

Permit

Environmental Protection Act 1994

Environmental authority EPPG00304213

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

Environmental authority number: EPPG00304213

Environmental authority takes effect on 3 December 2024.

The anniversary date of this environmental authority is 23 January each year. The payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

Names	Registered address
AGL Upstream Gas (Mos) Pty Limited	Level 24 200 George Street SYDNEY NSW 2000
AGL Gas Storage Pty Ltd	Level 24 200 George Street SYDNEY NSW 2000

Environmentally relevant activity and location details

Environmentally relevant activities	Location
Non-Scheduled - Petroleum Activity - Petroleum Lease (PL).	Petroleum Lease (PL) 213

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 land give written notice to the administering authority if they become aware of the following:

- the presence of, or happening of an event involving, a hazardous contaminant on the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- if the land is contaminated land – a change in the condition of the land that is causing, or is reasonably likely to cause, serious or material environmental harm (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 land (notice must be given within 20 business days).

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

Take effect

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

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

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

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

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

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



Signature

3 December 2024

Date

Helena Braye
Manager
Department of Environment, Tourism, Science and
Innovation
Delegate of the administering authority
Environmental Protection Act 1994

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Obligations under the *Environmental Protection Act 1994*

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

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

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

This environmental authority incorporates the following schedules:

- Schedule A General**
- Schedule B Air**
- Schedule C Water**
- Schedule D Stormwater**
- Schedule E Dams**
- Schedule F Land**
- Schedule G Biodiversity**
- Schedule H Noise**
- Schedule I Waste**
- Schedule J Wells, stimulation and pipelines**
- Schedule K Rehabilitation**
- Schedule L Definitions**

Words and phrases which are underlined are defined in *Schedule L – Definitions*.

SCHEDULE A – GENERAL

- A1** This environmental authority authorises the carrying out of the following resource activities:
- the petroleum activities listed in **Table A1 – Authorised Petroleum Activities** to the extent they are carried out in accordance with the activity's corresponding total number and maximum disturbance;
 - area of disturbance at a petroleum works site must not exceed 4ha at any one time;
 - for the specified relevant activities listed in **condition A1(b)** above, another activity where Schedule 2 of the Environmental Protection Regulation 2019 (the Regulation) provides exemption for the activity, but only to the extent of the circumstances stated in Schedule 2 of the Regulation; and
 - incidental activities that are not otherwise specified relevant activities.

Table A1 – Authorised petroleum activities

Petroleum Activities	Authorised Petroleum Activities	Maximum Disturbance Authorised
- Noorindoo 4 - appraisal - P&A - West Noorindoo 1 - development - shut-in not tied into network - Churchie West 1 - development - producing	3 wells	3 ha
Flow line connecting West Noorindoo 1 to Churchie West 1	1.60 km	4 ha
Roads/Access tracks	9	2 ha
Flow line from Churchie West 1 to Churchie Plant	500m	0.75 ha
Stimulation – West Noorindoo 1	1 well	1 ha

- A2** 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.
- A3** Any record required to be kept by a condition of this environmental authority must be kept at the licensed place and be available for examination by an authorised person.
- A4** Copies of any record required to be kept by a condition of this environmental authority must be provided to any authorised person or the administering authority on request.
- A5** A copy of the environmental authority must be kept in a location readily accessible to personnel carrying out the activity.
- A6** 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.

- A7** All monitoring must be undertaken by a suitably qualified person.
- A8** If requested by the administering authority in relation to investigating a complaint, monitoring must be commenced within 10 business days.
- A9** All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests.
- A10** Notwithstanding **condition A9**, 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.
- A11** Monitoring and sampling must be carried out in accordance with the requirements of the following documents (as relevant to the sampling being undertaken), as amended from time to time:
- a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual 2009 – Environmental Protection (Water) Policy 2009
 - 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)
 - f) for dust, Australian Standard AS3580.
- A12** In addition to the requirements under Chapter 7, Part 1, Division 2 of the *Environmental Protection Act 1994*, the administering authority must be notified through the Pollution Hotline and in writing, as soon as possible, but within 48 hours of becoming aware of any of the following events:
- a) any unauthorised significant disturbance to land
 - b) potential or actual loss of structural or hydraulic integrity of a dam
 - c) when the level of the contents of any regulated dam reaches the mandatory reporting level
 - d) when a regulated dam will not have available storage to meet the design storage allowance on 1 November of any year
 - e) potential or actual loss of well integrity
 - f) when the seepage trigger action response procedure required under condition (Water 13(g)) is or should be implemented
 - g) unauthorised releases of any volume of prescribed contaminants to waters
 - h) unauthorised releases of volumes of contaminants, in any mixture, to land greater than:
 - i) 200 L of hydrocarbons; or
 - ii) 1 000 L of brine; or
 - iii) 5 000 L of untreated coal seam gas water; or
 - iv) 5 000 L of raw sewage; or
 - v) 10 000 L of treated sewage effluent.
 - i) groundwater monitoring results from a landholder's active groundwater bore monitored under the stimulation impact monitoring program which is a 10% or greater increase from a previous baseline value for that bore and which renders the water unfit for its intended use
 - j) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.

- A13** 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.
 - g) procedures to notify the administering authority, local government and any potentially impacted landholder.
- A14** All plant and equipment must be maintained and operated in their proper and effective condition.
- A15** 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.
- A16** Measures to prevent fauna being harmed from entrapment must be implemented during the construction and operation of well infrastructure, dams and pipeline trenches.
- A17** Petroleum activities must not cause environmental nuisance at a sensitive place, other than where an alternative arrangement is in place.
- A18** 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.
- A19** All plans, procedures, programs, reports and methodologies required under this environmental authority must be written and implemented.

- A20** All documents required to be developed under this environmental authority must be kept for five years.
- A21** 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.
- A22** 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.
- A23** All reasonable and practicable measures must be taken to prevent or minimise environmental harm caused, or likely to be caused, by the activities.
- A24** Unless specifically authorised by a condition of this environmental authority, this environmental authority does not authorise a relevant act which is:
- an act that causes serious or material environmental harm or an environmental nuisance; or
 - an act that contravenes a noise standard; or
 - a deposit of a contaminant, or release of stormwater run-off, mentioned in section 440ZG of the *Environmental Protection Act 1994*.
- A25** **Contravention of conditions**
- Unless specifically authorised by a condition of this environmental authority, details of any contravention of a condition of this environmental authority must:
- be reported to the administering authority within 24 hours of becoming aware of the contravention; and
 - include the nature and circumstances of the contravention and any immediate actions taken.
- A26** As soon as reasonably practicable but no later than 20 business days of a report made under **condition A25** (or a longer period agreed to in writing by the administering authority), an investigation must be undertaken to determine:
- the potential circumstances and actions that may have contributed to the contravention; and
 - reasonable and practicable measures that will be implemented to address the cause of the contravention to prevent future contraventions of this nature.
- A27** As soon as reasonably practicable but no later than 20 business days of investigating a contravention under **condition A26** (or a longer period agreed to in writing by the administering authority), the reasonable and practicable measures identified in the investigation must be implemented.
- A28** The outcome of the investigation carried out under **condition A26** and the reasonable and practicable measures implemented under **condition A27** must be recorded.
- A29** **Record keeping**
- Unless otherwise specified by a condition of this environmental authority, records must be:
- kept for the period outlined in **Table A2 – Record keeping requirements**; and
 - provided to the administering authority upon request and in the format requested.

