental authority is 7.45 Bscf.
K6	The maximum formation pressure permitted is 2260 psia.
K7	Tracers must not be injected underground.
K8	**Underground Gas Storage Monitoring Program** The holder of this environmental authority must develop and implement an Underground Gas Storage Monitoring Program prior to commencing gas injection.
K9	The Underground Gas Storage Monitoring Program must include but not necessarily by limited to: a) based on a risk assessment to ensure the injection activities are managed to prevent environmental harm and meet the additional requirements within this environmental authority; b) establishment of baseline data including but not limited to: i. identification of the gas injection impact zone; ii. estimated volume and rates of gas to be injected; iii. development of a hydrogeological conceptualisation that includes: A. characterisation of aquifer geometry; B. physiochemical and hydraulic properties (including groundwater levels / pressure) of the target formation as well as surrounding geological formations; C. associated recharge and discharge processes that may influence movement and storage of the injected gas; c) validation of assumptions, predicted impacts and effectiveness of preventative measures (including details of any control or reference sites, methods for analysis and interpretation including a description of the statistical basis on which conclusions are drawn); d) operational monitoring to manage potential hazards including details on sampling and analysis methods (including frequency and locations) and quality assurance and control including but not limited to:

	i. continuously recording injection pressure, flow rate, cumulative volume of the gas and pressure of the target formation; ii. daily monitoring and keeping of records of the quantity of gas injected into the formation; iii. a temperature survey; iv. monitoring of gas water contact or saturation changes using the static gradient method; v. a casing integrity assessment technique such as: A. cement integrity log; B. Ultra Sonic Imaging Tool (USIT) log; C. Sonic Volume Density log (VDL); or D. An equivalent survey technique approved by the administering authority; vi. Profiling of the gas plume including rate of movement; vii. Weekly fixed gas monitors; viii. Bi-annual groundwater level monitoring of the target formation and other potentially affected aquifers; ix. Bi-annual monitoring of potentially affected landholder bores; x. Hydraulic gradient of the target formation within the Petroleum Lease (PL) 27; and xi. xi. Verification to assess the performance of the injection activities and compliance.
K10	**Reporting Requirements for Operational Gas Injection** An operational gas injection report which has been certified be a suitably qualified person must be submitted to the administering authority with each annual return until gas injection has ceased.
K11	The operational gas injection report must summarise the results of the Underground Gas Storage Monitoring Program and provide interpretation and analysis of the information including but not necessarily limited to: a) the results of the monitoring program as required by condition K9; b) monthly summaries of injection conditions; c) well head injections rates versus formation pressure; d) the effectiveness of aquitards (including the stability of the aquitard) and aquicludes of confining the injected gas within the target formation; e) a detailed interpretation of the logs and other tests conducted during drilling and construction of refurbishment of the well against their specific objectives; f) analysis of monitoring and operational data in terms of; i. validation of conceptual framework for injection; and ii. additional hazards that were not identified earlier;

	g) a revised risk analysis that identifies all potential hazards, likelihood of various risk elements and associated consequences; h) a re-evaluation of the gas injection impact zone; and i. location details of any wells closed and decommissioned (GDA94).
K12	**Operational Gas Injection Cessation Report** A gas injection cessation report which has been certified by a suitably qualified person must be submitted to the administering authority with two (2) months of final completion of gas injection activities.
K13	The gas injection cessation report must include, but not necessarily be limited to: a) volumes of gas injected at each well; b) a risk assessment statement providing details on identified hazards including their inherent risk, summary of the results from the verification monitoring, preventative measures and the residual risk; and c) a monitoring report outlining the methods and results of verification monitoring undertaken to assess the performance of the operational injection activities and preventative measures for identified hazards.

