

Permit

Environmental Protection Act 1994

Environmental authority EA0001399

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

Environmental authority number: EA0001399

Environmental authority takes effect on DD Month YYYY,

Deleted: 1 October 2021. This is the take effect date.

Environmental authority holder(s)

Name(s)	Registered address
ARROW CSG (AUSTRALIA) PTY LTD	Level 39 111 Eagle Street BRISBANE CITY QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Ancillary 62 - Resource recovery and transfer facility operation - 1(c) - Operating a facility for receiving and sorting, dismantling, baling or temporarily storing category 2 regulated waste	<u>PL304, PL305</u> , PL1044
Schedule 3 - 03 - A petroleum activity that is likely to have a significant impact on a category A or B Environmentally Sensitive Area	<u>PL304, PL305, PL491, PL492, PL494</u> , PL1044
Schedule 3 - 06 - A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam	<u>PL304, PL305</u> , PL1044
Schedule 3 - 08 - A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	<u>PL304, PL305, PL491, PL492, PL494</u> , PL1044
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Deleted: Schedule 3 - 03 - A petroleum activity that is likely to have a significant impact on a category A or B Environmentally Sensitive Area

Deleted: PL304

Environmentally relevant activity/activities	Location(s)
<u>Schedule 2, Ancillary 14 – Electricity Generation, 1: Generating electricity by using gas at a rated capacity of 10MW electrical or more</u>	<u>PL305</u>
<u>Schedule 2, Ancillary 15 – Fuel Burning: using fuel burning equipment that is capable of burning at least 500 kg of fuel in an hour</u>	<u>PL305</u>
<u>Schedule 2, Ancillary 16 – Extractive and screening activities, 1: Extracting, other than by dredging, in a year, the following quantity of material – (b) more than 1000.000 t but not more than 1.000.000 t.</u>	<u>PL305, PL491</u>
<u>Schedule 2, Ancillary 63 – Sewage Treatment, 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of - (a-i) 21 to 100EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme</u>	<u>PL305, PL492</u>
<u>Schedule 2, Ancillary 63 – Sewage Treatment, 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of - (b-i) more than 100 but not more than 1,500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme</u>	<u>PL305, PL492</u>
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Deleted: Ancillary 62 - Resource recovery and transfer facility operation - 1(c) - Operating a facility for receiving and sorting, dismantling, baling or temporarily storing category 2 regulated waste

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Deleted: Schedule 3 - 06 - A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam

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Deleted: Schedule 3 - 08 - A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES

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Deleted: Schedule 3 - 03 - A petroleum activity that is likely to have a significant impact on a category A or B Environmentally Sensitive Area

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Environmentally relevant activity/activities	Location(s)
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Deleted: Schedule 3 - 06 - A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam

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Deleted: Schedule 3 - 08 - A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES

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Deleted: Schedule 3 - 03 - A petroleum activity that is likely to have a significant impact on a category A or B Environmentally Sensitive Area

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Deleted: Schedule 3 - 08 - A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES

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Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

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

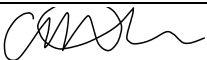
However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect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

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

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

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.

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Signature

1 October 2021

Date

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

Enquiries:

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Privacy statement

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

Obligations under the *Environmental Protection Act 1994*

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

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

Other permits required

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

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Schedule A – General

Authorised resource activities

(A1) This environmental authority authorises the carrying out of the following resource activity(ies):

- a) The petroleum activities¹ listed in **Schedule A, Table 1 – Authorised petroleum activities** to the extent they are carried out in accordance with the activity's corresponding scale and intensity (or both, where applicable);
- b) The following specified environmentally relevant activities (ERAs):
- i. Resource recovery and transfer facility operation – operating a facility for receiving and sorting, dismantling, baling, or temporarily storing (c) category 2 regulated waste;
 - ii. Electricity generation – generating electricity by using gas at a rated capacity of 10MW electrical or more;
 - iii. Fuel burning – using fuel burning equipment that is capable of burning at least 500kg of fuel in an hour;
 - iv. Extractive and screening activities - Extracting, other than by dredging, in a year, the following quantity of material – (b) more than 100,000t but not more than 1,000,000t;
 - v. Sewage treatment – operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (a-i) 21 to 100EP and (b-i) more than 100 but not more than 1,500, if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme;
 - vi. For the specified relevant activities listed in General (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
- c) Incidental activities that are not otherwise specified relevant activities.

Schedule A, Table 1 – Authorised petroleum activities

Tenures	Activity(ies)	Scale / Intensity
PL304 PL305 PL491 PL492 PL494 PL1044	Total coal seam gas wells, including: Core wells Exploration wells Development wells Production wells Monitoring wells	588 wells
	Petroleum activities carried out on a site containing a regulated structure ² (high or significant consequence)	Kedron Dam – one (1) dam / 20 ha Castleden Dam – one (1) dam / 14 ha Punchbowl Dam – one (1) dam / 35 ha

Deleted: Total scale of petroleum activities / infrastructure

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Deleted: Coal seam gas production

Deleted: 1.1 ha per well

Deleted: 588 gas production wells:
[PL304](#) – 95 wells
[PL305](#) – 86 wells
[PL491](#) – 192 wells
[PL492](#) – 151 wells
[PL494](#) – 27 wells
[PL1044](#) – 37 wells

Deleted: Petroleum pipeline

Deleted: [PL304](#) – 90 km
[PL305](#) – 90 km
[PL491](#) – 200 km
[PL492](#) – 190 km
[PL494](#) – 30 km
[PL1044](#) – 50 km

Deleted: 650 km of pipeline

Deleted: [PL304](#) – Kedron Dam
[PL305](#) – Castleden Dam
[PL1044](#) – Punchbowl Dam

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<u>Tenures</u>	<u>Activity(ies)</u>	<u>Scale / Intensity</u>
	<u>category dam</u>	
	<u>Central gas processing facility (Field Compression Station) and a power station, and a multi-point ground flare</u>	<u>One (1) facility / 13.18 ha</u>
	<u>Communication towers</u>	<u>Five (5) Comms towers / 5.00 ha</u>
	<u>Sewage treatment plants</u>	<u>Five (5) facilities / Less than 100EP (each)</u> <u>One (1) facility / 100 to 350EP</u>
	<u>Gravel pit (s)</u>	<u>Two (2) gravel pits / 19.90 ha</u>

Deleted: Total scale of petroleum activities / infrastructure

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1 The petroleum activities are authorised petroleum activities for the purposes of the *Petroleum and Gas (production and Safety) Act 2004* and the *Petroleum Act 1923*.

2 Words underlined are currently defined in **Schedule K – Definitions** or the *Environmental Protection Act 1994* and/or its subordinate legislation

(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.

(General 7 All monitoring must be undertaken by a suitably qualified person. PESCD³¹)

(General 8) If requested by the administering authority in relation to investigating a complaint, monitoring must be commenced within 10 business days.

(General 9) All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests.

(General 10) Notwithstanding condition (General 9), 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.

(General 11) Monitoring and sampling⁴ 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 2018 – *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 or subsequent versions).
- (f) for dust, Australian Standard AS3580.

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³ Conditions that include 'SC' are an existing approved and published standard condition.

⁴ Where monitoring and/or sampling cannot safely be undertaken due to an exceptional circumstance (such as a flood event) preventing a timeframe being met, safe access shall be re-established as soon as practicable and the monitoring and/or sampling shall be subsequently undertaken as soon as possible.

Notification

- (General 12) 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) likely 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. 200 L of stimulation additives; or
 - iii. 500 L of stimulation fluids; or
 - iv. 1,000 L of brine; or
 - v. 5,000 L of untreated coal seam gas water; or
 - vi. 5,000 L of raw sewage; or
 - vii. 10,000 L of treated sewage effluent.
 - (i) the use of restricted stimulation fluids
 - (j) groundwater monitoring results from a landholder's active groundwater bore monitored under the stimulation impact monitoring program which is a 10% or greater increase from a previous baseline value for that bore and which renders the water unfit for its intended use
 - (k) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.

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[¶] (General 13) - Petroleum activities that cause significant disturbance to land must not be carried out until financial assurance has been given to the administering authority as security for compliance with the environmental authority and any costs or expenses, or likely costs or expenses, mentioned in section 298 of the *Environmental Protection Act 1994*.[¶]

[¶] (General 14) - Prior to any changes in petroleum activities which would result in an increase to the maximum significant disturbance since financial assurance was last given to the administering authority, the holder of the environmental authority must amend the financial assurance and give the administering authority the increased amount of financial assurance.[¶]

[¶] (General 15) - If the amount of financial assurance held by the administering authority has been discounted and either the nominated period of financial assurance has ended, or an event or change in circumstance has resulted in the holder of the environmental authority no longer being able to meet one or more of the mandatory pre-requisites or applicable discount criteria, the holder of the environmental authority must amend the financial assurance and give the administering authority the increased amount of financial assurance as soon as practicable.[¶]

Contingency procedures for emergency environmental incidents

- (General 16) Petroleum activities involving significant disturbance to land cannot commence until the development of written contingency procedures for emergency environmental

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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 to environmental emergency incidents.
- (g) procedures to notify the administering authority, local government, and any potentially impacted landholder.

Plant and equipment operation and maintenance

(General 17 PESCC 4) All plant and equipment must be maintained and operated in their proper and effective condition.

(General 18) 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.

(General 19) Measures to prevent fauna being harmed from entrapment must be implemented during the construction, operation, and decommissioning of well infrastructure, dams, pipelines, and pipeline trenches.

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Erosion and sediment control

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- (General 20) 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).

Complaints

- (General 21) Petroleum activities must not cause environmental nuisance at a sensitive place, other than where an alternative arrangement is in place.

Documentation

- (General 22) 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.
- (General 23) All plans, procedures, programs, reports, and methodologies required under this environmental authority must be written and implemented.
- (General 24) All documents required to be developed under this environmental authority must be kept for five years.
- (General 25) 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.
- (General 26) A record of all complaints must be kept including the date, complainant's details, source, reason for the complaint, description of investigations and actions undertaken in resolving the complaint.

Schedule B – Waste Management

General Waste Management

- (Waste 1 and PESCC 24) Measures must be implemented so that waste is managed in accordance with the waste resource management hierarchy and the waste and resource management principles.
- (Waste 2) 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 to be disposed of or used on site under this environmental authority.
- (Waste 3) 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.
- (Waste 4) Green waste may be used on-site for either rehabilitation or sediment and erosion control, or both.
- (Waste 5) 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*.