Table A2 – Record keeping requirements

Description of records	Retention requirement
Monitoring results	Retain for 15 years
All other records	Retain for 5 years

SCHEDULE B – AIR

- B1** The holder of the environmental authority must ensure that:
- a) Dust or particulate matter or both resulting from a petroleum activity must not cause an environmental nuisance at any sensitive place or commercial place.
 - b) When requested by the administering authority, dust and particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive place or commercial place, and the results must be notified within 10 business days to the administering authority following completion of monitoring, analysis and interpretation of results.
- B2** All monitoring or 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.

SCHEDULE C – WATER

- C1** Contaminants must not be directly or indirectly released to any waters except as permitted under this environmental authority.
- C2** Produced water is not authorised to be released into the environment.

Authorised impacts to wetlands

- C3** 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.

Authorised activities in waters

- C4** Petroleum activities 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.
 - b) 100m of a watercourse.
- C5** Despite **condition C4** only construction or maintenance of linear infrastructure is permitted in or within any wetland of general environmental significance or in a watercourse.
- C6** 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;
 - b) ingress of saline water into freshwater aquifers; or draining; or
 - c) draining or filling of the wetland beyond the minimum area practicable to carry out the works.
- C7** 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) 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.
- C8** 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.
- C9** The construction or maintenance of linear infrastructure 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 C1—Release limits for construction or maintenance of linear infrastructure**.

Table C1—Release limits for construction or maintenance of linear infrastructure

Water Quality Parameters	Units	Water Quality Limits
Turbidity	Nephelometric Turbidity Units (NTU)	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 50 metre 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 50 meters downstream of the construction or maintenance activity.
		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 50 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 55NTU applies, measured within 50 metres downstream of the construction or maintenance activity.
Hydrocarbons	-	For a wetland of other environmental value, or watercourse, no visible sheen or slick

C10 Monitoring to demonstrate compliance with **condition C9** must be undertaken every 12 hours:

- once construction or maintenance of linear infrastructure has commenced in a wetland of general environmental significance or watercourse; and
- for 48 hours after construction or maintenance of linear infrastructure in a wetland of other environmental value or watercourse has ceased.

Register of activities in wetlands and watercourses

C11 A Linear Infrastructure Register must be kept of all linear infrastructure construction and maintenance activities in a wetland of general environmental significance and watercourses, which must include:

- location of the activity (e.g. GPS coordinates (GDA94) and watercourse name)
- estimated flow rate of surface water at the time of the activity
- duration of works, and
- results of impact monitoring carried out under condition (C10).

Activities in River Improvement Areas

C12 Measures must be taken to minimise negative impacts to, or reversal of, any river improvement works carried out in River Improvement Areas by Queensland's River Improvement Trusts.

Activities in Floodplains

C13 On floodplains, the activity must not:

- concentrate flood flows in a way that will or may cause or threaten a negative environmental impact; or
- divert flood flows from natural drainage paths and alter flow distribution; or
- increase the local duration of floods; or

- d) increase the risk of detaining flood flows.

Seepage monitoring program

C14 By 19 February 2025 a Seepage Monitoring Program must:

- a) be developed by an appropriate qualified person to detect any seepage of contaminants to groundwater from regulated dams; and
- b) implemented at all times.

C15 The seepage monitoring program required by **condition C14** must include but not necessarily be limited to:

- (a) identification of the structures for which seepage will be monitored;
- (b) identification of parameters to be monitored that represent the potential or actual contaminants held in the structures;
- (c) identification of trigger values for parameters to be monitored, that are suitable for early detection of contaminant releases from the structures;
- (d) installation of background seepage monitoring bores where groundwater quality will not have been affected by the activity 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 seepage of contaminants from the structures (i.e. within the potential area of impact);
 - ii) provide for the early detection of negative impacts prior to reaching groundwater dependent ecosystems, landholder's active groundwater bores, or water supply bores;
 - iii) provide for the early detection of negative impacts prior to reaching migration pathways to other formations (i.e. faults, areas of unconformities known to connect two or more formations);
- (f) monitoring of groundwater at each background and seepage monitoring bore at least quarterly for the parameters required by **condition C15(b)**;
- (g) seepage trigger action response procedures to be implemented:
 - i) if the monitoring of parameters required by **condition 15(b)** detects exceedances of the trigger values required by **condition C15(c)**; or
 - ii) 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 to ensure the Program includes all structures that are used to store contaminants, including any structures that have been constructed in the preceding 12 months.

C16 If the administering authority requests changes to the Seepage Monitoring Program required by **condition C14** via written correspondence, then the Seepage Monitoring Program must be amended in accordance with the requested changes and a revised copy provided to the administering authority within 30 business days of the date of the request.

Seepage monitoring bore drill logs

C17 A bore drill log must be completed for each seepage monitoring bore in condition (C15) which must include:

- a) bore identification reference and geographical coordinate location (GDA2020)
- 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) identification of the target formation of the bore.

C18 The method of water sampling required by this environmental authority must comply with that set out in the most recent version of the Department of Environment and Resource Management's "Monitoring and Sampling Manual 2009 – Environmental Protection (Water) Policy 2009 Version 2 September 2010".

Erosion and Sediment Control

- C19** 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).

SCHEDULE D – STORMWATER

- D1** The holder must implement and maintain measures to minimise the likelihood of the release of contaminated stormwater from the place where the activities are carried out to any stormwater drain or any waters.
- D2** The maintenance and cleaning of vehicles and any other equipment or plant must be carried out in areas from where the resultant contaminants are unlikely to be released into any waters, roadside gutter or stormwater drainage system.
- D3** Any spillage of wastes or contaminants that may cause environmental harm must be effectively contained and/or cleaned up as quickly as practicable.
- D4** Any spillage of wastes or contaminants must not be cleaned up by hosing, or otherwise releasing such waste or contaminants to any stormwater drainage system, roadside gutter or waters.

SCHEDULE E – DAMS

- E1** The dams used for the storage of contaminants must be maintained:
- a) so as to prevent any release of contaminants through the bed or banks of the pond to any waters (including groundwater);
 - b) so that a freeboard of not less than 0.5 metres is maintained at all times; and
 - c) so as to ensure the stability of the dams' construction.

- E2** Dams must be securely fenced and / or screened to:
- a) exclude and prevent the entrapment of livestock and wildlife; and
 - b) limit habitats for the introduction or spread of pests.

Assessment of Hazard Category

- E3** The consequence category of any dam 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), as amended from time to time.
- E4** The hazard assessment required under **condition E3** must occur in any of the following situations:
- a) prior to the design and construction of the dam;
 - b) prior to any change in its purpose or its stored contents;
 - c) for an existing low hazard dam, within 120 business days of issuing this environmental authority.
- E5** A consequence assessment report and a certification must be prepared for each structure as assessed and the report may include a consequence assessment for more than one structure.
- E6** 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).
- E7** Only low hazard dams are permitted under this authority.

Decommissioning

- E8** The holder of this environmental authority must not abandon any dam but must decommission each dam such that ongoing environmental harm is prevented.

Dams and evaporation ponds

- E9** The holder of the environmental authority must ensure all dams and evaporation ponds are:
- (a) designed, constructed, operated, maintained and decommissioned in accordance with the criteria outlined in the guideline *Structures which are dams or levees constructed as part of environmentally relevant activities* (ESR/2016/1934); and
 - (b) not located within 100 m of any natural drainage feature (i.e. watercourse, waterway, wetland or lake).
- E10** For dams, ponds and other excavations which are constructed as part of the petroleum activities, the holder of the environmental authority must where relevant either:
- (a) provide safe access for livestock where contained water quality is adequate for live stock; or
 - (b) construct and maintain bunds and/or fences sufficient to exclude livestock.

