

Permit

Environmental Protection Act 1994

Environmental authority P-EA-100365782

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

Environmental authority number: P-EA-100365782

Environmental authority takes effect on the date that your related tenure is granted. This is the take effect date.

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

The anniversary date of this environmental authority is the same day each year as the take effect date. The payment of the annual fee will be due each year on this day.

An annual return will be due each year on 01 April.

Environmental authority holder

Name	Registered address
Origin Energy Future Fuels Pty Ltd	Level 32, 100 Barangaroo Avenue, Barangaroo, NSW 2000

Environmentally relevant activity and location details

Environmentally relevant activities	Locations
Non-Scheduled GHG Storage Activity - Greenhouse Gas Exploration (EPQ)	EPQ 16 and EPQ 17

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

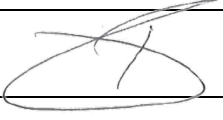
- a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority – on the nominated day; or
- b) if the authority states a day or an event for it to take effect – on the stated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

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

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

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

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



Signature

16 June 2023

Date

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

Enquiries:
Energy and Extractive Resources
GPO Box 2454, BRISBANE QLD 4001
Phone: (07) 3330 5715
Email: EnergyandExtractive@des.qld.gov.au

Privacy statement

Pursuant to section 540 of the EP Act, the Department is required to maintain a register of certain documents and information authorised under the EP Act. A copy of this document will be kept on the public register. The register is available for inspection by members of the

public who are able take extracts, or copies of the documents from the register. Documents that are required to be kept on the register are published in their entirety, unless alteration is required by the EP Act. There is no general discretion allowing the Department to withhold documents or information required to be kept on the public register. For more information on the Department's public register, search 'public register' at www.qld.gov.au. For queries about privacy matters please email privacy@des.qld.gov.au or telephone 13 74 68.

Obligations under the *Environmental Protection Act 1994*

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

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

Other permits required

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

Conditions of environmental authority

General conditions	
Condition number	Condition
A1	This environmental authority authorises the carrying out of the following activities: (1) the activities listed in Table 1 – Authorised Activities to the extent that they are carried out in accordance with the activity's corresponding: (i) maximum disturbance size; (ii) maximum scale; and (iii) location; (2) Activities including but not limited to: (a) Linear infrastructure; and (b) Borrow pits / extracting, other than by dredging; (3) Incidental activities that are necessary to carry out the activities authorised by this environmental authority.

Table 1 – Authorised Activities

Activity	Maximum disturbance size	Scale	Location
Geological Survey	180ha	600km	EPQ16 EPQ17
Water bores (including extraction, injection and monitoring bores)	40 ha	8 bores	EPQ16 EPQ17

A2	This environmental authority does not authorise the injection of CO ₂ on EPQ16 or EPQ17.
A3	All reasonable and practicable measures must be taken to prevent or minimise environmental harm caused, or likely to be caused, by the activities.
A4	Unless specifically authorised by a condition of this environmental authority, this environmental authority does not authorise a relevant act which is: (a) an act that causes serious or material environmental harm or an environmental nuisance; or (b) an act that contravenes a noise standard; or

	(c) a deposit of a contaminant, or release of stormwater run-off, mentioned in section 440ZG of the <i>Environmental Protection Act 1994</i> .
A5	Monitoring and sampling All monitoring and sampling required by the conditions of this environmental authority must be carried out, interpreted, and recorded by an appropriately qualified person.
A6	If requested by the administering authority in relation to investigating a complaint, monitoring must be commenced within 10 business days.
A7	All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests.
A8	Notwithstanding Condition A7, where there are no NATA accredited laboratories for a specific analyte or substance, then duplicate samples must be sent to at least two separate laboratories for independent testing or evaluation.
A9	Despite any other condition in this environmental authority, environmental nuisance caused by the activity at a sensitive place is authorised to the extent that an alternative arrangement permits that environmental nuisance to occur at that sensitive place.
A10	In addition to the requirements under Chapter 7, Part 1, Division 2 of the <i>Environmental Protection Act 1994</i> , 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 disturbance to land; (b) potential or actual loss of well integrity; (c) unauthorised releases of any volume of prescribed contaminants to waters; or (d) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.
A11	Environmental risk management procedures Written procedures must be developed and implemented by an appropriately qualified person that ensure: (a) all potential risks to the environment from the carrying out of the activity are identified and assessed, including: (i) during routine operations; and (ii) outside routine operations (e.g., maintenance, start up and shut down); and (iii) during preparation, rehabilitation, and closure; and (iv) in an emergency (e.g., fire, flood or other natural disaster); and (b) for each potential risk identified, any necessary measures to prevent or minimise the potential for environmental harm are implemented; and (c) staff understand their obligations under this environmental authority and the <i>Environmental Protection Act 1994</i> ; and

	(d) environmental risk management procedures are continually reviewed and improved, based on a reasonable risk-management approach.
A12	Plant and equipment An appropriately qualified person must install, operate, calibrate, and maintain the plant and equipment required to carry out the activity (including monitoring devices) in a proper and effective manner.
A13	The following infrastructure must be signed with a unique reference name or number in such a way that it is clearly observable: (a) water injection wells; and (b) sewage treatment facilities.
A14	Measures to prevent fauna being harmed from entrapment must be implemented during the construction and operation of well infrastructure, dams and pipeline trenches.
A15	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.
A16	All plans, procedures, programs, reports and methodologies required under this environmental authority must be written and implemented.
A17	All documents required to be developed under this environmental authority must be kept for five years.
A18	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.
A19	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.
Waste conditions	
Condition number	Condition
B1	All waste generated in carrying out the activity must be lawfully reused, recycled or removed to a facility that can lawfully accept the waste.