Pipeline wastewater

- (Waste 6) Pipeline wastewater, 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.

Authorised uses of produced water for petroleum activities

- (Waste 7) Produced water may be re-used in:
- a) drilling and well hole activities; or
 - b) stimulation activities.
- (Waste 8) 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.

- (Waste 9) Produced water may be used for construction and operational 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 does not harm vegetation surrounding the construction site.

(Waste 10) If there is any indication that any of the circumstances in condition (Waste 8)(b)(i) to (Waste 8)(b)(iv)) or (Waste 9)(a) to (Waste 9)(d)) is occurring the use must cease immediately and the affected area must be remediated without delay.

Use of produced water for irrigation activities

(Waste C1) Irrigation of produced water is authorised providing it ensures:

- (a) that soil structure, stability and productive capacity can be maintained or improved;
- (b) toxic effects to crops do not result; and
- (c) yields and produce quality are maintained or improved.

(Waste C2) Irrigation of produced water is authorised providing a written report is provided to the chief executive which:

- (a) certifies that the outcomes in condition (Waste C1) will be achieved;
- (b) states water quality criteria, which has been determined in accordance with the assessment procedures outlined in **Schedule B, Table 1 — Assessment procedures for water quality criteria**; and
- (c) includes a water monitoring program to monitor that the outcomes listed in condition (Waste C1) are being achieved.

Schedule B, Table 1 — Assessment procedures for water quality criteria

Water quality criteria	Assessment procedure
electrical conductivity sodium adsorption ratio pH	<p><i>Salinity Management Handbook</i>, with reference to Chapter 11; and/or <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i>, with reference to Volume 1 Chapter 4 and Volume 3 Chapter 9. The assessment should consider:</p> <ul style="list-style-type: none"> • soil properties within the root zone to be irrigated (e.g., clay content, cation exchange capacity, exchangeable sodium percentage) • water quality of the proposed resource (e.g., salinity, sodicity) • climate conditions (e.g., rainfall) • leaching fractions • average root zone salinity (calculated) • crop salt tolerance (e.g., impact threshold and yield decline) • management practices and objectives (e.g., irrigation application rate, amelioration techniques) • broader landscape issues (e.g., land use, depth to groundwater) • any additional modelling and tests undertaken to support the varied water quality parameters.
heavy metals	<p>Australian and New Zealand Guidelines for Fresh and Marine Water Quality, with reference to Volume 1 Chapters 3 and 4 and Volume 3 Chapter 9.</p> <p>The assessment should aim to derive site specific trigger values (e.g., cumulative contaminant loading limit) based on the methodology provided in the above-mentioned procedure.</p>

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Use of treated sewage or grey water for irrigation activities – Sewage treatment works less than 350EP

(Waste 12) Treated sewage effluent or greywater from a treatment system with a daily peak design capacity of less than 350EP may be released to land provided it:

- (a) is to a fenced and signed contaminant release area(s);
- (b) does not result in pooling or run-off or aerosols or spray drift or vegetation die-off;
- (c) minimises deep drainage below the root zone of any vegetation;
- (d) does not adversely affect the quality of shallow aquifers;
- (e) does not adversely impact soil quality; and
- (f) is to a contaminant release area(s) that is kept vegetated with groundcover, that is:
 - i. not a declared pest species;
 - ii. kept in a viable state for transpiration and nutrient uptake; and
 - iii. grazed or harvested and removed from the contaminant release area as needed, but not less than every three months.

Deleted: (Waste 11) → Treated sewage effluent or greywater can be released to land provided it:
meets or exceeds secondary treated class B standards for a treatment system with a daily peak design capacity of between 150 EP and 1500 EP; or
meets or exceeds secondary treated class C standards for a treatment system with a daily peak design capacity of less than 150 EP.

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Use of treated sewage or grey water for irrigation activities – Sewage treatment works between 100EP and 350EP

(Waste 13) Sewage pump stations must be fitted with:

- (a) a stand-by pump; and
- (b) a visible or audible 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.

(Waste 14) All nominated locations and minimum contaminant release areas in condition (Waste 13) for sewage treatment works with a daily peak design capacity of greater than 100EP must be determined using the Model for Effluent Disposal using Land Irrigation (MEDLI) program or recognised equivalent.

(Waste 15) A copy of the MEDLI program (or recognised equivalent) required in condition E18 must be submitted to the administering authority.

(Waste 16) If, within 20 business days following the submission of the MEDLI program results the administering authority provides comments on the submission, the holder of the environmental authority must:

- (a) have due regard to that comment in the finalisation of the amended MEDLI program results; and
- (b) submit the finalised amended MEDLI program results within 40 business days after the administering authority provided comments; and
- (c) implement the amended MEDLI program results.

(Waste 17) All treated sewage effluent or greywater released to land from a treatment system with a daily peak design capacity of greater than 100 EP must be in accordance with the contaminant release limits and monitored at the frequency as stated in *Schedule B, Table 2 – Treated Sewage Effluent Release Limits to Land* and the conditions of this environmental authority.

Schedule B, Table 2 – Treated Sewage Effluent Release Limits to Land

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Quality Characteristic / Contaminant	Sampling and in situ measurement point location	Unit	Limit Type	Release Limit	Frequency
5-day Biochemical oxygen demand (BOD)	Release pipe from sewage treatment plant	mg/L	maximum	20	Quarterly
Total Suspended Solids (TSS)		mg/L	maximum	30	
E. coli		CFU ¹ /mL	80 th percentile ²	1,000	
		CFU/100 mL	maximum	10,000	Monthly in-situ monitoring
Electrical Conductivity (EC)		—	monitor only	—	
pH		pH unit	range	6.0 – 9.0	

(Waste 18) If the water quality assessment required by condition (Waste 18) demonstrates that the water is not suitable for release to land, then water must be collected and disposed of at an appropriate facility.

Residual drilling material

(Waste 9) If sumps are used to store residual drilling material or drilling fluids, they must only be used for the duration of drilling activities.

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(Waste 20) Residual drilling material can only be disposed of on-site:

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

(Waste 21) Records must be kept to demonstrate compliance with condition (Waste 20) and (Waste 21).

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Transfer of coal seam gas water to a third party

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(Waste 22) The holder of this environmental authority must ensure that coal seam gas produced water is contained, is not released to land or waters, and is only used for purposes specifically authorised:

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- (a) under this environmental authority; or
- (b) under the Petroleum and Gas (Production and Safety) Act 2004; or
- (c) under the Petroleum Act 1923; or (d) under a current beneficial use approval or end of waste code or approval issued under the Waste Reduction and Recycling Act 2011.

(Waste 23) Produced water that is supplied or used under separate authorisation and in accordance with condition (Waste 22) is not further regulated under conditions of this authority.

¹ CFU = Coliform Forming Units.

² Based on at least five (5) samples with not less than 30 minutes between samples.

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(Waste 24) Coal seam gas water may be transferred to a third party to be used for the following purposes subject to compliance with conditions (Waste 25) and (Waste 26):

- (a) dust suppression if the coal seam gas water quality complies with the limits specified in Schedule B, Table 3 – Water Contaminant Release Limits;
- (b) construction and operational purposes if the coal seam gas water quality complies with the limits specified in Schedule B, Table 3 – Water Contaminant Release Limits;
- (c) irrigation and livestock watering purposes;
- (d) the following industrial purposes:
 - i. coal washing;
 - ii. power stations; and
 - iii. water treatment facilities.

(Waste 25) Any coal seam gas water supplied to a third party for irrigation and/or livestock watering purposes in accordance with Condition (Waste 24)(c) must comply with the relevant trigger values contained in ANZECC and ARMCANZ Water Quality Guidelines 2000, or subsequent versions thereof.

Schedule B, Table 3 – Water Contaminant Release Limits

<u>Water Quality Characteristics</u>	<u>Unit</u>	<u>Limit</u>	<u>Limit Type</u>
<u>pH</u>	<u>pH units</u>	<u>6.0 to 9.0</u>	<u>Range</u>
<u>Sodium Adsorption Ratio</u>	<u>ratio</u>	<u>6</u>	<u>80th Percentile</u>
		<u>12</u>	<u>Maximum</u>
<u>Total Dissolved Solids (TDS)</u>	<u>mg/L</u>	<u>1500</u>	<u>Maximum</u>
<u>Total Petroleum Hydrocarbons (TPH)</u>	<u>mg/L</u>	<u>10</u>	<u>Maximum</u>

(Waste 26) If the responsibility of coal seam gas water is given or transferred to a third party in accordance with Condition (Waste 24), the holder of environmental authority must ensure that:

- (a) the responsibility of the coal seam gas water is given or transferred in accordance with a written agreement (the third party agreement); and
- (b) the third party is made aware of the General Environmental Duty under section 319 of the Environmental Protection Act 1994.

Schedule C – Protecting Acoustic Values

(Noise 1) Notwithstanding condition (General 21), emission of noise from the petroleum activity(ies) at levels less than those specified in **Schedule C, Table 1 — Noise nuisance limits** are not considered to be environmental nuisance.

Schedule C, Table 1 — Noise nuisance limits

Time period	Time of Day	Metric	Short term noise event ¹ (dBA)	Medium term noise event ¹ (dBA)	Long term noise event ¹ (dBA)
6:00am — 7:00am	Morning	L _{Aeq,adj,15 min}	40	38	35
7:00am — 6:00pm	Day	<u>L_{Aeq,adj,15 min}</u>	45	43	40
6:00pm — 10:00pm	Evening	L _{Aeq,adj,15 min}	40	38	35
10:00pm — 6:00am	Night	L _{Aeq,adj,15 min}	28	28	28
		<u>Max L_{pA, 15 mins}</u>	55	55	55
Drilling activities undertaken from 10:00 pm — 7:00 am ²		L _{Aeq, adj, 15 min}	28 (measured indoors) 33 (measured outdoors)		

¹ The noise limits in Table 1 have been set based on the following deemed background noise levels (LABG):

6:00am—7:00 am: 30 dBA
7:00am—6:00 pm: 35 dBA
6:00pm—10:00 pm: 30 dBA
10:00pm—6:00 am: 25 dBA

² Drilling activities undertaken from 10:00 pm – 7:00 am must be temporary and mobile in nature, and must not contribute to long-term background noise creep.