SCHEDULE F – LAND

- F1** Contaminants must not be directly or indirectly released to land except for those releases authorised by this environmental authority.
- F2** Top soil must be managed in a manner that preserves its biological and chemical properties.
- F3** 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.
- F4** Acid sulfate soils must be treated and managed in accordance with the latest edition of the *Queensland Acid Sulfate Soil Technical Manual*.
- F5** Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.
- F6** Pipeline operation and maintenance must be in accordance, to the greatest practicable extent, with the relevant section of the *APGA Code of Environmental Practice: Onshore Pipelines (2017)* (or more recent editions).
- F7** Pipeline trenches must be backfilled and topsoils reinstated within three months after pipe laying.
- F8** 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.
- F9** 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 pest species, and which is established and growing.

Land management

- F10** The holder of the environmental authority must:
- (a) take all reasonable and practicable measures to minimise disturbance to land in order to prevent land degradation; and
 - (b) ensure that for land that is to be significantly disturbed by petroleum activities, the top layer of the soil profile is removed and
 - i) stockpiled in a manner that will preserve its biological and chemical properties; and
 - ii) used for rehabilitation purposes.

Chemical Storage

- F11** Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.

SCHEDULE G – BIODIVERSITY**Confirming biodiversity values**

- G1** 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.
- G2** A suitably qualified person must develop and certify a methodology so that **condition G1** can be complied with and which is appropriate to confirm on-the-ground biodiversity values.
- G3** Where mapped biodiversity values differ from those confirmed under **conditions G1 and G2**, petroleum activities may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity value.
- G4** Vegetation clearing must be undertaken under the direction of a fauna spotter-catcher that is an appropriately qualified person, to identify and relocate and minimise impacts to native fauna.
- G5** Records of vegetation clearing undertaken under **condition G4** must include:
- a. details of the area cleared;
 - b. the methodology used to identify and relocate and minimise impacts to fauna;
 - c. any Prescribed Environmental Matters encountered;
 - d. GPS Co-ordinates for the location of Prescribed Environmental Matters encountered;
 - e. Any native fauna relocated, injured or killed;
 - f. any identified key habitat features and a relevant description of the area.

Planning for land disturbance

- G6** 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 otherwise 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.

Planning for land disturbance – linear infrastructure

- G7** 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.
- G8** 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 G1 – Authorised Petroleum Activities in Environmentally Sensitive Areas and their protection zones**.

Table G1 – Authorised petroleum activities in Environmentally Sensitive Areas and their protection zones

Environmentally sensitive area	Within the environmentally sensitive area	Primary protection zone of the environmentally sensitive area	Secondary protection zone of the environmentally sensitive area
Category A environmentally sensitive areas	No petroleum activities permitted.	Only <u>low impact petroleum activities</u> permitted.	Only <u>essential petroleum activities</u> permitted.
Category B environmentally sensitive areas 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 environmentally sensitive areas that are 'endangered' regional ecosystems	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.	Only essential petroleum activities permitted.
Category C environmentally sensitive areas that are 'nature refuges'	Only low impact petroleum activities permitted.	Only low impact petroleum activities permitted.	
Category C environmentally sensitive areas that are on the 'essential habitat map', or 'of concern' regional ecosystems	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.	
Category C environmentally sensitive areas that are protected wildlife habitat	Only essential petroleum activities permitted	Only essential petroleum activities permitted	
Category C environmentally sensitive areas that are 'regional parks' (previously known as 'resources reserves')	Only essential petroleum activities permitted.	Only essential petroleum activities permitted.	
Category C environmentally sensitive areas 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.	

- G9** Despite **condition G6** of this environmental authority, the infrastructure (and associated activities necessary for construction, operational and maintenance purposes) in **Table G2 – Authorised Petroleum Activities Disturbance** are permitted within the 500m buffer zone of a Category B ESA that is Endangered Regional Ecosystem (ERE) but not within 50m of any ERE at the location specified.

Table G2 – Authorised Petroleum Activities Disturbance

Tenure	Description of Infrastructure	Area (ha)	Location (GDA94) Latitude; Longitude
PL213	West Noorindooo 1 (WN1) well	1	-27.12593; 149.18279
	Churchie west 1 (CW1) well	1	-27.11197; 149.18214
	WN1 to CW1 well pipeline	4	-27.12593; 149.18279 to -27.12593; 149.18279
	Flow line from Churchie West 1 to Churchie Plant	0.75	-27.111955; 149.182131 -27.110303; 149.183848

- G10** Petroleum activities disturbance authorised in **condition G7** must be in accordance with the scale and intensity of activities outlined below:

- a) the drill site must not disturb an area greater than 10,000m²;
- b) the flare pit size must not be greater than 10m²;
- c) the mud pit size must not be greater than 600m²;
- d) topsoil stripping must be limited to the sump and flare pit area;
- e) clearing of mature trees must be prevented or minimised during drill site construction;
- f) existing access and fence line tracks must be used where possible and any new tracks must be constructed by linking natural clearings where possible; and
- g) track construction involving blade clearing of established ground cover vegetation and/or clearing of mature trees must be prevented or minimised.

Vegetation management

- G11** The holder of the environment authority must:

- a) take all reasonable and practicable measures to prevent or minimise disturbance to vegetation by petroleum activities and manage the effects of clearing to prevent the loss of biodiversity, maintain ecological processes and prevent land degradation.
- b) The holder of the environmental authority must not clear:
 - (i) in, or within 50 metres of, the high bank of a watercourse;
 - (ii) in, or within 50 metres of, the static high water mark of wetlands, lakes or springs;
 - (iii) in a way that isolates clumps or dissects corridors of vegetation;
 - (iv) on slopes greater than 5%;
 - (v) on dispersible soils;
 - (vi) in existing or potential discharge areas; and
 - (vii) in areas subject to waterlogging or at risk of waterlogging as a result of clearing; except for necessary construction and maintenance of roads, tracks and pipelines where there is no suitable alternative site for the road, track or pipeline.
- c) The holder of the environmental authority must not clear in areas with a high probability of acid sulfate soils unless the clearing is conducted in accordance with an acid sulfate soil environmental management plan prepared in accordance with the most current edition of the Queensland Acid

Sulfate Soil Technical Manual (available on the Queensland government website).

G12 Prescribed environmental matters - Matters of State environmental significance

Impacts to Prescribed Environmental Matters (PEMs) are only authorised for the total area and location of impact listed in *Table G3 – Authorised impacts to PEMS* and shown in Appendix 1 *Figure 1 – Location of authorised impacts to PEMS*.

Table G3 – Authorised impacts to PEMS

Prescribed Environmental Matters	Location of impact	Significant residual impact (SRI) and Offset Required	Maximum extent of impact of total area on site
PROTECTED WILDLIFE HABITAT Habitat for an animal that is critically endangered wildlife, endangered wildlife or vulnerable wildlife or a special least concerned animal.			
<i>Tachyglossus aculeatus</i> - Short-beaked echidna	PL213 within Lot 2/E533 and Lot 7/E532	No	4 ha

G13 All impacts to PEMS must be determined, documented, and mapped by an appropriately qualified person.

G14 Records demonstrating compliance with **condition G11** and *Table G3 - Authorised impacts to Prescribed Environmental Matters* must be:

- a) completed by an appropriately qualified person; and
- b) kept for the life of the environmental authority

G15 Spatial records sufficient to demonstrate compliance with **conditions G1 to G12** 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 matter.

SCHEDULE H – NOISE

- H1** Noise from the activity not exceed the noise limits specified in the **Table H1 – Noise limits**, at any sensitive place or commercial place.