B2	Waste fluids, other than 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.																																
B3	Green waste may be used on-site for either rehabilitation or sediment and erosion control, or both.																																
B4	If sumps are used to store residual drilling material or drilling fluids, they must only be used for the duration of drilling activities.																																
B5	Residual drilling material can only be disposed of on-site by mix-bury-cover method if the residual drilling material meets the approved quality criteria.																																
B6	Records must be kept to demonstrate compliance with Condition B4 and B5.																																
Noise conditions																																	
Condition number	Condition																																
C1	Noise from the activity must not exceed the limits identified in <i>Table 2 – Noise limits</i> at any sensitive place. Table 2 – Noise limits<table><tr><th rowspan="2">Time period</th><th rowspan="2">Metric</th><th colspan="3">Maximum noise limit at a sensitive place</th></tr><tr><th>Short term noise event</th><th>Medium term noise event</th><th>Long term noise event</th></tr><tr><td>7:00am—6:00pm</td><td>$L_{Aeq,adj,T}$</td><td>45 dBA</td><td>43 dBA</td><td>40 dBA</td></tr><tr><td>6:00pm—10:00pm</td><td>$L_{Aeq,adj,T}$</td><td>40 dBA</td><td>38 dBA</td><td>35 dBA</td></tr><tr><td rowspan="2">10:00pm—6:00am</td><td>$L_{Aeq,adj,T}$</td><td>28 dBA</td><td>28 dBA</td><td>28 dBA</td></tr><tr><td>$Max L_{pA,T}$</td><td>55 dBA</td><td>55 dBA</td><td>55 dBA</td></tr><tr><td>6:00am—7:00am</td><td>$L_{Aeq,adj,T}$</td><td>40 dBA</td><td>38 dBA</td><td>35 dBA</td></tr></table> NOTE: The noise limits in Table 2 - Noise limits have been set based on the following deemed <u>background noise levels</u> (L_{ABG}): 7:00am—6:00 pm: 35 dBA 6:00pm—10:00 pm: 30 dBA 10:00pm—6:00 am: 25 dBA 6:00am—7:00 am: 30 dBA	Time period	Metric	Maximum noise limit at a sensitive place			Short term noise event	Medium term noise event	Long term noise event	7:00am—6:00pm	$L_{Aeq,adj,T}$	45 dBA	43 dBA	40 dBA	6:00pm—10:00pm	$L_{Aeq,adj,T}$	40 dBA	38 dBA	35 dBA	10:00pm—6:00am	$L_{Aeq,adj,T}$	28 dBA	28 dBA	28 dBA	$Max L_{pA,T}$	55 dBA	55 dBA	55 dBA	6:00am—7:00am	$L_{Aeq,adj,T}$	40 dBA	38 dBA	35 dBA
Time period	Metric			Maximum noise limit at a sensitive place																													
		Short term noise event	Medium term noise event	Long term noise event																													
7:00am—6:00pm	$L_{Aeq,adj,T}$	45 dBA	43 dBA	40 dBA																													
6:00pm—10:00pm	$L_{Aeq,adj,T}$	40 dBA	38 dBA	35 dBA																													
10:00pm—6:00am	$L_{Aeq,adj,T}$	28 dBA	28 dBA	28 dBA																													
	$Max L_{pA,T}$	55 dBA	55 dBA	55 dBA																													
6:00am—7:00am	$L_{Aeq,adj,T}$	40 dBA	38 dBA	35 dBA																													
C2	All monitoring of noise emissions from the activity must be undertaken when the activity is in operation.																																

C3	The following must be recorded when undertaking monitoring of noise emissions from the activity: (a) all equipment in operation at the time of the noise measurement; and (b) the mode of operation at the time of the noise measurement.
C4	All monitoring of noise emissions from the activity must be undertaken in accordance with the most current version of Queensland Government's 'Noise Measurement Manual' (ESR/2016/2195), the relevant Australian Standard and the Environmental Protection Regulation 2019 (Chapter 5, Part 4).
C5	Emission of substantial low frequency noise must not exceed either C5(a) and C5(b) below, or C5(c) and C5(d) below: (a) 60 dB(C) measured outside the relevant sensitive place; 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 place; and (d) the difference between the internal A-weighted and Z-weighted (<u>Max L_{pZ}, 15 min</u>) noise levels is no greater than 15 dB.
C6	Blasting is not authorised.
C7	Conditions C1 and C5 do not apply at a sensitive place to the extent that an alternative arrangement permits an exceedance of the noise levels in Conditions C1 and C5 to occur at that sensitive place.
Air conditions	
Condition number	Condition
D1	This environmental authority does not authorise odours or airborne contaminants generated by the activity to cause a relevant act at a sensitive place or commercial place.
D2	All monitoring of ambient air quality (including dust) emissions and point source emissions from the activity must be undertaken in accordance with the most current edition of: (a) the relevant Australian Standards; or (b) if monitoring requirements are not described in the Australian Standards, monitoring protocols must be in accordance with a method approved by any other Australian, European or North American jurisdiction/Environmental Protection Agency.
Land conditions	
Condition number	Condition
E1	<u>Top soil</u> disturbed by the activity must be managed in a manner that preserves its biological and chemical properties.

