

Permit¹

Environmental Protection Act 1994

Environmental authority

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

Permit¹ number: EPPG04180116

Project Name: Arrow Bowen Pipeline

Environmental authority takes effect when the relevant tenure is granted.

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

The anniversary date of this environmental authority is the day on which the relevant tenure is granted.

Environmental authority holder(s)

Name	Registered address
Arrow Bowen Pipeline Pty Ltd ACN: 141 181 295	Level 39 111 Eagle Street BRISBANE QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
Resource activity that is a petroleum activity which includes the following: - Item 3, Schedule 2A of the Environmental Protection Regulation 2008 – a petroleum activity that is likely to have a significant impact on category A or B environmentally sensitive area - Item 5, Schedule 2A of the Environmental Protection Regulation 2008 – constructing a new pipeline of more than 150km under a petroleum authority	Petroleum Pipeline Licence (PPL) 2016

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

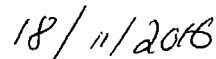


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| <ul style="list-style-type: none">- Item 8, Schedule 2A of the Environmental Protection Regulation 2008 – a petroleum activity or GHG storage activity, other than an activity mentioned in any of items 1 to 7, that includes one or more activities mentioned in schedule 2 for which an aggregate environmental score is stated. | |
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Signature

Andrew Langford
Delegate of the administering authority
Environmental Protection Act 1994



Date

Enquiries:

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Additional information for applicants

Environmentally relevant activities

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

An environmental authority authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the authority 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 and notifiable activities

It is a requirement of the *Environmental Protection Act 1994* (EP Act) that if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being, contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.

Responsibilities under the *Environmental Protection Act 1994*

Separate to the requirements of standard conditions, the holder of the environmental authority must also meet their obligations under the *Environmental Protection Act 1994*, and the regulations made under that Act. For example, the holder must be aware of the following provisions of the *Environmental Protection Act 1994*.

General environmental duty

Section 319 of the *Environmental Protection Act 1994* states that we all have a general environmental duty. This means that we are all responsible for the actions we take that affect the environment. We must not carry out any activity that causes or is likely to cause environmental harm unless we take all reasonable and practicable measures to prevent or minimise the harm. To decide what meets your general environmental duty, you need to think about these issues:

- the nature of the harm or potential harm
- the sensitivity of the receiving environment
- the current state of technical knowledge for the activity
- the likelihood of the successful application of the different measures to prevent or minimise environmental harm that might be taken
- the financial implications of the different measures as they would relate to the type of activity.

It is not an offence not to comply with the general environmental duty, however maintaining your general environmental duty is a defence against the following acts:

- (a) an act that causes serious or material environmental harm or an environmental nuisance
- (b) an act that contravenes a noise standard
- (c) a deposit of a contaminant, or release of stormwater run-off, mentioned in section 440ZG.

More information is available on the Department of Environment and Heritage Protection website www.ehp.qld.gov.au.

Duty to notify

Section 320 of the *Environmental Protection Act 1994* explains the duty to notify. The duty to notify applies to all persons and requires a person or company to give notice where serious or material environmental harm is caused or threatened. Notice must be given of the event, its nature and the circumstances in which the event happened. Notification can be verbal, written or by public notice depending on who is notifying and being notified.

The duty to notify arises where:

- a person carries out activities or becomes aware of an act of another person arising from or connected to those activities which causes or threatens serious or material environmental harm
- while carrying out activities a person becomes aware of the happening of one or both of the following events:
 - the activity negatively affects (or is reasonably likely to negatively affect) the water quality of an aquifer
 - the activity has caused the unauthorised connection of 2 or more aquifers.

For more information on the duty to notify requirements refer to the guideline *Duty to notify of environmental harm (EM467)*.

Some Relevant Offences under the *Environmental Protection Act 1994*

Non-compliance with a condition of an environmental authority (section 430)

Section 430 of the *Environmental Protection Act 1994* requires that a person who is the holder of, or is acting under an environmental authority must not wilfully contravene, or contravene a condition of the environmental authority.

Environmental authority holder responsible for ensuring conditions complied with (section 431)

Section 431 of the *Environmental Protection Act 1994* requires that the holder of an environmental authority must ensure everyone acting under the environmental authority complies with the conditions of the environmental authority. If another person acting under the environmental authority commits an offence against section 430, the holder also commits an offence, namely, the offence of failing to ensure the other person complies with the conditions.

Causing serious or material environmental harm (sections 437–39)

Material environmental harm is environmental harm that is not trivial or negligible in nature. It may be great in extent or context or it may cause actual or potential loss or damage to property. The difference between material and serious harm relates to the costs of damages or the costs required to

either prevent or minimise the harm or to rehabilitate the environment. Serious environmental harm may have irreversible or widespread effects or it may be caused in an area of high conservation significance. Serious or material environmental harm excludes environmental nuisance.

Causing environmental nuisance (section 440)

Environmental nuisance is unreasonable interference with an environmental value caused by aerosols, fumes, light, noise, odour, particles or smoke. It may also include an unhealthy, offensive or unsightly condition because of contamination.