Table H1 – Noise limits

Time period	Metric	Maximum noise limit at a sensitive place		
		<u>Short term noise event</u>	<u>Medium term noise event</u>	<u>Long term noise event</u>
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
Note: The noise limits in <i>Table H1 – Noise limits</i> have been set based on the following deemed background noise levels (LABG): 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				

- H2** All monitoring of noise emissions from the activity must be undertaken when the activity is in operation. The following must be recorded when undertaking monitoring of noise emissions from the activity:
- all equipment in operation at the time of the noise measurement; and
 - the mode of operation at the time of the noise measurement.
- H3** Noise measurements must be taken using a class 1 sound level meter as classified under AS IEC 61672.
- H4** 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).
- H5** Emission of substantial low frequency noise must not exceed either **H5(a)** and **H5(b)** below, or **H5(c)** and **H5(d)** below:
- 60 dB(C) measured outside the relevant sensitive place; and
 - the difference between the external A-weighted and C-weighted noise levels is no greater than 20 dB; or
 - 50 dB(Z) measured inside the sensitive place; and
 - the difference between the internal A-weighted and Z-weighted ($Max L_{pT}$) noise levels is no greater than 15 dB.
- H6** Where alternative arrangements are in place with an affected person(s) at a sensitive receptor, the noise limits in Schedule H: *Table 1 – Noise limits at Sensitive Receptors* do not apply at that sensitive receptor for the duration for which the alternative arrangements are in place.

SCHEDULE I – WASTE

- I1** 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.
- I2** Waste, including waste fluids, but excluding waste used in closed-loop systems, must be transported off-site for lawful re-use, remediation, recycling or disposal, unless the waste is specifically authorised by conditions of this environmental authority to be disposed of or used on site.
- I3** 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.
- I4** Green waste may be used on-site for either rehabilitation or sediment and erosion control, or both.
- I5** 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*.
- I6** 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.
- I7** Produced water may be re-used in drilling and well hole activities.
- I8** 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.
- I9** Produced water may be used for construction and operation 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.
- I10** If there is any indication that any of the circumstances in condition **I8(b)(i) to I8(b)(iv)** or **I9(a) to I9(d)** is occurring, the use must cease immediately and the affected area must be remediated without delay.
- I11** Treated sewage effluent or greywater can be released to land provided it:
- a) for a treatment system with a daily peak design capacity of between 150 EP and 1500 EP, meets the secondary treated class B standards; or
 - b) for a treatment system with a daily peak design capacity of less than 150 EP, meets the secondary treated class C standards.
- I12** The release of treated sewage effluent or greywater authorised in **condition I11** must:

- a) be to a fenced and signed contaminant release area;
- b) not result in pooling or run-off or aerosols or spray drift or vegetation die-off;
- c) be to a contaminant release area that is kept vegetated with groundcover, that is:
 - i) not a 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.

I13 Notwithstanding **condition I11**, treated sewage effluent that meets or exceeds secondary treated class A standards may be used for dust suppression or construction activities, provided the use meets the criteria in **condition I8 or I9**, as relevant to the use.

I14 Sewage pump stations must be fitted with a:

- a) stand-by pump; and
- b) high level alarm to warn of imminent pump station overflow, that operates without mains power or with a back-up power source that starts automatically in the event of a power failure.

I15 If sumps are used to store residual drilling material or drilling fluids, they must only be used for the duration of drilling activities.

I16 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.

I17 Records must be kept to demonstrate compliance with **conditions I15 and I16**.

SCHEDULE J – WELLS, STIMULATION AND PIPELINES

- J1** Pipeline construction, operation and maintenance must be in accordance with the most current edition of the *APGA Code of Environmental Practice: Onshore Pipelines*.
- J2** Oil based or synthetic based drilling muds must not be used in the carrying out of the activity.
- J3** The activity must not cause:
- a) the connection of the target gas producing formation and another aquifer; or
 - b) the connection of any aquifers.
- J4** Practices and procedures must be in place to detect, as soon as practicable any:
- a) connection of a target gas producing formation and another aquifer caused by the activity; and
 - b) connection of any aquifers caused by the activity.
- J5** The activity must not cause a decline in water pressure or water levels in a spring.
- J6** Other than as permitted by this environmental authority, the activity must not adversely impact the water quality of groundwater

Well stimulation

- J7** Polycyclic aromatic hydrocarbons or products that contain polycyclic aromatic hydrocarbons must not be used in stimulation fluids in concentrations above the reporting limit.
- J8** Stimulation activities must not adversely impact the water quality of groundwater, other than in the stimulation impact zone for a well during stimulation of that well.

Stimulation risk assessment

- J9** Prior to undertaking stimulation of a well, an individual site-specific risk assessment must be undertaken for each well to ensure that stimulation of the well will not cause environmental harm.
- J10** The stimulation risk assessment in **condition J9** must include for each well, but not necessarily be limited to:
- a) identification of issues at a relevant geospatial scale such that changes to features and attributes relevant to each well are adequately described;
 - b) a process description of the stimulation activity to be applied, including equipment and a comparison to best international practice;
 - c) provide details of where, when and how often stimulation is to be undertaken on the tenures covered by this environmental authority;
 - d) a geological model of the field to be stimulated including geological names, descriptions and depths of the target gas producing formations;
 - e) naturally occurring geological faults;
 - f) seismic history of the region (e.g. earth tremors, earthquakes);
 - g) proximity of overlying and underlying aquifers;
 - h) description of the depths that aquifers with environmental values occur, both above and below the target gas producing formation;
 - i) identification and proximity of landholder' active groundwater bores in the area where stimulation activities are to be carried out;
 - j) the environmental values of groundwater in the area;

- k) 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;
- l) description of overlying and underlying formations in respect of porosity, permeability, hydraulic conductivity, faulting and fracture propensity;
- m) consideration of barriers or known direct connections between the target gas producing formation and the overlying and underlying aquifers;
- n) a description of the well mechanical integrity testing program;
- o) process control and assessment techniques to be applied for determining extent of stimulation activities (e.g. microseismic measurements, modelling etc.);
- p) practices and procedures to ensure that the stimulation activities are designed to be contained within the target gas producing formation;
- q) groundwater transmissivity, flow rate, hydraulic conductivity and direction of flow;
- r) 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;
- s) 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;
- t) 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;
- u) an environmental hazard assessment of use, formation of, and detection of polycyclic aromatic hydrocarbons in stimulation activities;
- v) identification and an environmental hazard assessment of using radioactive tracer beads in stimulation activities;
- w) an environmental hazard assessment of leaving chemical compounds in stimulation fluids in the target gas producing formation for extended periods subsequent to stimulation;
- x) human health exposure pathways to operators and the regional population;
- y) risk characterisation of environmental impacts based on the environmental hazard assessment;
- z) potential impacts to landholder bores as a result of stimulation activities;
- aa) 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
- bb) 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.

J11 Stimulation of a well must not occur if the risk assessment in **conditions J9 and J10** identifies that stimulation of that well would potentially:

- a) impact:
 - i) a spring; or
 - ii) a landholders' active groundwater bore; or
- b) cause:
 - i) environmental harm outside of the target gas producing formation; or

- ii) the connection of the target gas producing formation and another aquifer.

Water quality baseline monitoring

- J12** Prior to undertaking any stimulation activity, a baseline bore assessment must be undertaken of the water quality of the following bores:
- 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.
 - 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.
 - any other bore that could potentially be adversely impacted by the stimulation activities in accordance with the findings of the risk assessment required by **conditions J9 and J10**.
- J13** 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 J14**.
- J14** The bore assessments in **condition J12** must include monitoring of:
- pH;
 - electrical conductivity [mS/m];
 - turbidity [NTU];
 - total dissolved solids [mg/L];
 - temperature [°C];
 - dissolved oxygen [mg/L];
 - dissolved gases (methane, chlorine, carbon dioxide, hydrogen sulfide) [mg/L];
 - alkalinity (bicarbonate, carbonate, hydroxide and total as CaCO₃) [mg/L];
 - sodium adsorption ratio (SAR);
 - anions (bicarbonate, carbonate, hydroxide, chloride, sulphate) [mg/L];
 - cations (aluminium, calcium, magnesium, potassium, sodium) [mg/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) [mg/L];
 - total petroleum hydrocarbons [mg/L];
 - BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para- and meta-xylene, and total xylene) [mg/L];
 - polycyclic aromatic hydrocarbons (including but not necessarily being limited to: naphthalene, phenanthrene, benzo[a]pyrene) [mg/L];
 - sodium hypochlorite [mg/L];
 - sodium hydroxide [mg/L];
 - formaldehyde [mg/L];
 - ethanol [mg/L]; and
 - gross alpha + gross beta or radionuclides by gamma spectroscopy [Bq/L].