END OF PERMIT CONDITIONS

Definitions

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

Term	Definition
acceptable standards for release to land	means wastewater of the following quality as determined by monitoring results or by characterisation: (a) electrical conductivity (EC) not exceeding 3000µS/cm (b) sodium adsorption ratio (SAR) not exceeding 8 (c) pH between 6.0 and 9.0 (d) heavy metals (measured as total) meets the respective short term trigger value in section 4.2.6, Table 4.2.10—Heavy metals and metalloids in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (e) does not contain biocides.
acid sulfate soil(s)	means a soil or soil horizon which contains sulfides or an acid soil horizon affected by oxidation of sulfides.
adjacent land use(s)	means the ecosystem function adjacent to an area of significant disturbance, or where there is no ecosystem function, the use of the land. An adjacent land use does not include an adjacent area that shows evidence of edge effect.
administering authority	means: (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the Environmental Protection Act 1994—the local government; or (b) for all other matters—the Chief Executive of the Department of Environment and Science; or (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.
affected person	is someone whose drinking water can potentially be impacted as a result of discharges from a dam or their life or property can be put at risk due to dwellings or workplaces being in the path of a dam break flood.

alternative arrangement	means a written agreement about the way in which a particular environmental nuisance impact will be dealt with at a sensitive place, and may include an agreed period of time for which the arrangement is in place. An alternative arrangement may include, but is not limited to, a range of nuisance abatement measures to be installed at the sensitive place, or provision of alternative accommodation for the duration of the relevant nuisance impact.
analogue site(s)	means an area of land which contains values and characteristics representative of an area to be rehabilitated prior to disturbance. Such values must encompass land use, topographic, soil, vegetation, vegetation community attributes and other ecological characteristics. Analogue sites can be the pre-disturbed site of interest where significant surveying effort has been undertaken to establish benchmark parameters.
annual exceedance probability or AEP	the probability that at least one event in excess of a particular magnitude will occur in any given year.
annual inspection report	means an assessment prepared by a suitably qualified and experienced person containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan); (a) against recommendations contained in previous annual inspections reports; (b) against recognised dam safety deficiency indicators; (c) for changes in circumstances potentially leading to a change in consequence category; (d) for conformance with the conditions of this authority; (e) for conformance with the 'as constructed' drawings; (f) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems); (g) for evidence of conformance with the current operational plan.
annual return period	means the most current 12-month period between two anniversary dates.
appraisal well	means a petroleum well to test the potential of one (1) or more natural underground reservoirs for producing or storing petroleum. For clarity, an appraisal well does not include an exploration well.
appropriately qualified person / suitably qualified person	means a person who has professional qualifications, training or skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis

about performance relevant to the subject matters using relevant protocols, standards, methods or literature.

approved quality criteria

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

Part A In all cases:

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

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

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

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

Parameter	Maximum concentration
Arsenic	20mg/kg
Selenium	5mg/kg
Boron	100mg/kg
Cadmium	3mg/kg
Chromium (total)	400mg/kg
Copper	100mg/kg
Lead	600mg/kg

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

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

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

ABN 46 640 294 485

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.
Authority	means an environmental authority or a development approval.
background noise level	means the sound pressure level, measured in the absence of the noise under investigation, as the L A90,T being the A-weighted sound pressure level exceeded for 90% of the measurement time period T of not less than 15 minutes (or LA 90, adj, 15 mins), using Fast response.
bankfull	means the channel flow rate that exists when the water is at the elevation of the channel bank above which water begins to spill out onto the floodplain. The term describes the condition of the channel relative to its banks (e.g. overbank, in-bank, bankfull, low banks, high bank).
bed	of any waters, has the meaning in Schedule 12 of the Environmental Protection Regulation 2008 and— (a) includes an area covered, permanently or intermittently, by tidal or non-tidal waters; but (b) does not include land adjoining or adjacent to the bed that is from time to time covered by floodwater.
being or intended to be utilised by the landholder or overlapping tenure holder	for significantly disturbed land, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use of the land such that rehabilitation standards for revegetation by the holder of the environmental authority are not required. For dams, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use for the dam such that rehabilitation standards for revegetation by the holder of the environmental authority are not required.