E2	Erosion and sediment control measures must be implemented and maintained at all times that: (a) minimise erosion and the release of sediment within areas disturbed by the activity; (b) prevent releases from the activity causing erosion outside of areas disturbed by the activity; and (c) prevent the release of sediment from areas disturbed by the activity to land or waters.
E3	Treatment and management of acid sulfate soils must comply with the most current edition of the Queensland Acid Sulfate Soil Technical Manual (available on the Queensland government website).
E4	Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.
E5	Pipeline construction, operation and maintenance must be in accordance with the most current edition of the <i>APGA Code of Environmental Practice: Onshore Pipelines</i> .
Biodiversity conditions	
Condition number	Condition
F1	Confirming biodiversity values Prior to clearing of native vegetation, confirmation of on-the-ground biodiversity values of the native vegetation communities to be cleared must be undertaken by an appropriately qualified person using a methodology which the appropriately qualified person has certified in writing as being appropriate for the confirmation.
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 F7, where mapped biodiversity values differ from those confirmed under Conditions F1 and F2, the activity may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity value.
F4	The location of the activity 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 of linear infrastructure; (b) be minimised in width to the greatest practicable extent; and (c) for linear infrastructure authorised in accordance with Condition F7, be no greater than 40m in total width.
F6	Activities are not permitted in Category A, B or C environmentally sensitive areas.
F7	Activities may be undertaken in areas of pre-existing disturbance in the primary protection zones of Category B environmentally sensitive areas that are 'endangered' regional ecosystems and Category C environmentally sensitive areas other than 'nature refuges' or 'koala habitat' areas, providing those activities do not have a measurable negative impact on the adjacent environmentally sensitive area.
F8	Significant residual impacts to prescribed environmental matters are not authorised under this environmental authority or the <i>Environmental Offsets Act 2014</i> .
F9	Records demonstrating that each impact to a prescribed environmental matter did not, or is not likely to, result in a significant residual impact to that matter must be: (a) completed by an <u>appropriately qualified person</u>; and (b) kept for the life of the environmental authority.
F10	Spatial records sufficient to demonstrate compliance with Conditions F1 to F7, and F9 must be kept for the life of the environmental authority. For clarity, this includes mapped biodiversity values, confirmed on-the-ground biodiversity values, location of the activity, environmentally sensitive areas and their protection zones, prescribed environmental matters and impacts to prescribed environmental matters.
Water conditions	
Condition number	Condition
G1	Water (including groundwater) monitoring and sampling must be carried out in accordance with the requirements of the most current edition of the Queensland Government's 'Monitoring and Sampling Manual 2018 – Environmental Protection (Water) Policy 2009' unless otherwise approved by the administering authority.
G2	The extraction of groundwater as part of the activity must not directly or indirectly cause environmental harm to a: (a) wetland; or (b) groundwater dependent ecosystem; or (c) watercourse; or (d) spring.
G3	Unless otherwise authorised under a condition of this environmental authority, the activity must not occur in or within:

	(a) 200m of a: (i) wetland of high ecological significance; (ii) Great Artesian Basin Spring; (iii) subterranean cave GDE; or (b) 100m of a watercourse.
G4	Despite Condition G3, geological surveys may be carried out in or within a watercourse and must not result in: (a) the clearing of native vegetation; (b) the disruption to soil profiles through earthworks or excavation; or (c) result in significant disturbance to land.
G5	Despite Condition G3, only construction or maintenance of linear infrastructure is permitted in or within any wetland of general environmental significance or in a watercourse.
G6	The construction or maintenance of linear infrastructure in a wetland of general environmental significance 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 general environmental significance are completed, the linear infrastructure must not: (a) drain or fill the wetland; (b) prohibit the flow of surface water in or out of the wetland; (c) change the hydrology of the wetland that existed prior to works; or 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.
G8	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.
G9	The construction or maintenance of linear infrastructure authorised within a wetland of general environmental significance or in a watercourse must comply with the water quality

	limits as specified in Protecting water values, Table 3 - Release limits for construction or maintenance of linear infrastructure. Protecting water values, Table 3 Release limits for construction or maintenance of linear infrastructure										
	<table><tr><th>Water quality parameters</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 general environmental significance, 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 general environmental significance, 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 applies, measured within 50m downstream of the construction or maintenance activity.</td></tr><tr><td>Hydrocarbons</td><td>-</td><td>For a wetland of general environmental significance, or watercourse, no visible sheen or slick</td></tr></table>	Water quality parameters	Units	Water quality limits	Turbidity	Nephelometric Turbidity Units (NTU)	For a wetland of general environmental significance, 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.	For a wetland of general environmental significance, 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 applies, measured within 50m downstream of the construction or maintenance activity.	Hydrocarbons	-	For a wetland of general environmental significance, or watercourse, no visible sheen or slick
Water quality parameters	Units	Water quality limits									
Turbidity	Nephelometric Turbidity Units (NTU)	For a wetland of general environmental significance, 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.									
		For a wetland of general environmental significance, 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 applies, measured within 50m downstream of the construction or maintenance activity.									
Hydrocarbons	-	For a wetland of general environmental significance, or watercourse, no visible sheen or slick									
G10	Monitoring must be undertaken at a frequency that is appropriate to demonstrate compliance with Condition G9.										
G11	A register must be kept of all linear infrastructure construction and maintenance activities in a wetland of general environmental significance and watercourses, which must include: (a) location of the activity (e.g. GPS coordinates (<u>GDA2020</u>) 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.										
G12	Activities on <u>floodplains</u> must be carried out in a way that does not: (a) concentrate flood flows; or (b) divert flood flows from natural drainage paths and alter flow distribution; or (c) increase the local duration of floods; or (d) increase the risk of detaining flood flows.										
Rehabilitation conditions											