Water impact monitoring program

- J15** Prior to the carrying out of stimulation activities a Water Impact Monitoring Program must be:
- developed by an appropriately qualified person to detect potential impacts to groundwater caused by the activity; and

b) implemented at all times.

J16 The Water Impact Monitoring Program in **condition J15** must:

a) be able to detect:

- i) the connection of the target gas producing formation with another aquifer;
- ii) the connection of any aquifers caused by the activity;
- iii) a decline in water pressure or water levels in a spring; and
- iv) adverse impacts to the water quality of groundwater caused by the activity;

b) consider the findings of the risk assessment required by in **conditions J9 and J10**;

c) include monitoring of:

- i) the stimulation fluids to be used in stimulation activities at sufficient frequency and which sufficiently represents the quantity and quality of the fluids used;
- ii) flow back waters from stimulation activities at sufficient frequency and which sufficiently represents the quality of that flow back water;
- iii) flow back waters from stimulation activities at sufficient frequency and accuracy to demonstrate that maximum practicable quantity of the volume used in stimulation activities has been extracted from the stimulated well; and
- iv) all bores in accordance with **condition J12**:

(1) at the following minimum frequency

- monthly for the first six (6) months subsequent to stimulation activities being undertaken; then
- annually for the first five (5) years subsequent to stimulation being undertaken or until all of the analytes and physico-chemical parameters listed in **conditions J14**, are not detected in concentrations above baseline bore monitoring data collected in accordance with **condition J12** for that bore on two (2) consecutive monitoring occasions; and

(2) for the following analytes and physico-chemical parameters:

- analytes and physico-chemical parameters relevant to baseline bore and risk assessments to enable data referencing and comparison including, but not necessarily being limited to the analytes and physico-chemical parameters in **condition J14**; and
- 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.

J17 If the administering authority requests changes to the Water Impact Monitoring Program in **conditions J15 and J16** via written correspondence, then the Water Impact Monitoring Program must be amended in accordance with the requested changes and a revised copy provided to the administering authority within 30 business days of the date of the request.

Annual water monitoring report

J18 An Annual Water Monitoring Report must be prepared by 1 October each year and made available to any potentially affected landholder or the administering authority upon request.

J19 The Annual Water Monitoring Report in **condition J18** must:

- a) be prepared by an appropriately qualified person;
- b) analyse and summarise all monitoring data collected under Water Impact Monitoring Program required by **condition J15** for the previous financial year; and

- c) assess whether compliance with **conditions J3, J5, and J6** has been achieved.

Stimulation impact monitoring program

- J20** A stimulation impact monitoring program must be developed prior to the carrying out of stimulation activities which must be able to detect adverse impacts to water quality from stimulation activities and must consider the findings of the risk assessment required by **conditions J13 and J14** 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 J12**.
- J21** 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 J12**; 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.
- J22** The stimulation impact monitoring program must provide for monitoring of the bores in **condition J20(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 J14**, are not detected in concentrations above baseline bore monitoring data on two (2) consecutive monitoring occasions.
- J23** The results of the stimulation impact monitoring program must be made available to any potentially affected landholder upon request by that landholder.

SCHEDULE K - REHABILITATION**Rehabilitation planning**

K1 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 K2 to K7**, inclusive; and
 - (2) provide for appropriate monitoring and maintenance; and
- c) be implemented

K2 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.

Progressive rehabilitation criteria

K3 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 K4 or K5** 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; and
- c) surface drainage lines are re-established;
- d) topsoil 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.

Final rehabilitation acceptance criteria in areas that do not have biodiversity values

K4 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 against either the highest ecological value of the 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-disturbed 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.

Final rehabilitation acceptance criteria in areas with biodiversity values

- K5** 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 K2**:
- 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 ecosystems are present
- K6** **Conditions K3, K4 and K5** continue to apply after this environmental authority has ended or ceased to have effect.

Transfer of infrastructure

- K7** When no longer required for the carrying out of the activity, all transfer category 2 assets must be decommissioned and be either:
- a) rehabilitated in accordance with **conditions K3, K4 and K5**; or
 - b) where agreed to in writing by the relevant landholder, left in-situ and transferred to the landholder's ownership.
- K8** Transfer category 2 assets subject to **condition K7** must not be transferred to a landholder unless:
- a) the asset and the land on which it is located is safe, stable, non-polluting and able to support the post-activity land use at the time of transfer;
 - b) the landholder has agreed in writing to the transfer in a documented agreement that is legally binding; and
 - c) an accurate record (including spatial records) has been made in respect of each asset transferred to the landholder.
- K9** Records of each asset transferred to a landholder must be current and complete.

Definitions

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

Word or Phrase	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—<i>Heavy metals and metalloids in Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i>; 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 <u>ecosystem function</u> adjacent to an area of <u>significant disturbance</u> , or where there is no <u>ecosystem function</u> , 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 <i>Environmental Protection Act 1994</i>—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.
alternative arrangement	means a written agreement about the way in which a particular <u>environmental nuisance</u> impact will be dealt with at a <u>sensitive place</u> , 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 <u>sensitive place</u> , 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 <u>rehabilitated</u> 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 return period	means the most current 12- <u>month</u> 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 <u>exploration well</u> .

Word or Phrase	Definition																																
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 <u>residual drilling materials</u>, means the <u>residual drilling material</u> meet the following quality standards: <u>Part A</u> In all cases: <table border="1"> <tr> <th>Parameter</th><th>Maximum concentration</th></tr> <tr> <td>pH</td><td>6 to 10.5 (range)</td></tr> <tr> <td>Electrical Conductivity</td><td>20 dS/m (20,000 µS/cm)</td></tr> <tr> <td>Chloride*</td><td>8000 mg/L</td></tr> </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"> <tr> <th>Parameter</th><th>Maximum concentration</th></tr> <tr> <td>Arsenic</td><td>20 mg/kg</td></tr> <tr> <td>Selenium</td><td>5 mg/kg</td></tr> <tr> <td>Boron</td><td>100 mg/kg</td></tr> <tr> <td>Cadmium</td><td>3 mg/kg</td></tr> <tr> <td>Chromium (total)</td><td>400 mg/kg</td></tr> <tr> <td>Copper</td><td>100 mg/kg</td></tr> <tr> <td>Lead</td><td>600 mg/kg</td></tr> </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"> <tr> <th>TPH</th><th>Maximum concentration</th></tr> <tr> <td>C6-C10</td><td>170 mg/kg</td></tr> <tr> <td>C10-C16</td><td>150 mg/kg</td></tr> <tr> <td>C16-C34</td><td>1300 mg/kg</td></tr> </table>	Parameter	Maximum concentration	pH	6 to 10.5 (range)	Electrical Conductivity	20 dS/m (20,000 µS/cm)	Chloride*	8000 mg/L	Parameter	Maximum concentration	Arsenic	20 mg/kg	Selenium	5 mg/kg	Boron	100 mg/kg	Cadmium	3 mg/kg	Chromium (total)	400 mg/kg	Copper	100 mg/kg	Lead	600 mg/kg	TPH	Maximum concentration	C6-C10	170 mg/kg	C10-C16	150 mg/kg	C16-C34	1300 mg/kg
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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 <u>clearing</u> , logging, timber harvesting, or grazing activities have previously occurred, where high densities of weed or <u>pest</u> 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.												
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 <u>waters</u> also known as produced formation water. The term includes all contaminants suspended or dissolved within the water.												
associated works	in relation to a <u>dam</u> , means: - operations of any kind and all things constructed, erected or installed for that <u>dam</u>; and - 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.												