biodiversity values	for the purposes of this environmental authority, means environmentally sensitive areas, prescribed environmental matters and wetlands.
BTEX	means benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene and total xylene.
Category A Environmentally Sensitive Area	means any area listed in Schedule 19, Section 1 of the *Environmental Protection Regulation 2019*.
Category B Environmentally Sensitive Area	means any area listed in Schedule 19, Section 2 of the *Environmental Protection Regulation 2019*.
Category C Environmentally Sensitive Area	means any of the following areas: - nature refuges as defined in the conservation agreement for that refuge under the Nature Conservation Act 1992 - koala habitat areas as defined under the Nature Conservation (Koala) Conservation Plan 2006 - state forests or timber reserves as defined under the Forestry Act 1959 - regional parks (previously known as resource reserves) under the Nature Conservation Act 1992 - an area validated as 'essential habitat' from ground-truthing surveys in accordance with the Vegetation Management Act 1999 for a species of wildlife listed as endangered or vulnerable under the Nature Conservation Act 1992 - 'of concern regional ecosystems' that are remnant vegetation and identified in the database called 'RE description database' containing regional ecosystem numbers and descriptions.
certified or certification	in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding dams means, a Statutory Declaration by a suitably qualified person or suitably qualified third party accompanying the written document stating: - the person's qualifications and experience relevant to the function - that the person has not knowingly included false, misleading or incomplete information in the document - that the person has not knowingly failed to reveal any relevant information or document to the administering authority

	- that the document addresses the relevant matters for the function and is factually correct; and - that the opinions expressed in the document are honestly and reasonably held.
clearing	has the meaning in the dictionary of the Vegetation Management Act 2000 and for vegetation— (a) means remove, cut down, ringbark, push over, poison or destroy in any way including by burning, flooding or draining; but (b) does not include destroying standing vegetation by stock, or lopping a tree.
Coal seam gas water	Means underground water brought to the surface of the earth, or moved underground in connection with exploring for, or producing coal seam gas.
closed-loop systems	means using waste on site in a way that does not release waste or contaminants in the waste to the environment.
control measure	has the meaning in section 31 of the *Environmental Protection Regulation 2019* and means a device, equipment, structure, or management strategy used to prevent or control the release of a contaminant or waste to the environment.
Consequence	in relation to a structure as defined, means the potential for environmental harm resulting from the collapse or failure of the structure to perform its primary purpose of containing, diverting or controlling flowable substances.
Consequence category	means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/193313).
critically limited regional ecosystem	means the regional ecosystems defined and listed in Appendix 5 of the Queensland Biodiversity Offset Policy.
daily peak design capacity	for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the Environmental Protection Regulation 2008 as the higher equivalent person (EP) for the works calculated using each of the formulae found in the definition for EP.
dam(s)	means a land-based structure or a void that 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 associated works.

Dam crest volume	means the volume of material (liquids and/or solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (for example, via spillway).
declared pest species	has the meaning in the Land Protection (Pest and Stock Route Management) Regulation 2003 and is a live animal or plant declared to be a declared pest under section 36 (Declaring Pests by Regulation) or section 37(2) (Declaring Pest under Emergency Pest Notice) of that Act and includes reproductive material of the animal or plant.
declared plant pest species	has the meaning in the Land Protection (Pest and Stock Route Management) Regulation 2003 and is a plant declared to be a declared pest under section 36 (Declaring Pests by Regulation) or section 37(2) (Declaring Pest under Emergency Pest Notice) of that Act and includes reproductive material of the plant.
Designer	for the purposes of a regulated dam, means the certifier of the design plan for the regulated dam.
Design plan	is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.
designated precinct	has the meaning in Part 5 section 15(3) of the Regional Planning Interests Regulation 2014 and means: - for a strategic environmental area mentioned in section 4(1) – the area identified as a designated precinct on the strategic environmental area map for the strategic environmental are; or - if a strategic environmental area is shown on a map in a regional plan – the area identified on the map as a designated precinct for the strategic environmental area.
design storage allowance or DSA	means an available volume, estimated in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/19337), published by the administering authority, as amended from time to time, that must be provided in a dam to an annual exceedance probability specified in that Manual.
development wells	means a petroleum well which produces or stores petroleum. For clarity, a development well does not include an appraisal well.