Depositing a prescribed water contaminant in waters (section 440ZG)

Prescribed contaminants include a wide variety of contaminants listed in Schedule 9 of the *Environmental Protection Act 1994*.

It is your responsibility to ensure that prescribed contaminants are not left in a place where they may or do enter a waterway, the ocean or a stormwater drain. This includes making sure that stormwater falling on or running across your site does not leave the site contaminated. Where stormwater contamination occurs you must ensure that it is treated to remove contaminants. You should also consider where and how you store material used in your processes onsite to reduce the chance of water contamination.

Placing a contaminant where environmental harm or nuisance may be caused (section 443)

A person must not cause or allow a contaminant to be placed in a position where it could reasonably be expected to cause serious or material environmental harm or environmental nuisance.

Some Relevant Offences under the *Waste Reduction and Recycling Act 2011*

Littering (section 103)

Litter is any domestic or commercial waste and any material a person might reasonably believe is refuse, debris or rubbish. Litter can be almost any material that is disposed of incorrectly. Litter includes cigarette butts and drink bottles dropped on the ground, fast food wrappers thrown out of the car window, poorly secured material from a trailer or grass clippings swept into the gutter. However, litter does not include any gas, dust, smoke or material emitted or produced during, or because of, the normal operations of a building, manufacturing, mining or primary industry.

Illegal dumping of waste (section 104)

Illegal dumping is the dumping of large volumes of litter (200L or more) at a place. Illegal dumping can also include abandoned vehicles.

Responsibilities under Other Legislation

An environmental authority pursuant to the *Environmental Protection Act 1994* does not remove the need to obtain any additional approval for the activity that might be required by other State and/or Commonwealth legislation. Other legislation for which a permit may be required includes but is not limited to the:

- *Aboriginal Cultural Heritage Act 2003*
- contaminated land provisions of the *Environmental Protection Act 1994*
- *Fisheries Act 1994*
- *Forestry Act 1959*

- *Nature Conservation Act 1992*
- *Petroleum and Gas (Production and Safety) Act 2004 / Petroleum Act 1923*
- *Queensland Heritage Act 1992*
- *Sustainable Planning Act 2009*
- *Water Supply (Safety and Reliability) Act 2008*
- *Water Act 2000*

Applicants are advised to check with all relevant statutory authorities and comply with all relevant legislation.

An environmental authority for petroleum activities is not an authority to impact on water levels or pressure heads in groundwater aquifers in or surrounding formations. There are obligations to minimise or mitigate any such impact under other Queensland Government and Commonwealth Government legislation.

This environmental authority consists of the following schedules:

Schedule A	General Environmental Protection
Schedule B	Waste Management
Schedule C	Protecting Acoustic Values
Schedule D	Protecting Air Values
Schedule E	Protecting Land Values
Schedule F	Protecting Biodiversity Values
Schedule G	Protecting Water Values
Schedule H	Rehabilitation
Schedule I	Dams
Schedule J	Definitions

SCHEDULE A – GENERAL ENVIRONMENTAL PROTECTION

Authorised Petroleum Activities

- (A1) In the carrying out of the petroleum activity(ies), the holder of this environmental authority must not exceed the number and maximum size for each of the specified petroleum activities listed in *Schedule A, Table 1 – Authorised Petroleum Activities and Pipeline Location*.
- (A2) The following environmentally specified relevant activities are authorised under this environmental authority:
- (a) **ERA 63(1)(b)(i) – Sewage Treatment** – operating sewage treatment works, other than no-release works, with a total daily peak design capacity of more than 100 but no more than 1500 equivalent persons (EP)
- (A3) Petroleum activities must be constructed within the locations outlined in *Schedule A, Table 1 – Authorised Petroleum Activities and Pipeline Location*.

Schedule A, Table 1 – Authorised Petroleum Activities and Pipeline Location

Petroleum Licence No.	Petroleum Activity	Maximum Size and number (where applicable)	Location	
			Latitude (GDA94)	Longitude (GDA94)
PPL 2016	Arrow Bowen Pipeline and Right of Way (ROW) (Revision K Alignment):	430km		
	Start - KP 0		148.0431 E	21.6523 S
	End - KP 347.8 (area of pipeline ROW outside of the Stanwell Gladstone Infrastructure Corridor (SGIC))	ROW no greater than 40 m wide	150.4227 E	23.3986 S
	Start - KP 347.8		150.4227 E	23.3986 S
	End - KP 430 (area of pipeline within SGIC)	ROW no greater than 30 m wide	151.0062 E	23.8119 S
	Additional work areas (AWAs) (located outside RoW) required to facilitate infrastructure crossings, vehicle access, temporary storage areas, water storage dams.	70ha total disturbance permitted for all AWA's combined. AWA's will preferentially use <u>areas of pre-existing disturbance</u>		
	Mainline Valve (MLV) Stations (including cathodic protection and vent)	Disturbance permitted for the four MLV's required is included in either the ABP RoW or the AWA disturbance calculations.		
	Main Line Valve 1 (KP 103)			
	Main Line Valve 2 (KP 213)			
	Main Line Valve 3 (KP 308.5)			
	Main Line Valve 4 (KP 375.6)			
	Temporary Construction Camps (including sewage treatment plant and effluent irrigation / disposal area)	A maximum of four (4) temporary construction camps are permitted with a maximum disturbance of 25ha per camp (including sewage treatment plant and disposal area). Camps are to be located in <u>areas of pre-existing disturbance</u>		