Word or Phrase	Definition
background noise level	means the sound pressure level, measured in the absence of the noise under investigation, as the $L_{A90,T}$ being the A-weighted sound pressure level exceeded for 90% of the measurement time period T of not less than 15 minutes (or $L_{A90,adj,15 mins}$), 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 <u>waters</u> , has the meaning in Schedule 19 of the Environmental Protection Regulation 2019 and— a) includes an area covered, permanently or intermittently, by tidal or non-tidal <u>waters</u>; but b) does not include land adjoining or adjacent to the <u>bed</u> that is from time to time covered by floodwater.
being or intended to be utilised by the landholder or overlapping tenure holder	for <u>significantly disturbed</u> 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 <u>rehabilitation</u> standards for <u>revegetation</u> by the holder of the environmental authority are not required. For <u>dams</u> , 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 <u>dam</u> such that <u>rehabilitation</u> standards for <u>revegetation</u> by the holder of the environmental authority are not required.
biodiversity values	for the purposes of this environmental authority, means <u>environmentally sensitive areas</u> , <u>prescribed environmental matters</u> and <u>wetlands</u> .
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 3 of the Environmental Protection Regulation 2019.
Category B Environmentally Sensitive Area	means any area listed in Schedule 19, Section 3 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 <i>Nature Conservation Act 1992</i> • state forests or timber reserves as defined under the Forestry Act 1959 • Resources Reserve under the <i>Nature Conservation Act 1992</i> • an area validated as from ground-truthing surveys as 'essential habitat' on the Queensland Government Essential Habitat Map in accordance with section 20AC of the <i>Vegetation Management Act 1999</i> for a species of wildlife listed as critically endangered, endangered, vulnerable under the <i>Nature Conservation Act 1992</i>

Word or Phrase	Definition
	• an area validated from ground-truthing surveys as 'protected wildlife habitat' that is category A, B or C on the Remnant Vegetation Management Map, in accordance with section 20A of the Vegetation Management Act 1992, for a species of wildlife listed as critically endangered, endangered or vulnerable under the <i>Nature Conservation Act 1992</i> 'of concern <u>regional ecosystems</u>' that are remnant vegetation and identified in the database called 'RE description database' containing <u>regional ecosystem</u> numbers and descriptions.
certified or certification	in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding <u>dams</u> means, a Statutory Declaration by a <u>suitably qualified person</u> or <u>suitably qualified third party</u> accompanying the written <u>document</u> 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 <u>document</u> • that the person has not knowingly failed to reveal any relevant information or <u>document</u> to the <u>administering authority</u> • that the <u>document</u> addresses the relevant matters for the function and is factually correct; and • that the opinions expressed in the <u>document</u> are honestly and reasonably held.
clearing	has the meaning in the dictionary of the <i>Vegetation Management Act 2000</i> and for vegetation— a) means remove, cut down, ringbark, push over, poison or destroy in any way including by burning, flooding or draining; but b) does not include destroying standing vegetation by stock, or lopping a tree.
closed-loop systems	means using waste on site in a way that does not release waste or contaminants in the waste to the environment.
coal seam gas water	means underground water brought to the surface of the earth, or moved underground in connection with exploring for, or producing coal seam gas.
control measure	has the meaning in section 47 of the Environmental Protection Regulation 2019 and means a device, equipment, <u>structure</u> , or management strategy used to prevent or control the release of a contaminant or waste to the environment.
critically limited regional ecosystem	means the <u>regional ecosystems</u> 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 2019 as the higher <u>equivalent person (EP)</u> for the works calculated using each of the formulae found in the definition for <u>EP</u> .
dam(s)	means a land-based <u>structure</u> or a <u>void</u> that contains, diverts or controls <u>flowable substances</u> , and includes any substances that are thereby contained, diverted or controlled by that land-based <u>structure</u> or <u>void</u> and <u>associated works</u> .

Word or Phrase	Definition
design storage allowance or DSA	means an available volume, estimated in accordance with the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/19337)</i> , published by the <u>administering authority</u> , as amended from time to time, that must be provided in a dam to an annual exceedance probability specified in that Manual.
designated precinct	has the meaning in Part 5 section 15(3) of the Regional Planning Interests Regulation 2014 and means: • for a <u>strategic environmental area</u> mentioned in section 4(1) – the area identified as a designated precinct on the <u>strategic environmental area</u> map for the strategic environmental area; or • if a <u>strategic environmental area</u> is shown on a map in a regional plan – the area identified on the map as a designated precinct for the <u>strategic environmental area</u>
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 <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 <i>Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland</i> (Version 5.1 March 2020) and means the layer making the greatest contribution to the overall biomass of the site and the vegetation community (National Land and Water Resources Audit 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.
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 <i>Environmental Protection Act 1994</i> and means any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value, and includes <u>environmental nuisance</u> . 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.

Word or Phrase	Definition
environmental nuisance	has the meaning in section 15 of the <i>Environmental Protection Act 1994</i> and means unreasonable interference or likely interference with an environmental value caused by— a) aerosols, fumes, light, noise, odour, particles or smoke; or b) an unhealthy, offensive or unsightly condition because of contamination; or c) another way prescribed by regulation.
environmental offset	has the meaning in section 7 of the <i>Environmental Offsets Act 2014</i> .
environmentally sensitive area	means <u>Category A, B or C environmentally sensitive areas</u> (ESAs)
equivalent person or EP	has the meaning under section 3 of the <i>Planning Guidelines For Water Supply and Sewerage</i> , 2010, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the Environmental Protection Regulation 2019 where: • $EP = V/200$ where V is the volume, in litres, of the average dry weather flow of sewage that can be treated at the works in a day; or • $EP = M/2.5$ where M is the mass, in grams, of phosphorus in the influent that the works are designed to treat as the inlet load in a day.
essential petroleum activities	means activities that are essential to bringing the resource to the surface and are only the following: • <u>low impact petroleum activities</u> • 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 • well sites with slope considerations (>2% slope) for cut and fill earthworks and drainage: ○ for single well sites, not exceeding 1.5 hectares disturbance ○ for multi-well sites, not exceeding 2.5 hectares disturbance • well sites including a Communications Tower: ○ for single well sites, not exceeding 1.5 hectare disturbance ○ for multi-well sites, not exceeding 3.0 hectare disturbance • associated infrastructure located on a well site necessary for the construction and operations of wells: ○ water pumps and generators ○ <u>flare pits</u> ○ chemical / fuel storages ○ <u>sumps</u> for <u>residual drilling material</u> and drilling fluids

Word or Phrase	Definition
	○ tanks, or dams which are not significant or high consequence dams to contain wastewater (e.g. <u>stimulation</u> flow back <u>waters</u>, <u>produced water</u>) ○ 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 • on site disposal of <u>residual drilling material</u> as per condition (Waste 16) • communications towers, not exceeding 1.0 hectares disturbance • 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 <u>control measures</u>, <u>rehabilitation</u>).
existing authority	has the meaning in section 94 of the <i>Environmental Offsets Act 2014</i> .
exploration well	means a petroleum well that is drilled to: • explore for the presence of petroleum or natural underground reservoirs suitable for storing petroleum; or • obtain stratigraphic information for the purpose of exploring for petroleum. For clarity, an exploration well does not include an appraisal or development well.
flare pit	has the meaning in the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/19338)</i> , 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 <u>waste fluids</u> which result from the operation of a flare.
floodplains	has the meaning in the <i>Water Act 2000</i> and means an area of reasonably flat land adjacent to a <u>watercourse</u> that— • is covered from time to time by floodwater overflowing from the <u>watercourse</u>; and • does not, other than in an upper valley reach, confine floodwater to generally follow the path of the <u>watercourse</u>; and • has finer sediment deposits than the sediment deposits of any bench, bar or in-stream island of the <u>watercourse</u>.