(Noise 2) If the noise subject to a valid complaint is tonal or impulsive, the adjustments detailed in **Schedule C, Table 2 — Adjustments to be added to noise levels at sensitive receptors** are to be added to the measured noise level(s) to derive L_{Aeq, adj, 15 min}.

Schedule C, Table 2 — Adjustments to be added to noise levels at sensitive receptors

Noise characteristic	Adjustment to noise
Tonal characteristic is just audible	+ 2 dBA
Tonal characteristic is clearly audible	+ 5 dBA
Impulsive characteristic is just audible	+ 2 dBA
Impulsive characteristic is clearly audible	+ 5 dBA

(Noise 3) Notwithstanding condition (Noise 1), emission of any low frequency noise must not exceed either (Noise 3(a)) and (Noise 3(b)), or (Noise 3(c)) and (Noise 3(d)) in the event of a valid complaint about low frequency noise being made to the administering authority:

- (a) 60 dB(C) measured outside the sensitive receptor; and
- (b) the difference between the external A-weighted and C-weighted noise levels is no greater than 20 dB; or

-
- (c) 50 dB(Z) measured inside the sensitive receptor; and
 - (d) the difference between the internal A-weighted and Z-weighted (Max $L_{pZ, 15 \text{ min}}$) noise levels is no greater than 15 dB.

Schedule D – Protecting Air Values

Venting and flaring

(Air 1) Unless venting is authorised under the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923*, waste gas must be flared in a manner that complies with all of (Air 1(a)) and (Air 1(b)) and (Air 1(c)), or with (Air 1(d)):

- (a) an automatic ignition system is used, and
- (b) a flame is visible at all times while the waste gas is being flared, and
- (c) there are no visible smoke emissions other than for a total period of no more than 5 minutes in any 2 hours, or
- (d) it uses an enclosed flare.

Fuel burning and combustion facilities – authorised point sources

(Air 2A) A fuel burning, or combustion facility must not be operated unless it is listed in **Schedule D, Table 1 – Authorised point sources**.

(Air 2B) If a fuel burning or combustion facility is listed in **Schedule D, Table 1—Authorised point sources**, the fuel burning or combustion facility must be operated so that the releases to air do not exceed the limits specified in **Schedule D, Table 1—Authorised point sources** at the specified release point reference.

Schedule D, Table 1 – Authorised point sources

Resource Authority Tenure	Facility	Release point reference	Unit description	Minimum release height (m)	Minimum efflux velocity (m/sec)	NOx as Nitrogen dioxide (NO ₂)	
						Maximum concentration (mg/Nm ³)	Maximum mass emission rate (g/sec)
PL305	Girrahween Field Compression Station (FCS)	A1	Generator Stack 1	5	32	750	1.5
		A2	Generator Stack 2	5	32	750	1.5
		A3	Generator Stack 3	5	32	750	1.5
		A4	Generator Stack 4	5	32	750	1.5
		A5	Generator Stack 5	5	32	750	1.5
		A6	Generator Stack 6	5	32	750	1.5
		A7	Generator Stack 7	5	32	750	1.5
		A8	Generator Stack 8	5	32	750	1.5

Point source air monitoring

(Air 3) Point source air monitoring for each fuel burning or combustion facility listed in **Schedule D, Table 1—Authorised point sources** must:

(a) be undertaken once:

i. in the first three months after first commissioned, and then

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- ii. every year thereafter (for seven of eight listed release points).
- (b) be carried out when the facility the subject of the sampling is operating under maximum operating conditions for the annual period; and
- (c) demonstrate compliance with the limits listed in **Schedule D , Table 1—Authorised point sources** at each release point reference.

Schedule E – Protecting Land Values

General

- (Land 1) Contaminants must not be directly or indirectly released to land except as permitted under this environmental authority.

Topsoil management

- (Land 2) Topsoil must be managed in a manner that preserves its biological and chemical properties.

Land management

- (Land 3) 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.

Acid sulfate soils

- (Land 4) Acid sulfate soils must be treated and managed in accordance with the latest edition of the *Queensland Acid Sulfate Soil Technical Manual*.

Chemical storage

- (Land 5) Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.

Pipeline operation and maintenance

- (Land 6) 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* (2013 or more recent editions).

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Pipeline reinstatement and revegetation

- (Land 7 Pipeline trenches must be backfilled and topsoils reinstated within three months after pipe laying.
- (Land 8) 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.
- (Land 9) 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 includes suitable native species of vegetation for the location and not a declared pest species, and which is established and growing.

Schedule F – Protecting Biodiversity Values

Confirming biodiversity values

- (Biodiversity 1) 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.
- (Biodiversity 2) A suitably qualified person must develop and certify a methodology so that condition (Biodiversity 1) can be complied with, and which is appropriate to confirm on-the-ground biodiversity values.
- (Biodiversity 3) For conditions (Biodiversity 4) to (Biodiversity 9), where mapped biodiversity values differ from those confirmed under conditions (Biodiversity 1) and (Biodiversity 2), petroleum activities may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity value.

Planning for land disturbance

- (Biodiversity 4) The location of the petroleum activity(ies) must be selected in accordance with the following site planning principles:
- (a) maximise the use of areas of pre-existing disturbance
 - (b) in order of preference, avoid, minimise, or mitigate any impacts, including cumulative impacts, on areas of native vegetation or other areas of ecological value
 - (c) minimise disturbance to land that may result in land degradation
 - (d) in order of preference, avoid then minimise isolation, fragmentation, edge effects or dissection of tracts of native vegetation; and
 - (e) in order of preference, avoid then minimise clearing of native mature trees.

Planning for land disturbance – linear infrastructure

- (Biodiversity 5) 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.

Authorised disturbance to Environmentally Sensitive Areas

- (Biodiversity 6) Despite condition (Biodiversity 5 (c)), should the quality of protection zone land be deemed historically disturbed (subject to assessment by a suitably qualified person), or of low environmental value, then condition Biodiversity 5 (c) is silent.
- (Biodiversity 8) Where petroleum activities are to be carried out in environmentally sensitive areas or their protection zones, the petroleum activities must be carried out in accordance with **Schedule F, Table 1 — Authorised petroleum activities in environmentally sensitive areas and their protection zones.**

Schedule F, Table 1 — Authorised petroleum activities in environmentally sensitive areas and their

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protection zones

Environmentally Sensitive Area (ESA)	Within the ESA	Primary protection zone of the ESA	Secondary protection zone of the ESA
Category A ESAs	No petroleum activities permitted.	Only <u>low impact petroleum activities</u> permitted.	Only essential petroleum activities permitted.
Category B ESAs that are other than 'endangered' regional ecosystems	Only low impact petroleum activities permitted.		Only essential petroleum activities permitted.
Category B ESAs that are 'endangered' regional ecosystems	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.	Only essential petroleum activities permitted.
Category C ESAs that are 'nature refuges' or 'koala habitat'	Only low impact petroleum activities permitted.		-
Category C ESAs that are 'essential habitat', 'essential regrowth habitat', or 'of concern' regional ecosystems	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.	-
Category C ESAs that are 'regional parks' (previously known as 'resources reserves')	Only essential petroleum activities permitted.		-
Category C ESAs that are 'state forests' or 'timber reserves'	Only essential petroleum activities permitted.	Petroleum activities permitted.	-
Areas of vegetation that are 'critically limited'	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.	-

(Biodiversity 8a) Despite condition (Biodiversity 8), the maximum footprint of significant disturbance specified in **Schedule F, Table 2 – Maximum significant disturbance** are authorised to be undertaken within the footprint prescribed in **Schedule F, Table 2 – Maximum significant disturbance**.

Schedule F, Table 2 – Maximum significant disturbance

Activity(ies)		Maximum footprint
Ground disturbance for petroleum activities		4,090.0 ha
Ground disturbance within a <u>Category B Environmentally Sensitive Area</u>		9.1 ha
Ground disturbance within a <u>Category C Environmentally Sensitive Area</u>		423.5 ha

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(Biodiversity 9) A report must be prepared for each annual return period for all petroleum activities that involved clearing of any environmentally sensitive area or protection zone which includes:

- records able to demonstrate compliance with conditions (Biodiversity 4), (Biodiversity 5), (Biodiversity 8) and (Biodiversity 8a)
- a description of the works
- a description of the area and its pre-disturbance values (which may include maps or photographs, but must include GPS coordinates for the works); and
- based on the extent of environmentally sensitive areas and primary protection zones on the relevant resource authority(ies), the proportion of native vegetation cleared per environmentally sensitive area and primary protection zone, including regional ecosystem type, over the annual return period.

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(Biodiversity 9a) Despite condition (Biodiversity 8) and (Biodiversity 8a), essential petroleum activities are permitted in Category B and Category C ESAs where there is significant residual impact authorised in Schedule F, Table 3 – Significant residual impacts to prescribed environmental matters and where shapefiles (consistent with the DES Spatial Schema) of the impact can be provided to the administering authority upon request.