document	has the meaning in the Acts Interpretation Act 1954 and means: - any paper or other material on which there is writing; and - any paper or other material on which there are marks; and - figures, symbols or perforations having a meaning for a person qualified to interpret them; and - any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).
ecologically dominant layer	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.
ecosystem function	means the interactions between and within living and nonliving components of an ecosystem and generally correlates with the size, shape and location of the vegetation community.
Emergency action plan	means documentation forming part of the operational plan held by the holder or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam owner and operating personnel in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to affected persons and the implementation of protection measures. The plan must require dam owners to annually review and update contact information where required.
enclosed flare	means a device where the residual gas is burned in a cylindrical or rectilinear enclosure that includes a burning system and a damper where air for the combustion reaction is admitted.
environmental harm	has the meaning in section 14 of the Environmental Protection Act 1994 and means any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value, and includes environmental nuisance. Environmental harm may be caused by an activity— (a) whether the harm is a direct or indirect result of the activity; or (b) whether the harm results from the activity alone or from the combined effects of the activity and other activities or factors.

environmental nuisance	has the meaning in section 15 of the Environmental Protection Act 1994 and means unreasonable interference or likely interference with an environmental value caused by— (a) aerosols, fumes, light, noise, odour, particles or smoke; or (b) an unhealthy, offensive or unsightly condition because of contamination; or (c) another way prescribed by regulation.
environmental offset	has the meaning in section 7 of the *Environmental Offsets Act 2014*.
environmentally sensitive area	means Category A, B or C environmentally sensitive areas (ESAs)
equivalent person or EP	has the meaning under section 3 of the Planning Guidelines For Water Supply and Sewerage, 2005, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the Environmental Protection Regulation 2008 where: - EP = V/200 where V is the volume, in litres, of the average dry weather flow of sewage that can be treated at the works in a day; or - EP = M/2.5 where M is the mass, in grams, of phosphorus in the influent that the works are designed to treat as the inlet load in a day.
essential petroleum activities	means activities that are essential to bringing the resource to the surface and are only the following: - low impact petroleum activities - geophysical, geotechnical, geological, topographic and cadastral surveys (including seismic, sample /test / geotechnical pits, core holes) - single well sites not exceeding 1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance - well sites with monitoring equipment (including monitoring bores): • for single well sites, not exceeding 1.25 hectares disturbance • for multi-well sites, not exceeding 1.75 hectares disturbance - well sites with monitoring equipment (including monitoring bores) and tanks (minimum 1 ML) for above ground fluid storage: • for single well sites, not exceeding 1.5 hectares disturbance • for multi-well sites, not exceeding 2.0 hectares disturbance - 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 authority	has the meaning in section 94 of the Environmental Offsets Act 2014.
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.
Extreme Storm Storage	means a storm storage allowance determined in accordance with the criteria in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/193314) published by the administering authority.
flare pit	has the meaning in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/19338), 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 - has finer sediment deposits than the sediment deposits of any bench, bar or in-stream island of the watercourse.
flowable substance	means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.
Flow back water	means stimulation activities and other fluids which flow back to the surface during hydraulic stimulation fracture activities.
fuel burning or combustion facility	means a permanent fuel burning or combustion equipment which in isolation, or combined in operation, or which are interconnected, is, or are capable of burning more than 500 kg of fuel in an hour.
GDA	means Geocentric Datum of Australia.
Great Artesian Basin (GAB) spring	means an area protected under the Environment Protection and Biodiversity Conservation Act 1999 because it is considered to be a Matter of National Environmental Significance and identified as a: - community of native species dependent on natural discharge of groundwater from the Great Artesian Basin; or - Great Artesian Basin spring; or - Great Artesian Basin discharge spring wetland. A GAB spring includes a spring vent, spring complex or watercourse spring and includes the land to which water rises naturally from below the ground and the land over which the water then flows.