Word or Phrase	Definition
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 <u>liquids</u> fluids or solids, or a mixture that includes water and any other <u>liquids</u> fluids or solids either in solution or suspension.
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 <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 <u>wetland</u>. A GAB spring includes a spring vent, spring complex or <u>watercourse</u> 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 <u>pest</u> 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.
hydraulic integrity	refers to the capacity of a dam to contain or safely pass <u>flowable substances</u> based on its design.
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.

Word or Phrase	Definition
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 an A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within a 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> 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 <u>administering authority</u> of the <i>Water Act 2000</i> .
linear infrastructure	means powerlines, pipelines, 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 <u>sensitive receptor</u> , 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 <u>dam</u> that is not classified as high or significant as assessed using the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> , published by the <u>administering authority</u> , as amended from time to time.
low impact petroleum activities	means petroleum activities which do not result in the <u>clearing</u> of native vegetation, cause disruption to soil profiles through earthworks or excavation or result in <u>significant disturbance</u> to land which cannot be <u>rehabilitated</u> 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	has the meaning defined in the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Environmental Protection Regulation 2019 and means the 'Map of Queensland Wetland Environmental Values, a <u>document</u> approved by the chief executive on and published by the department, as amended from time to time by the chief executive under Section 19.

Word or Phrase	Definition
Max L _{pA} , 15 min	means the absolute maximum instantaneous A-weighted sound pressure level, measured over 15 minutes.
Max L _{pZ} , 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 <u>sensitive receptor</u> , persists for an aggregate period not greater than five days and does not re-occur for a period of at least four 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 <u>sump</u> by mixing with subsoil and which occurs in accordance with the following <u>methodology</u> : - 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 percent; and - the residual solids is mixed with subsoil in the <u>sump</u> 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 <i>Acts Interpretation Act 1954</i> and means a calendar month and is a period starting at the beginning of any day of one (1) of the 12 named months and ending— • immediately before the beginning of the corresponding day of the next named month; or • if there is no such corresponding day—at the end of the next named month.
NATA accreditation	means accreditation by the National Association of Testing Authorities Australia.
notice of election	has the meaning in section 18(2) <i>Environmental Offsets Act 2014</i> .

Word or Phrase	Definition
pest	Means a plant or animal, other than a native species of plant or animal, that is – a) an <i>Invasive biosecurity matter</i> under the <i>Biosecurity Act 2014</i>* b) a Controlled biosecurity matter or regulated biosecurity matter under the <i>Biosecurity Act 2014</i> or c) a Locally significant invasive species declared under <i>Local Government Act 2009</i> as local law. *See Biosecurity Act 2014, schedule 1, part 3 or 4 or schedule 2, part 2. See also the notes to the Biosecurity Act 2014, schedules 1 and 2. <i>Invasive biosecurity matter</i> is defined to include invasive plants and animals as listed as prohibited and restricted matter in schedules 1 and 2 of the <i>Biosecurity Act 2014</i>.
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 <u>significant disturbance</u> occurring at that location.
predominant species	has the meaning in the <i>Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland</i> (Version 5.1 March 2020) 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 <i>Environmental Protection Act 1994</i> .
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.
primary protection zone	means an area within 200m from the boundary of any <u>Category A, B or C ESA</u> .
produced water	has the meaning in Section 15A of the <i>Petroleum and Gas (Production and Safety) Act 2004</i> and means CSG water or <u>associated water</u> for a petroleum tenure.
protection zone	means the <u>primary protection zone</u> of any <u>Category A, B or C ESA</u> or the <u>secondary protection zone</u> of any <u>Category A or B ESA</u> .
regional ecosystem	has the meaning in the <i>Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland</i> (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. Regional ecosystems of Queensland were originally described in Sattler and Williams (1999). The <i>Regional Ecosystem Description Database</i> (Queensland Herbarium 2013) is maintained by Queensland Herbarium and contains the current descriptions of regional ecosystems.
regulated dam	means any dam in the significant or high consequence category as assessed using the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> (ESR/2016/19339), published by the <u>administering authority</u> , as amended from time to time.

Word or Phrase	Definition
rehabilitation or rehabilitated	means the process of reshaping and <u>revegetating</u> land to restore it to a <u>stable</u> landform and in accordance with acceptance criteria and, where relevant, includes remediation of contaminated land. For the purposes of pipeline rehabilitation, rehabilitation includes <u>reinstatement</u> , <u>revegetation</u> and <u>restoration</u>
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 topography, <u>watercourses</u> , culverts, fences and gates and other landscape(d) features) and is detailed in the <i>Australian Pipeline Industry Association (APIA) Code of Environmental Practice: Onshore Pipelines</i> (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–0.020 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 <u>analogue site</u> . For the purposes of pipelines, restoration applies to final <u>rehabilitation</u> after pipeline decommissioning.
restricted stimulation fluids	has the meaning in section 206 of the <i>Environmental Protection Act 1994</i> and means fluids used for the purpose of <u>stimulation</u> , 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 <u>Category A</u> or <u>Category B ESA</u> means an area within 100 metres from the boundary of the <u>primary protection zone</u> .
secondary treated class A standards	means treated sewage effluent or <u>greywater</u> 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

Word or Phrase	Definition
	- 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 <u>greywater</u> which meets the following standards: - total phosphorous as P, maximum 20mg/L - total nitrogen as N, maximum 30mg/L 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L - suspended solids, maximum 30mg/L - pH, range 6.0 to 8.5 - e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 1000cfu per 100mL, maximum 10000cfu per 100mL.
secondary treated class C standards	means treated sewage effluent or <u>greywater</u> 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 100000cfu per 100mL.
sensitive place	means: - a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel) - a library, childcare centre, kindergarten, school, university or other educational institution - a medical centre, surgery or hospital - a protected area - a public park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment - a work place used as an office or for business or commercial purposes, which is not part of the petroleum activity(ies) and does not include employees accommodation or public roads - for noise, a place defined as a <u>sensitive receptor</u> for the purposes of the <i>Environmental Protection (Noise) Policy 2008</i>.
sensitive receptor	is defined in Schedule 2 of the <i>Environmental Protection (Noise) Policy 2008</i> , and means an area or place where noise is measured.