Planning for land disturbance – significant residual impacts

(Biodiversity 10) Significant residual impacts to prescribed environmental matters (other than if the impacts were authorised by an existing authority issued before the commencement of the *Environmental Offsets Act 2014*) are not authorised under this environmental authority or the *Environmental Offsets Act 2014* unless the impact(s) is specified in **Schedule F, Table 3 — Significant residual impacts to prescribed environmental matters**

Schedule F, Table 3 — Significant residual impacts to prescribed environmental matters

Prescribed environmental matter	Maximum extent of impact	Maximum extent of impact – Stage 1 (# wells TBC)	Maximum extent of impact – Stage 2 (# wells TBC)	Maximum extent of impact – Stage 3 (# wells TBC)	
REGULATED VEGETATION					
Endangered regional ecosystem					
RE 11.4.3	▼	MNES ^{1, 2}	0 ha	TBC ⁴	TBC ⁴
RE 11.9.5	▼	MNES ^{1, 2}	0 ha	TBC ⁴	TBC ⁴
Of concern regional ecosystem (not within an urban area)					
RE 11.3.2	▼	5 ha	TBC ³	TBC ⁴	TBC ⁴
RE 11.3.4	▼	20 ha	TBC ³	TBC ⁴	TBC ⁴
Regional ecosystems (not within an urban area) that intersect a wetland on the vegetation management wetlands map	▼	0 ha	0 ha	TBC ⁴	TBC ⁴
Regional ecosystems (not within an urban area) within the defined distance from the defining banks of a relevant watercourse on the vegetation management watercourse map					

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Prescribed environmental matter		Maximum extent of impact	Maximum extent of impact – Stage 1 (# wells TBC)	Maximum extent of impact – Stage 2 (# wells TBC)	Maximum extent of impact – Stage 3 (# wells TBC)	
RE 11.3.2 (17a)	▼	1 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.3.4 (16c)	▼	7 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.3.14 (18a)	▼	6 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.3.25 (16a)	▼	12 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.5.1 (18b)	▼	20 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.5.4 (18b)	▼	3 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.5.20 (13d)	▼	1 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.5.21 (18a)	▼	12 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.7.4 (12a)	▼	8 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.7.5 (29b)	▼	1 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.7.6 (10a)	▼	5 ha	TBC ³	TBC ⁴	TBC ⁴	▼
RE 11.7.7 (12a)	▼	10 ha	TBC ³	TBC ⁴	TBC ⁴	▼
▼	▼	▼	▼	▼	▼	▼
Essential habitat						
Essential habitat - (not in an urban area) on the essential habitat map for endangered wildlife (plant or animal)						
<i>Phascolarctos cinereus</i> (Koala)	▼	6.1 ha	TBC ³	TBC ⁴	TBC ⁴	▼
Essential habitat - (not in an urban area) for vulnerable wildlife (plant or animal)						
▼	▼	▼	▼	▼	▼	▼
<i>Nyctophilus corbeni</i> (South-eastern Long-eared Bat (SELEB))	▼	MNES ^{1, 2}	MNES ^{1, 2}	TBC ⁴	TBC ⁴	▼
CONNECTIVITY AREAS						
Connectivity area that is a regional ecosystem (not in urban area)						
▼	▼	▼	▼	▼	▼	▼
▼	▼	▼	▼	▼	▼	▼
Connectivity areas		470 ha	TBC ³	TBC ⁴	TBC ⁴	
WETLANDS AND WATERCOURSES						
▼	▼	▼	▼	▼	▼	▼

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Prescribed environmental matter		Maximum extent of impact	Maximum extent of impact – Stage 1 (# wells TBC)	Maximum extent of impact – Stage 2 (# wells TBC)	Maximum extent of impact – Stage 3 (# wells TBC)	
PROTECTED WILDLIFE HABITAT						
An area shown as a high-risk area on the flora survey trigger map that contains plants that are endangered or vulnerable wildlife		0 ha	0 ha	TBC ⁴	TBC ⁴	
An area not shown as a high-risk area on the flora survey trigger map that contains plants that are endangered or vulnerable wildlife		0 ha	0 ha	TBC ⁴	TBC ⁴	
A non-juvenile koala habitat tree located in an area shown as a bushland habitat, high value rehabilitation habitat or medium value rehabilitation habitat in the 'Map of Assessable Development Area Koala Habitat Values'		MNES ^{1, 2}	MNES ^{1, 2}	TBC ⁴	TBC ⁴	
Habitat for an animal that is endangered wildlife						
<i>Petauroides volans</i> (Greater Glider)		437.7 ha	TBC ³	TBC ⁴	TBC ⁴	
<i>Phascogale cinerea</i> (Koala)		536.6 ha	TBC ³	TBC ⁴	TBC ⁴	
Habitat for an animal that is vulnerable wildlife						
<i>Acanthopis antarcticus</i> (Common Death Adder)		454.1 ha	TBC ³	TBC ⁴	TBC ⁴	
<i>Adclarkia cameroni</i> (Brigalow Woodland Snail)		3.2 ha	TBC ³	TBC ⁴	TBC ⁴	
<i>Calyptorhynchus lathamii</i> (Glossy Black Cockatoo)		25.2 ha	TBC ³	TBC ⁴	TBC ⁴	
<i>Furina dunmali</i> (Dunmall's Snake)		MNES ^{1, 2}	TBC ³	TBC ⁴	TBC ⁴	
<i>Stagonopleura guttata</i> (Diamond Firetail)		437.9 ha	TBC ³	TBC ⁴	TBC ⁴	
<i>Hemiaspis damel</i> (Grey Snake)		3.4 ha	TBC ³	TBC ⁴	TBC ⁴	

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1 Matter(s) of National Environmental Significance (MNES) have been prescribed and will be offset in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Species Impact Management and Offset Plans, specifically the EPBC approval for the Surat Gas Project Environment Impact Statement (EPBC Approval 2010/5344, Tables 1 and 2).

2 No significant residual impacts to prescribed environmental matters are authorised under this environmental authority unless they are covered within EPBC Approval 2010/5344.

3 The Maximum extent of impact for stages 1 to 3 will be subject to confirmation of SRI and Offsets Staged delivery.

4 Stages 2 and 3 are to be confirmed in accordance with condition (Biodiversity 16).

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- (Biodiversity 11) Records demonstrating that each impact to a prescribed environmental matter not listed in **Schedule F, Table 3 — Significant residual impacts to prescribed environmental matters** did not, or is not likely to, result in a significant residual impact to that matter must be:
- (a) completed by an appropriately qualified person; and
 - (b) kept for the life of the environmental authority.
- (Biodiversity 12) An environmental offset made in accordance with the *Environmental Offsets Act 2014* and Queensland Environmental Offsets Policy, as amended from time to time, must be undertaken for the maximum extent of impact to each prescribed environmental matter authorised in **Schedule F, Table 3 — Significant residual impacts to prescribed environmental matters**, unless a lesser extent of the impact has been approved in accordance with condition (Biodiversity 14).
- (Biodiversity 13) The significant residual impacts to a prescribed environmental matter authorised in condition (Biodiversity 10) for which an environmental offset is required by condition (Biodiversity 12) may be carried out in stages. An environmental offset can be delivered for each stage of the impacts to prescribed environmental matters.
- (Biodiversity 14) Prior to the commencement of each stage, a report completed by an appropriately qualified person, that includes an analysis of the following must be provided to the administering authority:
- (a) for the forthcoming stage—the estimated significant residual impacts to each prescribed environmental matter; and
 - (b) for the previous stage, if applicable—the actual significant residual impacts to each prescribed environmental matter, to date.
- (Biodiversity 15) The report required by condition (Biodiversity 14) must be approved by the administering authority before a notice of election for the forthcoming stage, if applicable, is given to the administering authority.
- (Biodiversity 16) A notice of election for the staged environmental offset referred to in condition (Biodiversity 15), if applicable, must be provided to the administering authority no less than three months before the proposed commencement of that stage, unless a lesser timeframe has been agreed to by the administering authority.
- (Biodiversity 17) Within six months from the completion of the final stage of the project, a report completed by an appropriately qualified person, that includes the following matters must be provided to the administering authority:
- (a) an analysis of the actual impacts on prescribed environmental matters resulting from the final stage; and
 - (b) if applicable, a notice of election to address any outstanding offset debits for the authorised impacts.

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Schedule G – Protecting Water Values

Contaminant release

- (Water 1) Contaminants must not be directly or indirectly released to any waters.

Authorised impacts to wetlands

- (Water 2) The extraction of groundwater as part of the petroleum activity(ies) from underground aquifers must not directly or indirectly cause environmental harm to a wetland.

Authorised activities in waters

- (Water 3) Petroleum activities must not occur in or within 200m of a:
- (a) wetland of high ecological significance
 - (b) Great Artesian Basin Spring
 - (c) subterranean cave GDE
- (Water 4) Only construction or maintenance of linear infrastructure is permitted in or within any wetland of other environmental value or in a watercourse.
- (Water 5a) The construction or maintenance of linear infrastructure in a wetland of other environmental value must not result in the:
- (a) clearing of riparian vegetation outside of the minimum area practicable to carry out the works; or
 - (b) ingress of saline water into freshwater aquifers; or
 - (c) draining or filling of the wetland beyond the minimum area practicable to carry out the works.
- (Water 5b) After the construction or maintenance works for linear infrastructure in a wetland of other environmental value are completed, the linear infrastructure must not:
- (a) drain or fill the wetland
 - (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.
- (Water 6) 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.

(Water 7) The construction or maintenance of linear infrastructure authorised under condition (Water 4) must comply with the water quality limits as specified in **Schedule G, Table 1 — Release limits for construction or maintenance of linear infrastructure**.

Schedule G, Table 1 — 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 50m radius of the construction or maintenance activity.
		For a watercourse, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within 50m downstream of the construction or maintenance activity.
		For a wetland of other environmental value, if background water turbidity is equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within a 50m radius of the construction or maintenance activity.
		For a watercourse, if background water turbidity is equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within 50m downstream of the construction or maintenance activity.
Hydrocarbons	-	For a wetland of other environmental value, or watercourse, no visible sheen or slick

(Water 8) Monitoring must be undertaken at a frequency that is appropriate to demonstrate compliance with condition (Water 7).

Register of activities in wetlands and watercourses

(Water 9) A register must be kept of all linear infrastructure construction and maintenance activities in a wetland of other environmental value and watercourses, which must include:

- 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 (Water 8).

Activities in floodplains

(Water 11) Petroleum activity(ies) on floodplains must be carried out in a way that does 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
- increase the risk of detaining flood flows.

Seepage monitoring program

(Water 12) A seepage monitoring program must be developed by a suitably qualified person which is commensurate with the site-specific risks of contaminant seepage from containment facilities, and which requires and plans for detection of any seepage of contaminants to groundwater as a result of storing contaminants by 15 November 2018.

Deleted: Activities in river improvement areas

(Water 10)

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- (Water 13) The seepage monitoring program required by condition (Water 12) must include but not necessarily be limited to:
- (a) identification of the containment facilities for which seepage will be monitored
 - (b) identification of trigger parameters that are associated with the potential or actual contaminants held in the containment facilities
 - (c) identification of trigger concentration levels that are suitable for early detection of contaminant releases at the containment facilities
 - (d) installation of background seepage monitoring bores where groundwater quality will not have been affected by the petroleum activities authorised under this environmental authority to use as reference sites for determining impacts
 - (e) installation of seepage monitoring bores that:
 - i. are within formations potentially affected by the containment facilities authorised under this environmental authority (i.e., within the potential area of impact)
 - ii. provide for the early detection of negative impacts prior to reaching groundwater dependent ecosystems, landholder's active groundwater bores, or water supply bores
 - 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 bores for the trigger parameters identified in condition (Water 13(b)) at a frequency determined by a suitably qualified person and:
 - i. at least once every two years where baseline data has been established; or
 - ii. at least every six months for two years to establish baseline data for any impact to groundwaters, after which time monitoring may continue at the frequency according to condition (Water 13(f)(i)).
 - (g) seepage trigger action response procedures for when trigger parameters and trigger levels identified in conditions (Water 13(b)) and (Water 13(c)) trigger the early detection of seepage, or upon becoming aware of any monitoring results that indicate potential groundwater contamination
 - (h) a rationale detailing the program conceptualisation including assumptions, determinations, monitoring equipment, sampling methods and data analysis; and
 - (i) provides for annual updates to the program for new containment facilities constructed in each annual return period.