	Note: The Australian Government's Protected Matters Search Tool should be used to get an indication of whether the area of interest may contain an MNES spring. *Note: The GAB springs dataset can be requested from the Queensland Government Herbarium*
green waste	means waste that is grass cuttings, trees, bushes, shrubs, material lopped from trees, untreated timber or other waste that is similar in nature but does not include declared pest species.
greywater	means wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Greywater does not include sewage.
groundwater dependent ecosystem (GDE)	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. For the purposes of the environmental authority, groundwater dependent ecosystems do not include those mapped as "unknown".
growing	means to increase by natural development, as any living organism or part thereof by assimilation of nutriment; increase in size or substance.
holder	means: (a) where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or (b) where this document is a development approval, any person who is the registered operator for that development approval.
hydraulic integrity	refers to the capacity of a dam to contain or safely pass flowable substances based on its design.
Hydraulic performance	means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/193314).
impulsive (for noise)	means sound characterised by brief excursions of sound pressure (acoustic impulses) that significantly exceed the background sound pressure. The duration of a single impulsive sound is usually less than one second.

Incidental activity	means an activity (other than a specified relevant activity) that is reasonably necessary for carrying out a petroleum activity.
LA 90, adj, 15 mins	means the A-weighted sound pressure level, adjusted for tonal character that is equal to or exceeded for 90% of any 15 minutes sample period equal, using Fast response.
LAeq, adj, 15 mins	means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within any 15 minute period has the same square sound pressure as a sound level that varies with time.
land degradation	has the meaning in the Vegetation Management Act 1999 and means the following: - soil erosion - rising water tables - the expression of salinity - mass movement by gravity of soil or rock - stream bank instability - a process that results in declining water quality.
landholder's active groundwater bore	means bores that are able to continue to provide a reasonable yield of water in terms of quantity for the bores authorised purpose or use. This term does not include monitoring bores owned by the administering authority of the Water Act 2000.
levee	means an embankment that only provides for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of water or flowable substances at any other times.
linear infrastructure	means powerlines, pipelines, flowlines, roads and access tracks.
liquid	means a substance which is flowing and offers no permanent resistance to changes of shape.
long term noise event	means a noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five (5) days, even when there are respite periods when the noise is inaudible within those five (5) days.
low consequence dam	means any dam that is not a high or significant consequence category as assessed using the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/193314).

low impact petroleum activities	means petroleum activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation or result in significant disturbance to land which cannot be rehabilitated immediately using hand tools after the activity is completed. Examples of such activities include but are not necessarily limited to soil surveys (excluding test pits), topographic surveys, cadastral surveys and ecological surveys, may include installation of monitoring equipment provided that it is within the meaning of low impact and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.
mandatory reporting level or MRL	means a warning and reporting level determined in accordance with the criteria in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/193314) published by the administering authority.
manual	means the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/193314) published by the administering authority, as amended from time to time.
map of referable wetlands	has the meaning in Schedule 12 of the Environmental Protection Regulation 2008 and means the 'Map of referable wetlands', a document approved by the chief executive on 4 November 2011 and published by the department, as amended from time to time by the chief executive under section 144D.
Max LpA, 15 min	means the absolute maximum instantaneous A-weighted sound pressure level, measured over 15 minutes.
Max LpZ, 15 min	means the maximum value of the Z-weighted sound pressure level measured over 15 minutes.
maximum extent of impact	means the total, cumulative, residual extent and duration of impact to a prescribed environmental matter that will occur over a project's life after all reasonable avoidance and reasonable on-site mitigation measures have been, or will be, undertaken.
medium term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than five (5) days and does not re-occur for a period of at least four (4) weeks. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a difference source or source location.
methodology	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.