Condition number	Condition
H1	Rehabilitation planning A Rehabilitation Plan must: (a) be developed and documented before commencement of the activity by an appropriately qualified person; (b) include: (i) map/s showing pre-disturbance land uses; (ii) map/s showing pre-disturbance biodiversity values; (iii) rehabilitation goals; and (iv) procedures to be undertaken for rehabilitation that will: (1) achieve the requirements of conditions H2 to H6, inclusive; and (2) provide for appropriate monitoring and maintenance; and (c) be implemented at all times following the commencement of the activity.
H2	Within three months after pipe laying, pipeline trenches must be backfilled with topsoils and reinstated to: (a) establish a stable landform; (b) establish a level consistent with surrounding soils; and (c) re-establish original contours.
H3	Progressive rehabilitation criteria Within 12 months of works associated with the activity ceasing over an area of land, disturbance on the land caused by the activity must be rehabilitated to meet the following acceptance criteria and be maintained until the final acceptance criteria in Conditions H4 or H5 is met: (a) contaminated land resulting from the activity is remediated and rehabilitated; (b) the areas are: (i) non-polluting; (ii) a stable landform; and (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 <u>declared pest species</u>, is growing; or (ii) an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained.
H4	Final rehabilitation acceptance criteria in areas that do not have biodiversity values Disturbance caused by the activity to areas that do not have biodiversity values, which are not being or intended to be utilised by the landholder or overlapping tenure holder, must be

	rehabilitated to meet the following final rehabilitation acceptance criteria measured either against either 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, then the disturbed land must be rehabilitated to have at least one regional ecosystem from the same broad vegetation group, and with the equivalent biodiversity status or a biodiversity status with a higher conservation value.
H5	Final rehabilitation acceptance criteria in areas with biodiversity values Disturbance caused by the activity to areas with biodiversity values must be rehabilitated to meet the following final rehabilitation acceptance criteria as measured against the pre-disturbance biodiversity values assessment for that area required by Condition F1: (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.
H6	Conditions H3, H4 and H5 continue to apply after this environmental authority has ended or ceased to have effect.
Well construction, maintenance and stimulation activities conditions	
Condition number	Condition
I1	Oil based or synthetic based drilling muds must not be used in the carrying out the activity.
I2	Drilling activities must not result in the connection of the target 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 are not permitted.
Schedule: Water Injection Trial	
Condition number	Condition

J1	Prior to the commencement of the Water Injection Trial, the holder of this environmental authority must develop and implement the Water Injection Management Plan required by Condition J14.
J2	Water production and injection associated with the Water Injection Trial must only occur within the Precipice Sandstone at a depth between 2,000 and 2,800 metres below ground level (mbgl).
J3	Fluid injected during the Water Injection Trial must: (a) be groundwater produced from the Precipice Sandstone by the holder of this environmental authority; (b) have no additives other than dissolved oxygen; and (c) must not exceed the amount of groundwater produced of 1ML.
J4	Water production and injection associated with the Water Injection Trial must not cause environmental harm.
J5	Water production and injection associated with the Water Injection Trial must cease immediately upon becoming aware that environmental harm is caused or threatened to be caused as a result of the injection activities.
J6	The holder of this environmental authority must notify the administering authority of the water bores locations (production, injection and monitoring) and the commencement date of the trial within seven (7) days of its commencement.
J7	Water production and injection associated with the Water Injection Trial is limited to a maximum period of 18 months, commencing from the first date of injection into the Precipice Sandstone.
J8	Well Integrity Unless otherwise stated in the conditions of this environmental authority, injection wells must be constructed according to the current standards applicable to water bore drilling activities under the <i>Water Act 2000</i> or the <i>Petroleum and Gas (Production and Safety) Act 2004</i> .
J9	The well systems prior to and during the injection trial activities must have appropriate records and documentation which support and indicate mechanical integrity and which hold a certificate of mechanical integrity prepared and certified by a suitable qualified persons, available for inspection such that: (a) there is no leakage in the casing, tubing, or packer; and (b) there is no fluid movement into an aquifer that is not the Precipice Sandstone.
J10	Water injection associated with the Water Injection Trial must not result in the connection of the target formation and another aquifer.
J11	Practices and procedures must be in place to detect, as soon as practicable, any fractures that have or may result in the connection of the target formation and another aquifer as a result of water injection activities.
J12	For water injection, the injection operation pressure at the wellhead must not exceed 90% of the formation fracture pressure.