Seepage monitoring bore drill logs

- (Water 14) A bore drill log must be completed for each seepage monitoring bore in condition (Water 13) which must include:
- (a) bore identification reference and geographical coordinate location

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- (b) specific construction information including but not limited to depth of bore, depth and length of casing, depth and length of screening and bore sealing details
- (c) standing groundwater level and water quality parameters including physical parameter and results of laboratory analysis for the possible trigger parameters
- (d) lithological data, preferably a stratigraphic interpretation to identify the important features including the identification of any aquifers; and
- (e) target formation of the bore.

Schedule H – Rehabilitation

Rehabilitation planning

- (Rehabilitation 1) A Rehabilitation Plan must be developed by a suitably qualified person and must include the:
- (a) rehabilitation goals; and
 - (b) procedures to be undertaken for rehabilitation that will:
 - i. achieve the requirements of conditions (Rehabilitation 2) to (Rehabilitation 8), inclusive; and
 - ii. provide for appropriate monitoring and maintenance.

Transitional rehabilitation

- (Rehabilitation 2) Significantly disturbed areas that are no longer required for the on-going petroleum activities must be rehabilitated within 12 months (unless an exceptional circumstance in the area to be rehabilitated (e.g., a flood event) prevents this timeframe being met) and be maintained to meet the following acceptance criteria:
- (a) contaminated land resulting from petroleum activities is remediated and rehabilitated
 - (b) the areas are:
 - i. non-polluting
 - ii. a stable landform
 - iii. re-profiled to contours consistent with the surrounding landform
 - (c) surface drainage lines are re-established, consistent with natural flow patterns and self-sustaining;
 - (d) topsoil is reinstated; and
 - (e) either:
 - i. groundcover, that includes suitable native species of vegetation for the location and 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

- (Rehabilitation 3) All significantly disturbed areas caused by petroleum activities which are not being or intended to be utilised by the landholder or overlapping tenure holder, must be rehabilitated to meet the following final acceptance criteria measured either against the highest ecological value adjacent land use or the pre-disturbed land use:
- (a) greater than or equal to 70% of native ground cover species richness
 - (b) greater than or equal to the total per cent of ground cover
 - (c) less than or equal to the per cent species richness of declared plant pest species; and

- (d) where the adjacent land use contains, or the pre-clearing land use contained, one or more regional ecosystem(s), then at least one regional ecosystem(s) from the same broad vegetation group, and with the equivalent biodiversity status or a biodiversity status with a higher conservation value as any of the regional ecosystem(s) in either the adjacent land or pre-disturbed land, must be present.

Final rehabilitation acceptance criteria in environmentally sensitive areas

- (Rehabilitation 4) Where significant disturbance to land has occurred in an environmentally sensitive area, the following final rehabilitation criteria as measured against the pre-disturbance biodiversity values assessment (required by conditions (Biodiversity 1) and (Biodiversity 2)) must be met:
- (a) greater than or equal to 70% of native ground cover species richness;
 - (b) greater than or equal to the total per cent ground cover;
 - (c) less than or equal to the per cent species richness of declared plant pest species;
 - (d) greater than or equal to 50% of organic litter cover;
 - (e) greater than or equal to 50% of total density of coarse woody material; and
 - (f) all predominant species in the ecologically dominant layer, that define the pre-disturbance regional ecosystem(s) are present.

Continuing conditions

- (Rehabilitation 5) Conditions (Rehabilitation 2), (Rehabilitation 3), and (Rehabilitation 4) continue to apply after this environmental authority has ended or ceased to have effect.

Remaining dams

- (Rehabilitation 8) Where there is a dam (including a low consequence dam) that is being or intended to be utilised by the landholder or overlapping tenure holder, the dam must be decommissioned to no longer accept inflow from the petroleum activity(ies) and the contained water must be of a quality suitable for the intended ongoing uses(s) by the landholder or overlapping tenure holder.

Deleted: Rehabilitation reporting for relinquishment of part of an authority to prospect area under the *Petroleum and Gas (Production and Safety) Act 2004*

Schedule I – Well construction, maintenance, and stimulation activities

Drilling activities

- (Well activities 1) Oil based or synthetic based drilling muds must not be used in the carrying out of the petroleum activity(ies).
- (Well activities 2) Drilling activities must not result in the connection of the target gas producing formation and another aquifer.
- (Well activities 3) Practices and procedures must be in place to detect, as soon as practicable, any fractures that:
- a) have or may result in the connection of a target formation and another aquifer as a result of drilling activities; or
 - b) cause the connection of a target gas producing formation and another aquifer.

Schedule J – Structures

Consequence category assessment

- (J1) The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* at the following times:
- (a) prior to the design and construction of the structure, if it is not an existing structure; or
 - (b) prior to any change in its purpose or the nature of its stored contents.
- (J2) A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.
- (J3) Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*.

Notification of affected persons

- (J4) All affected persons must be provided with a copy of the emergency action plan in place for each regulated structure
- (a) for existing structures that are regulated structures, within 10 business days of this condition taking effect;
 - (b) prior to the operation of the new regulated structure; and
 - (c) if the emergency action plan is amended, within 5 business days of it being amended.

Operation and maintenance of a regulated structure

- (J5) For existing structures that are regulated structures:
- (a) where the existing structure that is a regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the holder must submit to the administering authority within 12 months of the commencement of this condition a copy of the certified system design plan including that structure; and
 - (b) there must be a current operational plan for the existing structures.
- (J6) Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in compliance with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.

Design storage allowance

- (J7) The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.
- (J8) By 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the dam (or network of linked containment systems).
- (J9) The holder must, as soon as practicable but within forty-eight (48) hours of becoming aware that the regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.

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- (J10) The holder must, immediately on becoming aware that a regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.

Annual inspection report

- (J11) Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
- (J12) At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include a recommendations section, with any recommended actions to ensure the integrity of the regulated structure or a positive statement that no recommendations are required.
- (J13) The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933).
- (J14) The holder must within 20 business days of receipt of the annual inspection report, provide to the administering authority:
- (a) The recommendations section of the annual inspection report; and
 - (b) If applicable, any actions being taken in response to those recommendations; and
 - (c) If, following receipt of the recommendations and (if applicable) recommended actions, the administering authority requests a copy of the annual inspection report from the holder, provide this to the administering authority within 10 business days of receipt of the request.

Transfer arrangements

- (J15) The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.

Register of Regulated Structures

- (J16) A Register of Regulated Structures must be established and maintained by the holder of this environmental authority for each regulated structure.
- (J17) The holder of this environmental authority must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
- (J18) All entries in the Register of Regulated Structures must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.
- (J19) The holder of this environmental authority must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Structures, in the electronic format required by the administering authority.

Schedule K – Definitions

Word or term	Definition
acceptable standards for release to land	means wastewater of the following quality as determined by monitoring results or by characterisation: <ul style="list-style-type: none"> (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) meet the respective short term trigger value in section 4.2.6, Table 4.2.10—Heavy metals and metalloids in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (e) does not contain biocides.
Acid sulfate soil(s)	means a soil or soil horizon which contains sulfides, or an acid soil horizon affected by oxidation of sulfides.
Adjacent land use(s)	means the <u>ecosystem function</u> adjacent to an area of significant disturbance, or where there is no ecosystem function, the use of the land. An adjacent land use does not include an adjacent area that shows evidence of edge effect.
Administering authority	means: <ul style="list-style-type: none"> (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the Environmental Protection Act 1994—the local government; or (b) for all other matters—the Chief Executive of the Department of Environment and Heritage Protection; or (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.
Affected person	is someone whose drinking water can potentially be impacted as a result of discharges from a dam, or their life or property can be put at risk due to dwellings or workplaces being in the path of a dam break flood.
Alternative arrangement	means a written agreement about the way in which a particular environmental nuisance impact will be dealt with at a sensitive place, and may include an agreed period of time for which the arrangement is in place. An alternative arrangement may include, but is not limited to, a range of nuisance abatement measures to be installed at the sensitive place, or provision of alternative accommodation for the duration of the relevant nuisance impact.
Analogue site(s)	means an area of land which contains values and characteristics representative of an area to be rehabilitated prior to disturbance. Such values must encompass land use, topographic, soil, vegetation, vegetation community attributes and other ecological characteristics. Analogue sites can be the pre-disturbed site of interest where significant surveying effort has been undertaken to establish benchmark parameters.
Annual exceedance probability or AEP	the probability that at least one event in excess of a particular magnitude will occur in any given year.
Annual inspection report	means an assessment prepared by a suitably qualified and experienced person containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan); <ul style="list-style-type: none"> (a) against recommendations contained in previous annual inspections reports; (b) against recognised dam safety deficiency indicators; (c) for changes in circumstances potentially leading to a change in consequence category; (d) for conformance with the conditions of this authority; (e) for conformance with the 'as constructed' drawings; (f) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year of accumulated sediment, state of the containment barrier and the level of liquids in the <u>dam</u> (or network of linked containment systems); (g) for evidence of conformance with the current operational plan.
Annual return period	means the most current 12-month period between two anniversary dates.
Appraisal well	means a petroleum well to test the potential of one (1) or more natural underground reservoirs for producing or storing petroleum. For clarity, an appraisal well does not include an exploration well.