mix-bury-cover method	means the stabilisation of residual drilling solids in the bottom of a sump by mixing with subsoil and which occurs in accordance with the following methodology: - the base of the subsoil and residual solid mixture must be separated from the groundwater table by at least one metre of a continuous layer of impermeable subsoil material (kw=10–8m/s) or subsoil with a clay content of greater than 20%; and - the residual solids is mixed with subsoil in the sump and cover; and - the subsoil and residual solids is mixed at least three parts subsoil to one part waste (v/v); and - a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and - topsoil is replaced
month	has the meaning in the Acts Interpretation Act 1954 and means a calendar month and is a period starting at the beginning of any day of one (1) of the 12 named months and ending— - immediately before the beginning of the corresponding day of the next named month; or - if there is no such corresponding day—at the end of the next named month.
NATA accreditation	means accreditation by the National Association of Testing Authorities Australia
notice of election	has the meaning in section 18(2) Environmental Offsets Act 2014.
operational plan	includes: (a) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA); (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.
petroleum activity	means an authorised resource activity listed under the heading Petroleum activities in Schedule A, Table 1 – Authorised petroleum activities
prescribed environmental matters	has the meaning in section 10 of the Environmental Offsets Act 2014, limited to the matters of State environmental significant listed in schedule 2 of the Environmental Offsets Regulation 2014.
pipeline waste water	means hydrostatic testing water, flush water or water from low point drains.
pre-disturbed land use	means the function or use of the land as documented prior to significant disturbance occurring at that location.

predominant species	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.
prescribed contaminants	has the meaning in section 440ZD of the Environmental Protection Act 1994 and means:
primary protection zone	means an area within 200m from the boundary of any Category A, B or C ESA.
produced water	has the meaning in Section 15A of the Petroleum and Gas (Production and Safety) Act 2004 and means CSG water or associated water for a petroleum tenure.
protection zone	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.
regional ecosystem	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 vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil. Regional ecosystems of Queensland were originally described in Sattler and Williams (1999). The Regional Ecosystem Description Database (Queensland Herbarium 2013) is maintained by Queensland Herbarium and contains the current descriptions of regional ecosystems.
register of regulated structures	includes: (a) Date of entry in the register; (b) Name of the structure, its purpose and intended/actual contents; (c) The consequence category of the dam as assessed using the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/193315); (d) Dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam; (e) Name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings; (f) For the regulated dam, other than in relation to any levees – i. The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam; ii. Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area iii. Dam crest volume (megalitres);

	iv. Spillway crest level (metres AHD). v. Maximum operating level (metres AHD); vi. Storage rating table of stored volume versus level (metres AHD); vii. Design storage allowance (megalitres) and associated level of the dam (metres AHD); viii. Mandatory reporting level (metres AHD); (g) The design plan title and reference relevant to the dam; (h) The date construction was certified as compliant with the design plan; (i) The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan; (j) Details of the composition and construction of any liner; (k) The system for the detection of any leakage through the floor and sides of the dam; (l) Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year; (m) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority; (n) Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.
regulated dam	means any dam in the significant or high consequence category as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/19339), published by the administering authority, as amended from time to time.
regulated structure	means any structure in the significant or high consequence category as assessed using the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/193315) published by the administering authority. A regulated structure does not include: - 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; - a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities; - a flare pit

rehabilitation or rehabilitated	means the process of reshaping and revegetating land to restore it to a stable landform and in accordance with acceptance criteria and, where relevant, includes remediation of contaminated land. For the purposes of pipeline rehabilitation, rehabilitation includes reinstatement, revegetation and restoration.
reinstate or reinstatement	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 Australian Pipeline Industry Association (APIA) Code of Environmental Practice: Onshore Pipelines (2013).
reporting limit	means the lowest concentration that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes, the reporting limit is selected as the lowest non-zero standard in the calibration curve. Results that fall below the reporting limit will be reported as “less than” the value of the reporting limit. The reporting limit is also referred to as the practical quantitation limit or the limit of quantitation. For polycyclic aromatic hydrocarbons, the reporting limit must be based on super-ultra trace methods and, depending on the specific polycyclic aromatic hydrocarbon, will range between 0.005 µg/L–0.02 µg/L.
residual drilling material	means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.
restoration	means the replacement of structural habitat complexity, ecosystem 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.
restricted stimulation fluids	has the meaning in section 206 of the Environmental Protection Act 1994 and means fluids used for the purpose of stimulation, including fracturing, that contain the following chemicals in more than the maximum amount prescribed under a regulation— (a) petroleum hydrocarbons containing benzene, ethylbenzene, toluene or xylene (b) chemicals that produce, or are likely to produce, benzene, ethylbenzene, toluene or xylene as the chemical breaks down in the environment.
revegetation or revegetating or revegetate	means to actively re-establish vegetation through seeding or planting techniques in accordance with site specific management plans.
secondary protection zone	in relation to a Category A or Category B ESA means an area within 100 metres from the boundary of the primary protection zone.