J13	The holder of this environmental authority must undertake non-chemical disinfection of injection fluid if results of six-monthly testing of injected fluid show levels of coliform bacteria, sulphate reducing bacteria or iron fixing bacteria that has potential to cause adverse impacts on the groundwater within the target formation.
J14	Water Injection Management Plan The Water Injection Management Plan must be certified by a suitably qualified person and must include but not necessarily be limited to: (a) a detailed description of the proposed water production and injection activities; (b) a comprehensive baseline assessment of the water quality in the target formation at the injection well sites and the monitoring well sites; (c) details of naturally occurring geological faults; (d) description of overlying and underlying formations in respect of porosity, permeability, hydraulic conductivity, faulting and fracture propensity; (e) a quality control and assurance program; (f) injection fluid characteristics, including: i. estimated volumes and rates of water to be produced and injected; ii. a description of the physical and chemical components and their concentrations of the water to be injected; (g) target aquifer characteristics that will be utilised to confirm whether the aquifer is a confined aquifer and is suitable for carbon capture and storage activities, including but not limited to: i. the pre-existing state of the target formation including, faults or geological features that exist in the target and adjacent aquifers to the outer extent of the water quality impact zone and the hydraulic impact zone and a history of seismic events within the target formation water quality impact zone and the hydraulic impact zone; ii. physical characteristics including, storage characteristics, distribution and depth, recharge and flow characteristics and history of use; iii. characterisation of the physiochemical properties of the target formation; iv. compatibility of the injection fluid with the target formation and formation water; v. groundwater levels and/or pressure. (h) details of the aquifer residence time including justification of its appropriateness; (i) details of where the fluid is proposed to be treated including a description of the treatment process; (j) the regional characteristics of the receiving environment; (k) identification of the water quality impact zone and the hydraulic impact zone; (l) identification of fluid injection wells, water bores, springs, lakes, wetlands, environmental assets and watercourses connected to the target aquifer and other geologic features that occur within the water quality impact zone and the hydraulic impact zone;

	(m) identification of the environmental values and water quality objectives of the potential water quality impact zone of the target formation in accordance with the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 and the Queensland Water Quality Guidelines; (n) identification of the impacts on the environmental values due to the injection fluid; (o) details of how and where the fluid will be produced, aggregated, stored, treated and kept separate from other waters until it is reinjected into the target formation; (p) a water management program for the management of any water that is not suitable for injection; (q) an assessment of the potential for migration of injection fluid or native groundwater out of the target formation through wells, bores, springs, connected watercourses, faults or other geologic features likely to impact on other aquifers; (r) a risk assessment identifying potential hazards, their inherent risk, preventative measures for the management of potential hazards and details on sampling and analysis methods to verify preventative measures of potential hazards, including frequency and locations and quality assurance and control; (s) verification methods to assess performance of the injection activities; (t) control measures that will be implemented for fluid storage, treatment and injection to prevent or control the release of contaminant or waste to the environment; (u) the indicators or other criteria against which the performance of fluid injection will be assessed; (v) procedures for dealing with accidents, spills, failure of containment structures and other incidents that may arise in the course of fluid injection; (w) Identification of existing and proposed landholder water bores and which aquifer water is, or is, proposed to be sourced from; and (x) a review process to identify improvements or changes to the injection activities, including: i. submission of any amendments to the administering authority for review and comment; and ii. incorporating comments from the administering authority.
J15	Water Monitoring Program Prior to the commencement of water production and injection associated with the Water Injection Trial, the holder of this environmental authority must develop a Water Monitoring Program, that is sufficient to detect impacts to groundwater as a result of the Water Injection Trial.
J16	The Water Monitoring Program must be certified by a suitably qualified person and must include but not necessarily be limited to: (a) a monitoring network (including groundwater monitoring bore locations, frequency, aquifers and parameters (including standing water level and pressure)) to monitor the

	groundwater in the Precipice Sandstone and surrounding aquifers prior to, during and following the Water Injection Trial; (b) identification of: i. environmental harm; ii. trigger values that will provide early warning of any impact to groundwater; iii. limits that will detect when groundwater is impacted; and iv. migration of injected fluid outside of the Precipice Sandstone. (c) verification methods to assess performance of the injection activities, including performance indicators or other criteria against which the performance of fluid injection will be assessed; (d) procedures that will be adopted to regularly review the monitoring program and to notify the administering authority in accordance with Condition J26; and (e) procedures that will be implemented to prevent unauthorised environmental harm in response to unforeseen or non-compliant monitoring results.
J17	Prior to the commencement of water production and injection associated with the Water Injection Trial, the trigger values and limits identified in Condition J16(b) must be peer reviewed by an independent suitably qualified groundwater resources expert who must: (a) confirm that the trigger values and limits identified are appropriate to detect environmental harm and potential or actual impacts to groundwater, including changes to baseline water quality established in Condition J14(b); and (b) provide a written report to the administering authority detailing the outcomes of the peer review, including any recommendations.
J18	Prior to commencing water production and injection associated with the Water Injection Trial; (a) the holder of this environmental authority must amend the Water Monitoring Program in accordance with the administering authority's comment(s) or recommended changes to trigger values and limits (identified in Condition J16(b)) following the administering authority's review of the written report provided under Condition J17; and (b) the holder of this environmental authority must provide a copy of the updated version of the Water Monitoring Plan to the administering authority.
J19	The holder of this environmental authority must implement and comply with the most current version of the Water Monitoring Program provided to the administering authority under Condition J18.
J20	If groundwater quality monitoring results exceed any of the trigger values specified in Condition J16(b)(ii), the holder of this environmental authority must notify the administering authority within 48 hours of receiving the results and complete an investigation in accordance with Condition J21.
J21	An investigation into the potential for environmental harm must be completed and a written report provided to the administering authority within 10 business days of receiving the monitoring results, outlining:

	(a) Results and interpretation of any samples taken and analysed; (b) An analysis of the trends in groundwater quality and movement; (c) Outcomes of actions taken at the time to prevent or minimise environmental harm; and (d) Proposed actions to prevent a recurrence of the exceedance.
J22	The limits specified in the Water Monitoring Program in accordance with Condition J16(b)(iii) must not be exceeded.
J23	Reporting Requirements An operational fluid injection report must summarize the results of the Injection Monitoring Program and provide interpretation and analysis of those results including but not necessarily being limited to: (a) the results of the water monitoring program; (b) monthly summaries of injection conditions; (c) commentary on changes to injection fluid characteristics or sources; (d) mechanical integrity tests; (e) pressure of the target formation; (f) stability of overlying aquitard; (g) an updated risk assessment providing details on potential hazards including their inherent risk, preventative measures & monitoring and the residual risk; (h) quantity of fluid injected; and (i) quality parameters of fluid injected.
J24	Within six (6) months of completion of the injection trial, the holder of this environmental authority must submit to the administering authority an Injection Trial Report prepared by a suitably qualified person.
J25	The Injection Trial Report must include, but not necessarily be limited to: For any well to be used for fluid injection: (a) bore completion reports; (b) outcomes of the injection trial including, but not limited to: i. confirmation that the target formation is a confined aquifer; ii. suitability of the target formation for carbon capture and storage activities; iii. well head injection rates versus formation pressure; target formation pressure within the hydraulic impact zone during and upon completion of the trial; iv. hydraulic gradient of the target formation within the hydraulic impact zone upon completion of the trial; v. the effectiveness of aquitards (including the stability of the aquitard) and aquicludes of confining the injected fluid within the target formation; and

	vi. a detailed interpretation of the logs and other tests conducted during the injection trial against their specific objectives; (c) the results of the water monitoring program including: i. Reporting on the triggers and limits in condition J16(b), outlining if compliance with these parameters has been met; ii. a water compatibility analysis of the injection fluid and native groundwater that includes identification of potential impacts on water quality of the target formation or geological formation within the water quality impact zone; (d) 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; (e) a revised risk analysis that identifies all potential hazards, likelihood of various risk elements and associated consequences; (f) a re-evaluation of the hydraulic impact zone; and (g) a re-evaluation of the water quality impact zone.
J26	Fluid Injection Notification The administering authority must be notified as soon as reasonably practicable, but within 48 hours of becoming aware of: (a) migration of injected fluid out of the target formation; or (b) a loss of hydraulic isolation of the target formation; or (c) the detection of groundwater contaminants that were not detected in background samples; or (d) a monitoring result that does not comply with any one of the limits identified in the Water Monitoring Program condition J16(b)(iii); or (e) Impacts to formation integrity and surface subsidence.

Definitions

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

Term	Definition
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 <u>ecosystem function</u> adjacent to an area of disturbance, or where there is no ecosystem function, the use of the land. An adjacent land use does not include an adjacent area that shows evidence of edge effect.