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Word or term	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	<p>for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards:</p> <p><u>Part A</u> In all cases:</p> <table border="1"> <thead> <tr> <th>Parameter</th><th>Maximum concentration</th></tr> </thead> <tbody> <tr> <td>pH</td><td>6- 10.5 (range)</td></tr> <tr> <td>Electrical Conductivity</td><td>20 dS/m (20,000 µS/cm)</td></tr> <tr> <td>Chloride</td><td>8,000 mg/L</td></tr> </tbody> </table> <p>*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.</p> <p><u>Part B</u> If any of the following metals are a component of the drilling fluids, then for that metal:</p> <table border="1"> <thead> <tr> <th>Parameter</th><th>Maximum Concentration</th></tr> </thead> <tbody> <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> </tbody> </table> <p>The limits in Part B and Part C refer to the post soil/by-product mix.</p> <p><u>Part C</u> If a hydrocarbon sheen is visible, the following hydrocarbon fractions:</p> <table border="1"> <thead> <tr> <th>TPH</th><th>Maximum Concentration</th></tr> </thead> <tbody> <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>1,300 mg/kg</td></tr> <tr> <td>C34-C40</td><td>5,600 mg/kg</td></tr> <tr> <td>Total Polycyclic Aromatic Hydrocarbons (PAHs)</td><td>20 mg/kg</td></tr> <tr> <td>Phenols (halogenated)</td><td>1 mg/kg</td></tr> <tr> <td>Phenols (non-halogenated)</td><td>30 mg/kg</td></tr> <tr> <td>Monocyclic aromatic hydrocarbons (Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene)</td><td>7 mg/Kg</td></tr> <tr> <td>Benzene</td><td>1 mg/Kg</td></tr> </tbody> </table>	Parameter	Maximum concentration	pH	6- 10.5 (range)	Electrical Conductivity	20 dS/m (20,000 µS/cm)	Chloride	8,000 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	1,300 mg/kg	C34-C40	5,600 mg/kg	Total Polycyclic Aromatic Hydrocarbons (PAHs)	20 mg/kg	Phenols (halogenated)	1 mg/kg	Phenols (non-halogenated)	30 mg/kg	Monocyclic aromatic hydrocarbons (Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene)	7 mg/Kg	Benzene	1 mg/Kg
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Word or term	Definition
areas of pre-existing disturbance	means areas where environmental values have been negatively impacted as a result of anthropogenic activity and these impacts are still evident. Areas of pre-disturbance may include areas where legal clearing, logging, timber harvesting, or grazing activities have previously occurred, where high densities of weed or pest species are present which have inhibited re- colonisation of native regrowth, or where there is existing infrastructure (regardless of whether the infrastructure is associated with the authorised petroleum activities). The term 'areas of pre- disturbance' does not include areas that have been impacted by wildfire/s, controlled burning, flood, or natural vegetation die-back.
Assessed or assessment	by a suitably qualified and experienced person in relation to a consequence assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment: <ul style="list-style-type: none"> (a) exactly what has been assessed and the precise nature of that determination; (b) the relevant legislative, regulatory, and technical criteria on which the assessment has been based; (c) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and (d) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.
Associated water	means underground water taken or interfered with, if the taking or interference happens during the course of, or results from, the carrying out of another authorised activity under a petroleum authority, such as a petroleum well, and includes waters also known as produced formation water. The term includes all contaminants suspended or dissolved within the water.
Associated works	in relation to a dam, means: <ul style="list-style-type: none"> (a) operations of any kind and all things constructed, erected, or installed for that dam; and (b) any land used for those operations.
Australian Standard 3580	means any of the following publications: <ul style="list-style-type: none"> • AS3580.10.1 Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter—Gravimetric method. • AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 high volume sampler with size-selective inlet—Gravimetric method • AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter— PM10 low volume sampler—Gravimetric sampler.
Authority	means an environmental authority or a development approval.
Background noise level	means the sound pressure level, measured in the absence of the noise under investigation, as the $LA_{90,T}$ being the A-weighted sound pressure level exceeded for 90% of the measurement time period T of not less than 15 minutes (or $LA_{90,adj, 15 mins}$), using Fast response.
Bankfull	means the channel flow rate that exists when the water is at the elevation of the channel bank above which water begins to spill out onto the floodplain. The term describes the condition of the channel relative to its banks (e.g., overbank, in-bank, bankfull, low banks, high bank).
Bed	of any waters, has the meaning in Schedule 19 of the <i>Environmental Protection Regulation 2019</i> and— <ul style="list-style-type: none"> (a) includes an area covered, permanently or intermittently, by tidal or non-tidal waters; but (b) does not include land adjoining or adjacent to the bed that is from time to time (c) covered by floodwater.
Being or intended to be utilised by the landholder or overlapping tenure holder	for significantly disturbed land, means there is a written agreement (e.g., land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder, or the overlapping tenure holder has a preferred use of the land such that rehabilitation standards for revegetation by the holder of the environmental authority are not required. For dams, means there is a written agreement (e.g., land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder, or the overlapping tenure holder has a preferred use for the dam such that rehabilitation standards for revegetation by the holder of the environmental authority are not required.
Biodiversity values	for the purposes of this environmental authority, means environmentally sensitive areas, prescribed environmental matters and wetlands.
BTEX	means benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene, and total

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Word or term	Definition
	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: <ul style="list-style-type: none"> nature refuges as defined in the conservation agreement for that refuge under the Nature Conservation Act 1992 koala habitat areas as defined under the Nature Conservation (Koala) Conservation Plan 2006 state forests or timber reserves as defined under the Forestry Act 1959 regional parks (previously known as resource reserves) under the Nature Conservation Act 1992 an area validated as 'essential habitat' from ground-truthing surveys in accordance with the <i>Vegetation Management Act 1999</i> for a species of wildlife listed as endangered or vulnerable under the Nature Conservation Act 1992 'of concern regional ecosystems' that are remnant vegetation and identified in the database called 'RE description database' containing regional ecosystem numbers and descriptions.
Certify, certified, certifying or certification	<p>in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding dams means, a Statutory Declaration by a suitably qualified person or suitably qualified third party accompanying the written document stating:</p> <ul style="list-style-type: none"> the person's qualifications and experience relevant to the function that the person has not knowingly included false, misleading, or incomplete information in the document that the person has not knowingly failed to reveal any relevant information or document to the administering authority that the document addresses the relevant matters for the function and is factually correct; and that the opinions expressed in the document are honestly and reasonably held. <p>In the guideline <i>Structures which are dams or levees constructed as part of environmentally relevant activities</i> (ESR/2016/1937) – means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by this Manual, including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).</p>
Clearing	has the meaning in the dictionary of the <i>Vegetation Management Act 2000</i> and for vegetation— <ul style="list-style-type: none"> (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.
Construction or constructed	in relation to a dam includes building a new dam and modifying or lifting an existing dam, but does not include investigations and testing necessary for the purpose of preparing a design plan.
Consequence	in relation to a structure as defined, means the potential for environmental harm resulting from the collapse or failure of the structure to perform its primary purpose of containing, diverting, or controlling flowable substances.
Consequence category	means a category, either low, significant, or high, into which a dam is assessed as a result of the application of tables and other criteria in the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (ESR/2016/1933).
Control measure	has the meaning in section 31(b) of the <i>Environmental Protection Regulation 2019</i> and means a device, equipment, structure, or management strategy used to prevent or control the release of a contaminant or waste to the environment.
Critically limited regional ecosystem	means the regional ecosystems defined and listed in Appendix 5 of the <i>Queensland Biodiversity Offset Policy</i> .

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Word or term	Definition
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.
Daily peak design capacity	for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the <i>Environmental Protection Regulation 2019</i> as the higher equivalent person (EP) for the works calculated using each of the formulae found in the definition for EP.
Dam(s)	means a land-based structure or a void that contains, diverts, or controls flowable substances, and includes any substances that are thereby contained, diverted, or controlled by that land-based structure or void and associated works.
Dam crest volume	means the volume of material (liquids and/or solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (for example, via spillway).
<u>declared pest species</u>	<u>means a species declared under the <i>Biosecurity Act 2014</i> and that are species that occur beyond their natural range and have the potential to cause significant adverse economic, environmental, and social impacts.</u>
Design plan	is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.
Designated precinct	has the meaning in Part 5 section 15(3) of the <i>Regional Planning Interests Regulation 2014</i> and means: <ul style="list-style-type: none"> for a strategic environmental area mentioned in section 4(1) – the area identified as a designated precinct on the strategic environmental area map for the strategic environmental area; or if a strategic environmental area is shown on a map in a regional plan – the area identified on the map as a designated precinct for the strategic environmental area.
Design storage allowance or DSA	means an available volume, estimated in accordance with the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i> , published by the administering authority, as amended from time to time, that must be provided in a dam to an annual exceedance probability specified in that Manual.
Designer	for the purposes of a regulated dam, means the certifier of the design plan for the regulated dam.
Development approval	means a development approval under the <i>Planning Act 2016</i> (or under the repealed <i>Sustainable Planning Act 2009</i> or <i>Integrated Planning Act 1997</i>) in relation to a matter that involves an environmentally relevant activity under the <i>Environmental Protection Act 1994</i> .
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: <ul style="list-style-type: none"> 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 <u>5.1 March 2020</u>) and means the layer making the greatest contribution to the overall biomass of the site and the vegetation community (<i>National Land and Water Resources Audit</i> (NLWRA) 2001)). This is also referred to as the ecologically dominant stratum or the predominant canopy in woody ecosystems.
Ecosystem function	means the interactions between and within living and nonliving components of an ecosystem and generally correlates with the size, shape, and location of the vegetation community.
Emergency action plan	means documentation forming part of the operational plan held by the holder or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam owner and operating personnel in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to affected persons and the implementation of protection measures. The plan must require dam owners to annually review and update contact information where required.
Enclosed flare	means a device where the residual gas is burned in a cylindrical or rectilinear enclosure that includes a burning system and a damper where air for the combustion reaction is admitted.