secondary treated class A standards	means treated sewage effluent or greywater which meets the following standards: - total phosphorous as P, maximum 20mg/L - total nitrogen as N, maximum 30mg/L - 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L - suspended solids, maximum 30mg/L - pH, range 6.0 to 8.5 - e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 100cfu per 100mL, maximum 1000cfu per 100mL.
secondary treated class B standards	means treated sewage effluent or greywater which meets the following standards: - total phosphorous as P, maximum 20mg/L - total nitrogen as N, maximum 30mg/L - 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L - suspended solids, maximum 30mg/L - pH, range 6.0 to 8.5 - e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 1000cfu per 100mL, maximum 10 000cfu per 100mL.
secondary treated class C standards	means treated sewage effluent or greywater which meets the following standards: - total phosphorous as P, maximum 20mg/L - total nitrogen as N, maximum 30mg/L - 5-day biochemical oxygen demand (inhibited) (e.g. Release pipe from sewage treatment plant), maximum 20mg/L - suspended solids, maximum 30mg/L - pH, range 6.0 to 8.5 - e-Coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 10 000cfu per 100mL, maximum 100 000cfu per 100mL.

sensitive place	means: - a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel) - a library, childcare centre, kindergarten, school, university or other educational institution - a medical centre, surgery or hospital - a protected area - a public park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment - a work place used as an office or for business or commercial purposes, which is not part of the petroleum activity(ies) and does not include employees accommodation or public roads - for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 2008.
sensitive receptor	is defined in Schedule 2 of the Environmental Protection (Noise) Policy 2008, and means an area or place where noise is measured.
short term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven (7) days. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.
significant residual impact	has the meaning in section 8 *Environmental Offsets Act 2014*.
significantly disturbed or significant disturbance or significant disturbance to land or areas	has the meaning in Schedule 12, section 4 of the Environmental Protection Regulation 2008. Land is significantly disturbed if— (a) to a condition required under the relevant environmental authority; or (b) 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.
species richness	means the number of different species in a given area.
specified relevant activity	means an activity that is: - but for being carried out as a resource activity, would otherwise be a prescribed ERA; - stimulation activities;

	- extracting material, other than by dredging; or - point source discharge of treated produced water to surface waters.
spillway	means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges form the dam, normally under flood conditions or in anticipation of flood conditions.
stable	has the meaning in Schedule 5 of the Environmental Protection Regulation 2008 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.
statement of compliance	for a condition in an environmental authority has the meaning in section 208 of the Environmental Protection Act 1994 and is a condition that requires the holder to give the administering authority a statement of compliance about a document or work relating to a relevant activity. The condition must also state— (a) the criteria (the compliance criteria) the document or work must comply with; and (b) that the statement of compliance must state whether the document or work complies with the compliance criteria; and (c) the information (the supporting information) that must be provided to the administering authority to demonstrate compliance with the compliance criteria; and (d) when the statement of compliance and supporting information must be given to the administering authority.
stimulation	means a technique used to increase the permeability of natural underground reservoir that is undertaken above the formation pressure and involves the addition of chemicals. It includes hydraulic fracturing / hydrofraccing, fracture acidizing and the use of proppant treatments. Explanatory note: This definition is restricted from that in the Petroleum and Gas (Production and Safety) Act 2004 in order to only capture the types of stimulation activities that pose a risk to environmental values of water quality in aquifers.
stimulation fluid	means the fluid injected underground to increase permeability. For clarity, the term stimulation fluid only applies to fluid injected down well post-perforation.
stimulation impact zone	means a 100m maximum radial distance from the stimulation target location within a gas producing formation.
strategic environmental area	has the meaning in section 11(1) of the *Regional Planning Interest Act 2014.*
structure	means a dam or levee.