alternative arrangement	means a written agreement about the way in which a particular environmental nuisance impact will be dealt with at a sensitive place, and may include an agreed period of time for which the arrangement is in place. An alternative arrangement may include, but is not limited to, a range of nuisance abatement measures to be installed at the sensitive place, or provision of alternative accommodation for the duration of the relevant nuisance impact.																																
appropriately qualified person / suitably qualified person	means a person who has professional qualifications, training, skills or experience relevant to the EA requirements and can give authoritative assessment, advice and analysis in relation to the EA requirements using relevant protocols, standards, methods or literature.																																
approved quality criteria	for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards: <u>Part A</u> In all cases: <table border="1"> <thead> <tr> <th>Parameter</th><th>Maximum concentration</th></tr> </thead> <tbody> <tr> <td>pH</td><td>6–10.5 (range)</td></tr> <tr> <td>Electrical Conductivity</td><td>20dS/m (20,000µS/cm)</td></tr> <tr> <td>Chloride*</td><td>8000mg/L</td></tr> </tbody> </table> *Chloride analysis is only required if an additive containing chloride was used in the drilling process The limits in Part A must be measured in the clarified filtrate of oversaturated solids prior to mixing. <u>Part B</u> If any of the following metals are a component of the drilling fluids, then for that metal: <table border="1"> <thead> <tr> <th>Parameter</th><th>Maximum concentration</th></tr> </thead> <tbody> <tr> <td>Arsenic</td><td>20mg/kg</td></tr> <tr> <td>Selenium</td><td>5mg/kg</td></tr> <tr> <td>Boron</td><td>100mg/kg</td></tr> <tr> <td>Cadmium</td><td>3mg/kg</td></tr> <tr> <td>Chromium (total)</td><td>400mg/kg</td></tr> <tr> <td>Copper</td><td>100mg/kg</td></tr> <tr> <td>Lead</td><td>600mg/kg</td></tr> </tbody> </table> The limits in Part B and Part C refer to the post soil/by-product mix. <u>Part C</u> If a hydrocarbon sheen is visible, the following hydrocarbon fractions: <table border="1"> <thead> <tr> <th>TPH</th><th>Maximum concentration</th></tr> </thead> <tbody> <tr> <td>C6-C10</td><td>170mg/kg</td></tr> <tr> <td>C10-C16</td><td>150mg/kg</td></tr> <tr> <td>C16-C34</td><td>1300mg/kg</td></tr> </tbody> </table>	Parameter	Maximum concentration	pH	6–10.5 (range)	Electrical Conductivity	20dS/m (20,000µS/cm)	Chloride*	8000mg/L	Parameter	Maximum concentration	Arsenic	20mg/kg	Selenium	5mg/kg	Boron	100mg/kg	Cadmium	3mg/kg	Chromium (total)	400mg/kg	Copper	100mg/kg	Lead	600mg/kg	TPH	Maximum concentration	C6-C10	170mg/kg	C10-C16	150mg/kg	C16-C34	1300mg/kg
Parameter	Maximum concentration																																
pH	6–10.5 (range)																																
Electrical Conductivity	20dS/m (20,000µS/cm)																																
Chloride*	8000mg/L																																
Parameter	Maximum concentration																																
Arsenic	20mg/kg																																
Selenium	5mg/kg																																
Boron	100mg/kg																																
Cadmium	3mg/kg																																
Chromium (total)	400mg/kg																																
Copper	100mg/kg																																
Lead	600mg/kg																																
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
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 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.	
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).	
being or intended to be utilised by the landholder or overlapping tenure holder	for 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	means environmentally sensitive areas, prescribed environmental matters and wetlands.	
Category A Environmentally Sensitive Area	has the meaning in the Environmental Protection Regulation 2019.	
Category B Environmentally Sensitive Area	has the meaning in 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 <i>Nature Conservation Act 1992</i>	

	- koala habitat areas as defined under the Nature Conservation (Koala) Conservation Plan 2017 - state forests or timber reserves as defined under the <i>Forestry Act 1959</i> - regional parks (previously known as resource reserves) under the <i>Nature Conservation Act 1992</i> - an area validated from ground-truthing surveys as 'essential habitat' for 'protected wildlife' in accordance with the <i>Vegetation Management Act 1999</i> 'of concern regional ecosystems' that are remnant vegetation and identified in the database called 'RE description database' containing regional ecosystem numbers and descriptions.
certified or certification	in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding dams means, a Statutory Declaration by a suitably qualified person or suitably qualified third party accompanying the written document stating: - the person's qualifications and experience relevant to the function - that the person has not knowingly included false, misleading or incomplete information in the document - that the person has not knowingly failed to reveal any relevant information or document to the administering authority - that the document addresses the relevant matters for the function and is factually correct; and - that the opinions expressed in the document are honestly and reasonably held.
clearing	(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.
Commercial place	means a place used as a workplace, an office or for business or commercial purposes and includes a place within the curtilage of such a place reasonably used by persons at that place.
control measure	has the meaning in section 47 of the Environmental Protection Regulation 2008 and means a device, equipment, structure, or management strategy used to prevent or control the release of a contaminant or waste to the environment.
daily peak design capacity	for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the Environmental Protection Regulation 2019 as the higher equivalent person (EP) for the works calculated using each of the formulae found in the definition for EP.
declared pest species	are species listed as: 'prohibited matter' or 'restricted matter' species under the <i>Biosecurity Act 2014</i>; or 'Weeds of National Significance' under the Australian Weeds Strategy 2017–2027.
designated precinct	as defined in section 15 of the Regional Planning Interest Regulation 2014.
document	has the meaning in the <i>Acts Interpretation Act 1954</i> and means: - any paper or other material on which there is writing; and - any paper or other material on which there are marks; and

	- figures, symbols or perforations having a meaning for a person qualified to interpret them; and - any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).
ecologically dominant layer	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 5.1 March 2020) 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.
environmental offset	has the meaning in section 7 of the <i>Environmental Offsets Act 2014</i> .
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, 2010, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the Environmental Protection Regulation 2019.
floodplains	has the meaning in the <i>Water Act 2000</i> .
GDA	means Geocentric Datum of Australia.
Great Artesian Basin (GAB) spring	means an area protected under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> 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. <i>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.</i> <i>Note: The GAB springs dataset can be requested from the Queensland Government Herbarium</i>
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”.
High ecological value waters	see the Environmental Protection (Water and Wetland Biodiversity) Policy 2019, schedule 2.
$L_{Aeq, adj, T}$	means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonality (+ 5 dBA if present) and impulsiveness (+ 5 dBA if present), 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 <i>Vegetation Management Act 1999</i> .
linear infrastructure	means powerlines, pipelines, flowlines, roads and access tracks.
long term noise event	means a noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five (5) days, even when there are respite periods when the noise is inaudible within those five (5) days.
low impact activities	means 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.
Map of Queensland wetland environmental values	see the Environmental Protection (Water and Wetland Biodiversity) Policy 2019, schedule 2.
Max $L_{pA, T}$	means the absolute maximum instantaneous A-weighted sound pressure level, measured for not less than 15 minutes.
Max $L_{p, T}$	means the maximum value of the instantaneous sound pressure level measured for not less than 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.
mix-bury-cover method	means the stabilisation of residual drilling solids in the bottom of a sump by mixing with subsoil and which occurs in accordance with the following methodology:

	- the base of the subsoil and residual solid mixture must be separated from the groundwater table by at least one metre of a continuous layer of impermeable subsoil material ($k_w=10-8\text{m/s}$) or subsoil with a clay content of greater than 20%; and - the residual solids 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.
Monitor, monitored and monitoring	means monitoring the impact of an activity on the receiving environment and includes analysing, assessing, examining, inspecting, measuring, modelling or reporting any of the following matters— (a) the quantity, quality, characteristics, timing and variability of the release of any contaminant; and (b) the effectiveness of any control measure; and (c) the characteristics of, and impact on, the receiving environment; and (d) the effectiveness of remedial or rehabilitation measures (if applicable to the relevant monitoring requirement).
Monitoring bore	means a groundwater bore that provides access to groundwater for measuring its quality and level; and allows groundwater samples to be withdrawn for laboratory analysis.
Monitoring results	includes analysis results (laboratory and in situ) and monitoring reports.
prescribed environmental matters	has the meaning in section 10 of the <i>Environmental Offsets Act 2014</i> , limited to the matters of State environmental significant listed in schedule 2 of the Environmental Offsets Regulation 2014.
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 5.1 March 2020) and means a species that contributes most to the overall above-ground biomass of a particular stratum.
primary protection zone	means an area within 200m from the boundary of any Category A, B or C ESA.
Records	include any written procedures, plans, monitoring results, and monitoring programs required under a condition of this environmental authority.
regional ecosystem	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 5.1 March 2020) and means a Vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil
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 most current edition of the APGA Code of Environmental Practice: Onshore Pipelines.
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 ug/L–0.02 ug/L.
residual drilling material	means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.
secondary protection zone	in relation to a Category A or Category B ESA means an area within 100 metres from the boundary of the primary protection zone.
secondary treated class 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	- includes the following and includes a place within the curtilage of such a place reasonably used by persons at that place: a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or - a motel, hotel or hostel; or - a kindergarten, school, university or other educational institution; or - a medical centre or hospital; or - a protected area under the Nature Conservation Act 1992, the Marine Parks Act 2004 or a World Heritage Area; or - a public park or garden; or - for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 2019.
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 <i>Environmental Offsets Act 2014</i> .
species richness	means the number of different species in a given area.
Spring	has the meaning in the <i>Water Act 2000</i> .
stable	has the meaning in Schedule 8 of the Environmental Protection Regulation 2019.
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 / hydrofracking, fracture acidizing and the use of proppant treatments. Explanatory note: This definition is restricted from that in the <i>Petroleum and Gas (Production and Safety) Act 2004</i> in order to only capture the types of stimulation activities that pose a risk to environmental values of water quality in aquifers.
strategic environmental area	has the meaning in section 11(1) of the <i>Regional Planning Interest Act 2014</i> .
Substantial low frequency noise	means a noise emission that has an unbalanced frequency spectrum shown in a one-third octave band measurements, with a predominant component within the frequency range 10 to 200 Hz. It includes any noise emission likely to cause an overall sound pressure level at a noise sensitive place exceeding 55 dB(Z).
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; or - 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. <i>Note: the Subterranean GDE (caves) dataset can be displayed through the Queensland Government WetlandInfo mapping program.</i> <i>Note: the Subterranean GDE (caves) dataset can be obtained from the Queensland Government Information System.</i>
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.
synthetic based drilling mud	means a mud where the base fluid is a synthetic oil, consisting of chemical compounds which are artificially made or synthesised by chemically modifying petroleum components or other raw materials rather than the whole crude oil.
top soil	means the surface (top) layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from the natural surface.
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.
Vegetation management wetlands map	see the <i>Vegetation Management Act 1999</i> , section 20AA.
waste fluids	has the meaning in section 13 of the <i>Environmental Protection Act 1994</i> in conjunction with the common meaning of “fluid” which is “a substance which is capable of flowing and offers no permanent resistance to changes of shape”.
watercourse	has the meaning in Schedule 4 of the <i>Environmental Protection Act 1994</i> .
waters	includes a river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water, natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part thereof
Water Injection Trial	means producing and injecting groundwater from the target formation (the Precipice Sandstone) for the purpose of testing the feasibility of Greenhouse Gas stream storage and does not include producing groundwater as a result of commissioning a water bore under the <i>Water Act 2000</i> or for undertaking groundwater sampling and/or monitoring.
well integrity	the ability of a well to contain the substances flowing through it.
wetland of high ecological significance	means a ‘GBR wetland of high ecological significance’ or a ‘Wetland of high ecological significance’ shown on the map of Queensland wetland environmental values.

wetland of general environmental significance	means a 'Wetland of general ecological significance' shown on the map of Queensland wetland environmental values.
---	---

END OF ENVIRONMENTAL AUTHORITY