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Word or term	Definition
Environmental harm	has the meaning in section 14 of the <i>Environmental Protection Act 1994</i> and means any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration, or frequency) on an environmental value, and includes environmental nuisance. Environmental harm may be caused by an activity— <ul style="list-style-type: none"> (a) whether the harm is a direct or indirect result of the activity; or (b) whether the harm results from the activity alone or from the combined effects of the activity and other activities or factors.
Environmental nuisance	has the meaning in section 15 of the <i>Environmental Protection Act 1994</i> and means unreasonable interference or likely interference with an environmental value caused by — <ul style="list-style-type: none"> (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 or ESA	means Category A, B or C environmentally sensitive areas (ESAs)
equivalent person (s) or EP	has the meaning under section 3 of the Planning Guidelines For Water Supply and Sewerage, 2005, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the <i>Environmental Protection Regulation 2019</i> where: <ul style="list-style-type: none"> • $EP = V/200$ 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: <ul style="list-style-type: none"> • <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 1.1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance • well sites with monitoring equipment (including monitoring bores): <ul style="list-style-type: none"> ○ 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: <ul style="list-style-type: none"> ○ for single well sites, not exceeding 1.5 hectares disturbance ○ for multi-well sites, not exceeding 2.0 hectares disturbance • <u>well sites with slope considerations (>2% slope) for cut and fill earthworks and drainage:</u> <ul style="list-style-type: none"> ○ <u>for single well sites, not exceeding 1.5 hectares disturbance</u> ○ <u>for multi-well sites, not exceeding 2.5 hectares disturbance</u> • <u>well sites including a communication tower:</u> <ul style="list-style-type: none"> ○ <u>for single well sites, not exceeding 1.5 hectares disturbance</u> ○ <u>for multi-well sites, not exceeding 3.0 hectares disturbance</u> • associated infrastructure located on a well site necessary for the construction and operations of wells: <ul style="list-style-type: none"> ○ water pumps and generators ○ flare pits ○ chemical / fuel storages ○ sumps for residual drilling material and drilling fluids ○ tanks, or dams which are not significant or high consequence dams to contain wastewater (e.g., stimulation flow back waters, produced water) ○ pipe laydown areas ○ soil and vegetation stockpile areas ○ a temporary camp associated with a drilling rig that may involve sewage treatment works that are no release works ○ temporary administration sites and warehouses

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Word or term	Definition
	<ul style="list-style-type: none"> o 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 Residual Drilling Material • <u>communication tower pads and collocated access tracks and fibre optic cable, not exceeding 1.0 hectares disturbance</u> • supporting access tracks • gathering / flow pipelines from a well head to the initial compression facility <u>and water transfer station/tanks/ponds</u> • activities necessary to achieve compliance with the conditions of the environmental authority in relation to another essential petroleum activity (e.g., sediment and erosion control measures, rehabilitation). • <u>temporary workspaces necessary for the construction of other essential petroleum activities, which will not have a significant impact on any Matters of State Environmental Significance in accordance with the Environment Offsets Act 2014.</u>
Existing authority	has the meaning in section 94 of the <i>Environmental Offsets Act 2014</i> .
Existing structure	means a structure that prior to 26 July 2018 meets any or both of the following, a structure: <ul style="list-style-type: none"> (a) with a design that is in accordance with the ESR/2016/1933 version 5.00 <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> and that is considerably in progress; (b) that is under considerable construction or that is constructed.
Exploration well	means a petroleum well that is drilled to: <ul style="list-style-type: none"> • 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. <p>For clarity, an exploration well does not include an appraisal or development well.</p>
Extreme storm storage	means a storm storage allowance determined in accordance with the criteria in the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (ESR/2016/1933) published by the administering authority.
Flare pit	has the meaning in the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> (EM635), and means containment area where any hydrocarbon that is discovered in an over-pressured reservoir during a drilling operation is diverted to, and combusted, The flare pit is only used during the drilling and work over process on a petroleum well.
Flare precipitant	means waste fluids which result from the operation of a flare.
Floodplains	has the meaning in the <i>Water Act 2000</i> and means an area of reasonably flat land adjacent to a watercourse that— <ul style="list-style-type: none"> • is covered from time to time by floodwater overflowing from the watercourse; and • does not, other than in an upper valley reach, confine floodwater to generally follow the path of the watercourse; and • has finer sediment deposits than the sediment deposits of any bench, bar, or in-stream island of the watercourse.
Flowable substance	means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.
Fuel burning or combustion facility	means a permanent fuel burning or combustion equipment which in isolation, or combined in operation, or which are interconnected, is, or are capable of burning more than 500 kg of fuel in an hour.
GDA	means Geocentric Datum of Australia.
Great Artesian Basin (GAB) spring	means an area protected under the Environment Protection and Biodiversity Conservation Act 1999 because it is considered to be a Matter of National Environmental Significance and

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Word or term	Definition
	<p>identified as a:</p> <ul style="list-style-type: none"> community of native species dependent on natural discharge of groundwater from the Great Artesian Basin; or Great Artesian Basin spring; or Great Artesian Basin discharge spring wetland. <p>A GAB spring includes a spring vent, spring complex or watercourse spring and includes the land to which water rises naturally from below the ground and the land over which the water then flows.</p> <p><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></p> <p><i>Note: The GAB springs dataset can be requested from the Queensland Government Herbarium</i></p>
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 pest species.
Greywater	means wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Greywater does not include sewage.
Groundwater dependent ecosystem (GDE)	<p>means ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes, and ecosystem services.</p> <p>For the purposes of the environmental authority, groundwater dependent ecosystems do not include those mapped as "unknown".</p>
Growing	means to increase by natural development, as any living organism or part thereof by assimilation of nutriment; increase in size or substance.
Holder	<p>means:</p> <ul style="list-style-type: none"> (a) where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or (b) where this document is a development approval, any person who is the registered operator for that development approval. (c)
Hydraulic integrity	refers to the capacity of a dam to contain or safely pass flowable substances based on its design.
Hydraulic performance	means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (ESR/2016/1933).
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.
L_A 90, adj, 15 mins	means the A-weighted sound pressure level, adjusted for tonal character that is equal to or exceeded for 90% of any 15 minutes sample period equal, using Fast response.
L_{aeq}, adj, 15 mins	means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within any 15 minute period has the same square sound pressure as a sound level that varies with time.
Land degradation	<p>has the meaning in the <i>Vegetation Management Act 1999</i> and means the following:</p> <ul style="list-style-type: none"> soil erosion rising water tables the expression of salinity mass movement by gravity of soil or rock ream bank instability a process that results in declining water quality.
Landholder's active groundwater bore	means bores that are able to continue to provide a reasonable yield of water in terms of quantity for the bores authorised purpose or use. This term does not include monitoring bores owned by the administering authority of the <i>Water Act 2000</i> .
Levee	means an embankment that only provides for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of <u>water</u> or <u>flowable substances</u> at any other times.
Linear infrastructure	means powerlines, pipelines, flowlines, roads, and access tracks.

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Word or term	Definition
Liquid	means a substance which is flowing and offers no permanent resistance to changes of shape.
Long term noise event	means a noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five (5) days, even when there are respite periods when the noise is inaudible within those five (5) days.
Low consequence dam	means any dam that is not classified as high or significant as assessed using the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures</i> , published by the administering authority, as amended from time to time.
Low impact petroleum activities	means petroleum activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation or result in significant disturbance to land which cannot be rehabilitated immediately using hand tools after the activity is completed. Examples of such activities include but are not necessarily limited to soil surveys (excluding test pits), topographic surveys, cadastral surveys, and ecological surveys, may include installation of monitoring equipment provided that it is within the meaning of low impact and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.
Mandatory reporting level or MRL	means a warning and reporting level determined in accordance with the criteria in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> published by the administering authority.
Manual	means the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> published by the administering authority, as amended from time to time.
Map of referable wetlands	has the meaning in Schedule 12 of the <i>Environmental Protection Regulation 2008</i> and means the 'Map of referable wetlands', a document approved by the chief executive on 4 November 2011 and published by the department, as amended from time to time by the chief executive under section 144D.
Max 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 sensitive receptor, persists for an aggregate period not greater than five (5) days and does not re-occur for a period of at least four (4) weeks. Re- occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a difference source or source location.
Methodology	means the science of method, especially dealing with the logical principles underlying the organisation of the various special sciences, and the conduct of scientific inquiry.
mix-bury-cover method	means the stabilisation of residual drilling solids in the bottom of a sump by mixing with subsoil and which occurs in accordance with the following methodology: <ul style="list-style-type: none"> the base of the subsoil and residual solid mixture must be separated from the groundwater table by at least one metre of a continuous layer of impermeable subsoil material (kw=10–8m/s) or subsoil with a clay content of greater than 20%; and the residual solids is mixed with subsoil in the sump and cover; and the subsoil and residual solids is mixed at least three parts subsoil to one part waste (v/v); and a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and topsoil is replaced.
Modification or modifying month	see definition of 'construction'
NATA accreditation	means accreditation by the National Association of Testing Authorities Australia.
Notice of	has the meaning in section 18(2) <i>Environmental Offsets Act 2014</i> .

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Word or term	Definition
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Operational plan	includes: <ul style="list-style-type: none"> (a) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA); (b) (b) contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting (c) from any overtopping or loss of structural integrity of the regulated structure.
Pipeline wastewater	means hydrostatic testing water, flush water, or water from low point drains.
Pre-disturbed land use	means the function or use of the land as documented prior to significant disturbance occurring at that location.
Predominant species	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 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 <i>Environmental Offsets Regulation 2014</i> .
Primary protection zone	means an area within 200m from the boundary of any Category A, B or C ESA.
Produced water	has the meaning in Section 15A of the <i>Petroleum and Gas (Production and Safety) Act 2004</i> and means CSG water or associated water for a petroleum tenure.
Protection zone	means the primary protection zone of any Category A, B or C ESA or the secondary protection zone of any Category A or B ESA.
Regional ecosystem	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 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 Regional Ecosystem Description Database (Queensland Herbarium 2013) is maintained by Queensland Herbarium and contains the current descriptions of regional ecosystems.
Register of regulated structures	includes: <ul style="list-style-type: none"> (a) Date of entry in the register; (b) Name of the structure, its purpose, and intended/actual contents; (c) The consequence category of the dam as assessed using the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933); (d) Dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam; (e) Name and qualifications of the suitably qualified and experienced person who certified the design plan and as constructed drawings; (f) For the regulated dam, other than in relation to any levees – <ul style="list-style-type: none"> i. The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam; ii. Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area iii. Dam crest volume (megalitres); iv. Spillway crest level (metres AHD). v. Maximum operating level (metres AHD); vi. Storage rating table of stored volume versus level (metres AHD); vii. Design storage allowance (megalitres) and associated level of the dam (metres AHD); viii. Mandatory reporting level (metres AHD); (g) The design plan title and reference relevant to the dam; (h) The date construction was certified as compliant with the design plan; (i) The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan; (j) Details of the composition and construction of any liner; (k) The system for the detection of any leakage through the floor and sides of the dam; (l) Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of