subterranean cave GDE	- means an area identified as a subterranean cave in the mapping produced by the Queensland Government and identified in the Queensland Government Information System, as amended from time to time; and - means a cave ecosystem which requires access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain its communities of plants and animals, ecological processes and ecosystem services. Subterranean cave GDEs are caves dependent on the subterranean presence of groundwater. Subterranean cave GDEs have some degree of groundwater connectivity and are indicated by either high moisture levels or the presence of stygofauna, or both, referred to in the Queensland Government WetlandsInfo mapping program, as amended from time to time. *Note: the Subterranean GDE (caves) dataset can be displayed through the Queensland Government Wetland Info mapping program.* *Note: the Subterranean GDE (caves) dataset can be obtained from the Queensland Government Information System.*
suitably qualified person	means a person who has professional qualifications, training or skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis about performance relevant to the subject matters using relevant protocols, standards, methods or literature. In relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 2002,* and has demonstrated competency and relevant experience: - for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design - for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments.
suitably qualified third party	means a person who: (a) has qualifications and experience relevant to performing the function including but not limited to: i. a bachelor's degree in science or engineering; and ii. 3 years' experience in undertaking soil contamination assessments; and

	(b) is a member of at least one organisation prescribed in Schedule 8 of the Environmental Protection Regulation 2008; and (c) not be an employee of, nor have a financial interest or any involvement which would lead to a conflict of interest with the holder(s) of the environmental authority.
sump	means a pit in which waste residual drilling material or drilling fluids are stored only for the duration of drilling activities.
synthetic based drilling mud	means a mud where the base fluid is a synthetic oil, consisting of chemical compounds which are artificially made or synthesised by chemically modifying petroleum components or other raw materials rather than the whole crude oil.
System design plan	means a plan that manages an integrated containment system that shares the required DSA and/or ESS volume across the integrated containment system.
top soil	means the surface (top) layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from the natural surface.
total density of coarse woody material	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.
transmissivity	means the rate of flow of water through a vertical strip of aquifer which is one unit wide and which extends the full saturated depth of the aquifer.
valid complaint	means all complaints unless considered by the administering authority to be frivolous, vexatious or based on mistaken belief.
void	means any constructed, open excavation in the ground.

waste and resource management hierarchy	has the meaning provided in section 9 of the Waste Reduction and Recycling Act 2011 and is the following precepts, listed in the preferred order in which waste and resource management options should be considered— (a) AVOID unnecessary resource consumption (b) REDUCE waste generation and disposal (c) RE-USE waste resources without further manufacturing (d) RECYCLE waste resources to make the same or different products (e) RECOVER waste resources, including the recovery of energy (f) TREAT waste before disposal, including reducing the hazardous nature of waste (g) DISPOSE of waste only if there is no viable alternative.
waste and resource management principles	has the meaning provided in section 4(2)(b) of the Waste Reduction and Recycling Act 2011 and means the: (a) polluter pays principle (b) user pays principle (c) proximity principle (d) product stewardship principle.
waste fluids	has the meaning in section 13 of the *Environmental Protection Act 1994* 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.
watercourse	has the meaning in Schedule 4 of the Environmental Protection Act 1994 and means: 1. a river, creek or stream in which water flows permanently or intermittently— (a) in a natural channel, whether artificially improved or not; or (b) in an artificial channel that has changed the course of the watercourse. 2. Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.
waters	includes all or any part of a creek, river, stream, lake, lagoon, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.

water year	means the 12-month period from 1 July to 30 June.
well integrity	the ability of a well to contain the substances flowing through it.
wetland	Means an area shown as a wetland on the map of Queensland environmental values.
wetland of high ecological significance	means a wetland that meets the definition of a wetland and that is shown as a wetland of 'high ecological significance' or wetland of 'high ecological value' on the Map of referable wetlands.
wetland of other environmental value	means a wetland that meets the definition of a wetland and that is shown as a wetland of 'general environmental significance' or wetland of 'other environmental value' on the Map of referable wetlands.
Wet season	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.

END OF ENVIRONMENTAL AUTHORITY