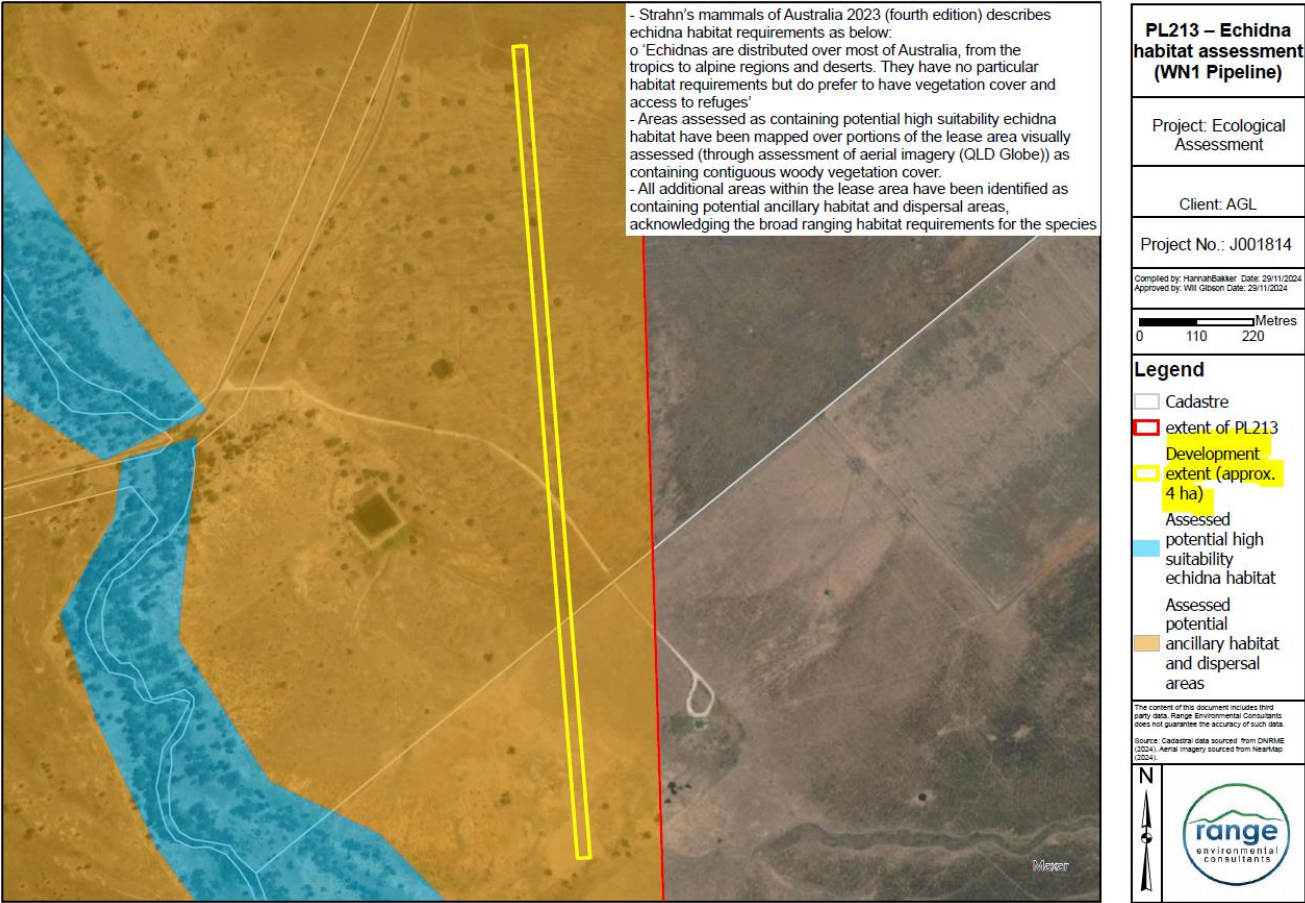
Word or Phrase	Definition
short term noise event	is a noise exposure, when perceived at a <u>sensitive receptor</u> , persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven (7) days. Re-occurrence is deemed to apply where a noise of comparable 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> .
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) it is contaminated land; or (b) it has been disturbed and human intervention is needed to rehabilitate it— I. to a condition required under the relevant environmental authority; or II. if the environmental authority does not require the land to be <u>rehabilitated</u> 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.
Stable	has the meaning in Schedule 8, Part 1 of the Environmental Protection Regulation 2019 and, for a site, means the <u>rehabilitation</u> and <u>restoration</u> 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 <i>Environmental Protection Act 1994</i> and is a condition that requires the holder to give the <u>administering authority</u> a statement of compliance about a <u>document</u> or work relating to a relevant activity. The condition must also state— (a) the criteria (the compliance criteria) the <u>document</u> or work must comply with; and (b) that the statement of compliance must state whether the <u>document</u> or work complies with the compliance criteria; and (c) the information (the supporting information) that must be provided to the <u>administering authority</u> to demonstrate compliance with the compliance criteria; and (d) when the statement of compliance and supporting information must be given to the <u>administering authority</u>.
stimulation	means a technique used to increase the permeability of natural underground reservoir that is undertaken above the formation pressure and involves the addition of chemicals. It includes hydraulic fracturing / hydrofracturing, fracture acidizing and the use of proppant treatments.
stimulation fluid	means the fluid injected underground to increase permeability. For clarity, the term <u>stimulation</u> fluid only applies to fluid injected down well post-perforation.
stimulation impact zone	means a 100m maximum radial distance from the <u>stimulation</u> target location within a gas producing formation.

Word or Phrase	Definition
strategic environmental area	has the meaning in section 11(1) of the <i>Regional Planning Interest Act 2014</i> .
structure	means <u>dam</u> or levee.
subterranean cave <u>GDE</u>	- 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 <u>GDEs</u> are caves dependent on the subterranean presence of groundwater. Subterranean cave <u>GDEs</u> 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. <i>Note: the Subterranean <u>GDE</u> (caves) dataset can be displayed through the Queensland Government WetlandInfo mapping program.</i> <i>Note: the Subterranean <u>GDE</u> (caves) dataset can be obtained from the Queensland Government Information System.</i>
suitably qualified third party	means a person who: (a) has qualifications and experience relevant to performing the function including but not limited to: i. a bachelor's degree in science or engineering; and ii. 3 years' experience in undertaking soil contamination assessments; and (b) is a member of at least one organisation prescribed in Schedule 14 of the Environmental Protection Regulation 2019; and 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 <u>residual drilling material</u> 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.
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.

Word or Phrase	Definition
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.
valid complaint	means all complaints unless considered by the <u>administering authority</u> 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 <i>Waste Reduction and Recycling Act 2011</i> and is the following precepts, listed in the preferred order in which waste and resource management options should be considered— 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 <i>Waste Reduction and Recycling Act 2011</i> 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 <i>Environmental Protection Act 1994</i> and means: a) a river, creek or stream in which water flows permanently or intermittently— i. in a natural channel, whether artificially improved or not; or ii. in an artificial channel that has changed the course of the watercourse. b) Watercourse includes the <u>bed</u> 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, <u>wetland</u> , spring, unconfined surface water, unconfined water in natural or artificial watercourses, <u>bed</u> 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.
well integrity	the ability of a well to contain the substances flowing through it.
wetland	for the purpose of this environmental authority, wetland means:

Word or Phrase	Definition
	• areas shown on the Map of Queensland environmental Values which is a <u>document</u> approved by the chief executive and published by the department, as amended from time to time by the chief executive under section 19 of the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i>; and • areas defined under the Queensland Wetlands Program as permanent or periodic / intermittent inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six (6) metres, and possess one or more of the following attributes: ○ at least periodically, the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle, or ○ the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers, or ○ the substratum is not soil and is saturated with water, or covered by water at some time. The term wetland includes riverine, lacustrine, estuarine, marine and palustrine wetlands; and it does not include a <u>Great Artesian Basin Spring</u> or a subterranean wetland that is a cave or aquifer.
wetland of high ecological significance	means a <u>wetland</u> that meets the definition of a <u>wetland</u> and that is shown as a <u>wetland</u> of 'high ecological significance' or <u>wetland</u> of 'high ecological value' on the <u>Map of Queensland wetland environmental values</u> .
wetland general environmental significance	means a <u>wetland</u> that meets the definition of a <u>wetland</u> and that is shown as a <u>wetland</u> of 'general environmental significance' or <u>wetland</u> of 'other environmental value' on the <u>Map of Queensland wetland environmental values</u> .

Figure 1 – Location of authorised impacts to PEMs.



END OF ENVIRONMENTAL AUTHORITY