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Word or term	Definition
	<p>any year;</p> <p>(m) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority;</p> <p>(n) Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.</p>
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 (EM635)</i> , published by the administering authority, as amended from time to time.
Regulated structure	<p>means any structure in the significant or high consequence category as assessed using the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> published by the administering authority. A regulated structure does not include:</p> <ul style="list-style-type: none"> a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container; a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities; a flare pit.
Rehabilitation or rehabilitated	means the process of reshaping and revegetating land to restore it to a stable landform and in accordance with acceptance criteria and, where relevant, includes remediation of contaminated land. For the purposes of pipeline rehabilitation, rehabilitation includes reinstatement, revegetation, and restoration.
Reinstate or reinstatement	for pipelines, means the process of bulk earth works and structural replacement of pre-existing conditions of a site (i.e., soil surface topography, watercourses, culverts, fences and gates and other landscape(d) features) and is detailed in the Australian Pipeline Industry Association (APIA) Code of Environmental Practice: Onshore Pipelines (2013).
Reporting limit	means the lowest concentration that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes, the reporting limit is selected as the lowest non-zero standard in the calibration curve. Results that fall below the reporting limit will be reported as "less than" the value of the reporting limit. The reporting limit is also referred to as the practical quantitation limit or the limit of quantitation. For polycyclic aromatic hydrocarbons, the reporting limit must be based on super-ultra trace methods and, depending on the specific polycyclic aromatic hydrocarbon, will range between 0.005 ug/L–0.02 ug/L.
residual drilling material	means waste drilling materials including muds and cuttings or cement returns from well holes, and which have been left behind after the drilling fluids are pumped out.
Restoration	means the replacement of structural habitat complexity, ecosystem processes, services, and function from a disturbed or degraded site to that of a pre-determined or analogue site. For the purposes of pipelines, restoration applies to final rehabilitation after pipeline decommissioning.
Restricted stimulation fluids	<p>has the meaning in section 206 of the <i>Environmental Protection Act 1994</i> and means fluids used for the purpose of stimulation, including fracturing, that contain the following chemicals in more than the maximum amount prescribed under a regulation—</p> <p>(a) petroleum hydrocarbons containing benzene, ethylbenzene, toluene, or xylene</p> <p>(b) chemicals that produce, or are likely to produce, benzene, ethylbenzene, toluene, or xylene as the chemical breaks down in the environment.</p>
Revegetation or revegetating or revegetate	means to actively re-establish vegetation through seeding or planting techniques in accordance with site specific management plans.
Secondary protection zone	in relation to a Category A or Category B ESA means an area within 100 metres from the boundary of the primary protection zone.

Deleted: secondary treated class A standards

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

Deleted: secondary treated class B standards

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

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Word or term	Definition
	<p>Deleted: secondary treated class C standards</p> <p>Deleted: means treated sewage effluent or greywater which meets the following standards: total phosphorous as P, maximum 20mg/L total nitrogen as N, maximum 30mg/L 5-day biochemical oxygen demand (inhibited) (e.g., Release pipe from sewage treatment plant), maximum 20mg/L suspended solids, maximum 30mg/L pH, range 6.0 to 8.5 e-Coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 10 000cfu per 100mL, maximum 100 000cfu per 100mL.</p>
sensitive place	<p>means:</p> <ul style="list-style-type: none"> 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 workplace used as an office or for business or commercial purposes, which is not part of the petroleum activity(ies) and does not include employee's accommodation or public roads for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 2008.
Sensitive receptor	is defined in Schedule 2 of the Environmental Protection (Noise) Policy 2008, and means an area or place where noise is measured.
Short term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven (7) days. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.
Significant residual impact	has the meaning in section 8 <i>Environmental Offsets Act 2014</i> .
Significantly disturbed or significant disturbance or significant disturbance to land or areas	<p>has the meaning in Schedule 12, section 4 of the <i>Environmental Protection Regulation 2008</i>. Land is significantly disturbed if—</p> <p><u>(a) it is contaminated land ; or</u> <u>(b) it has been disturbed and human intervention is needed to rehabilitate it –</u></p> <p>(i) to a condition required under the relevant environmental authority; or</p> <p>(ii) if the environmental authority does not require the land to be rehabilitated to a particular condition—to the condition it was in immediately before the disturbance.</p>
Species richness	means the number of different species in a given area.
Spillway	means a weir, channel, conduit, tunnel, gate, or other structure designed to permit discharges from the dam, normally under flood conditions or in anticipation of flood conditions.
Stable	has the meaning in Schedule 5 of the <i>Environmental Protection Regulation 2008</i> and, for a site, means the rehabilitation and restoration of the site is enduring or permanent so that the site is unlikely to collapse, erode or subside.
Statement of compliance	<p>for a condition in an environmental authority has the meaning in section 208 of the Environmental Protection Act 1994 and is a condition that requires the holder to give the administering authority a statement of compliance about a document or work relating to a relevant activity. The condition must also state—</p> <p>(a) the criteria (the compliance criteria) the document or work must comply with; and</p> <p>(b) that the statement of compliance must state whether the document or work complies with the compliance criteria; and</p> <p>(c) the information (the supporting information) that must be provided to the administering authority to demonstrate compliance with the compliance criteria; and</p> <p>(d) when the statement of compliance and supporting information must be given to the administering authority</p>

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Word or term	Definition
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. <i>Explanatory note: This definition is restricted from that in the Petroleum and Gas (Production and Safety) Act 2004 in order to only capture the types of stimulation activities that pose a risk to environmental values of water quality in aquifers.</i>
Stimulation fluid	means the fluid injected underground to increase permeability. For clarity, the term stimulation fluid only applies to fluid injected down well post-perforation.
Stimulation impact zone	means a 100m maximum radial distance from the stimulation target location within a gas producing formation.
Strategic environmental area	has the meaning in section 11(1) of the <i>Regional Planning Interest Act 2014</i> .
Structure	means a dam or levee.
Subterranean cave GDE	<ul style="list-style-type: none"> means an area identified as a subterranean cave in the mapping produced by the Queensland Government and identified in the Queensland Government Information System, as amended from time to time; and means a cave ecosystem which requires access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain its communities of plants and animals, ecological processes, and ecosystem services. Subterranean cave GDEs are caves dependent on the subterranean presence of groundwater. Subterranean cave GDEs have some degree of groundwater connectivity and are indicated by either high moisture levels or the presence of stygofauna, or both, referred to in the Queensland Government Wetlands Info mapping program, as amended from time to time. <p><i>Note: the Subterranean GDE (caves) dataset can be displayed through the Queensland Government Wetland Info mapping program.</i> <i>Note: the Subterranean GDE (caves) dataset can be obtained from the Queensland Government Information System.</i></p>
Suitably qualified and experienced person	<p>in relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the <i>Professional Engineers Act 2002</i>, and has demonstrated competency and relevant experience:</p> <ul style="list-style-type: none"> for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments. <p><i>Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.</i></p>
Suitably qualified person	means a person who has professional qualifications, training or skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice, and analysis about performance relevant to the subject matters using relevant protocols, standards, methods, or literature.
Suitably qualified third party	<p>means a person who:</p> <ol style="list-style-type: none"> has qualifications and experience relevant to performing the function including but not limited to: <ol style="list-style-type: none"> a bachelor's degree in science or engineering; and 3 years' experience in undertaking soil contamination assessments; and is a member of at least one organisation prescribed in Schedule 14 of the <i>Environmental Protection Regulation 2019</i>; 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 residual drilling material or drilling fluids are stored only for the duration of drilling activities.
Synthetic based drilling mud	means a mud where the base fluid is a synthetic oil, consisting of chemical compounds which are artificially made or synthesised by chemically modifying petroleum components or other raw materials rather than the whole crude oil.

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Word or term	Definition
System design plan	means a plan that manages an integrated containment system that shares the required DSA and/or ESS volume across the integrated containment system.
Topsoil	means the surface (top) layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location, and slope, but generally is not greater than about 300mm in depth from the natural surface.
Total density of coarse woody material	means the total length of logs on the ground greater than or equal to 10cm diameter per hectare and number of logs on the ground greater than or equal to 10cm diameter per hectare.
transmissivity	means the rate of flow of water through a vertical strip of aquifer which is one unit wide and which extends the full saturated depth of the aquifer.
valid complaint	means all complaints unless considered by the administering authority to be frivolous, vexatious, or based on mistaken belief.
void	means any constructed, open excavation in the ground.
waste and resource management hierarchy	has the meaning provided in section 9 of the <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— <ul style="list-style-type: none"> (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 <ul style="list-style-type: none"> (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 <i>Environmental Protection Act 1994</i> in conjunction with the common meaning of "fluid" which is "a substance which is capable of flowing and offers no permanent resistance to changes of shape". Accordingly, to be a waste fluid, the waste must be a substance which is capable of flowing and offers no permanent resistance to changes of shape.
watercourse	has the meaning in Schedule 4 of the <i>Environmental Protection Act 1994</i> and means: <ol style="list-style-type: none"> 1) a river, creek or stream in which water flows permanently or intermittently— <ol style="list-style-type: none"> a) in a natural channel, whether artificially improved or not; or b) in an artificial channel that has changed the course of the watercourse. 2) Watercourse includes the <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, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.
water year	means the 12-month period from 1 July to 30 June.
well integrity	the ability of a well to contain the substances flowing through it.
wet season	means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.
wetland	for the purpose of this environmental authority, wetland means: <ul style="list-style-type: none"> • areas shown on the Map of referable wetlands which is a document approved by the chief executive on 4 November 2011 and published by the department, as amended from time to time by the chief executive under section 144D of the Environmental Protection Regulation 2008; 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

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Word or term	Definition
	<p>attributes:</p> <ul style="list-style-type: none"> ○ 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. <p>The term wetland includes riverine, lacustrine, estuarine, marine, and palustrine wetlands; and it does not include a Great Artesian Basin Spring or a subterranean wetland that is a cave or aquifer.</p>
wetland of high ecological significance (HES)	means a wetland that meets the definition of a wetland and that is shown as a wetland of 'high ecological significance' or wetland of 'high ecological value' on the Map of referable wetlands.
wetland of other environmental value	means a wetland that meets the definition of a wetland and that is shown as a wetland of 'general environmental significance' or wetland of 'other environmental value' on the 'Map of referable wetlands'.

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