Permit
Environmental authority EPPG04180116

Petroleum Licence No.	Petroleum Activity	Maximum Size and number (where applicable)	Location	
			Latitude (GDA94)	Longitude (GDA94)
	Temporary Pipeline Lay Down Areas	A maximum of three (3) temporary pipeline lay down areas are permitted with a maximum disturbance of 10 ha per area. Lay down areas are to be located in <u>areas of pre-existing disturbance</u>		
	<u>Low Consequence Dams</u>	A maximum of eight (8) low consequence dams are permitted with a maximum disturbance footprint of 0.5 ha per dam and a maximum capacity of 20 ML per dam. Disturbance required for low consequence dams must be within the disturbance permitted for the AWA's and / or ROW.		
	Gladstone Gas Hub (including cathodic protection)	Maximum construction footprint of 9 ha		

- (A4) This environmental authority authorises the carrying out of the authorised petroleum activities and specified relevant activities subject to the conditions of this environmental authority.
- (A5) This environmental authority does not authorise a relevant act¹ to occur in carrying out an authorised environmentally relevant activity unless a condition expressly authorises the relevant act to occur.²

Monitoring standards

- (A6) All monitoring must be undertaken by a suitably qualified person³.
- (A7) If requested by the administering authority in relation to investigating a complaint, monitoring must be commenced within 10 business days.
- (A8) All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests.
- (A9) Notwithstanding condition (A7), where there are no NATA accredited laboratories for a specific analyte or substance, then duplicate samples must be sent to at least two separate laboratories for independent testing or evaluation.
- (A10) Monitoring and sampling must be carried out in accordance with the requirements of the following documents (as relevant to the sampling being undertaken), as amended from time to time:
- (a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual 2009 – Environmental Protection (Water) Policy 2009
 - (b) for groundwater, *Groundwater Sampling and Analysis – A Field Guide* (2009:27 GeoCat #6890.1)
 - (c) for noise, the Environmental Protection Regulation 2008

¹ See section 493A of the Act.

² Section 493A(2) of the Act provides that a relevant act is unlawful unless it is authorised to be done under Section 493 (2).

³ Words underlined are currently defined in the dictionary, schedule of an environmental authority or the *Environmental Protection Act 1994* and/or its subordinate legislation.

- (d) for air, the *Queensland Air Quality Sampling Manual* and/or Australian Standard 4323.1:1995 *Stationary source emissions method 1: Selection of sampling positions*, as appropriate for the relevant measurement
- (e) for soil, the *Guidelines for Surveying Soil and Land Resources*, 2nd edition (McKenzie *et al.* 2008), and/or the *Australian Soil and Land Survey Handbook*, 3rd edition (National Committee on Soil and Terrain, 2009)
- (f) for dust, Australian Standard AS3580

Notification

- (A11) 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) unauthorised releases of any volume of prescribed contaminants to waters
 - (d) unauthorised releases of volumes of contaminants, in any mixture, to land greater than:
 - i. 200L of hydrocarbons; or
 - ii. 5,000L of raw sewage; or
 - iii. 10,000L of treated sewage effluent.
 - (e) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.

Financial Assurance

- (A12) 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*.
- (A13) 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.
- (A14) 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.

Third Party Audit

- (A15) A third party auditor, nominated by the holder of this environmental authority and accepted by the administering authority, must audit compliance with the conditions of this environmental authority at a minimum frequency of:
- (a) annually during construction with the first audit to be undertaken 6 months after the commencement of construction activities; and
 - (b) every three years during operations starting from the first year of operations.
- (A16) Notwithstanding condition (A15), the holder of this environmental authority may, prior to undertaking the third party audit, negotiate with the administering authority the scope and content of the third party audit.
- (A17) An audit report of the audit required by condition (A15) must be prepared and certified by the third party auditor presenting the findings of each audit carried out.
- (A18) The financial cost of the third party audit is to be borne by the holder of this environmental authority.
- (A19) Not more than 60 business days following the submission of the audit report, the holder of this environmental authority must provide a written report to the administering authority addressing the:
- (a) actions taken by the holder to ensure compliance with this environmental authority; and
 - (b) actions taken to prevent a recurrence of any non-compliance issues identified.
- (A20) The audit report required by condition (A17) must be submitted with the subsequent annual return.

Contingency procedures for emergency environmental incidents

- (A21) Petroleum activities involving significant disturbance to land cannot commence until the development of written contingency procedures for emergency environmental incidents which include, but are not necessarily limited to:
- (a) a clear definition of what constitutes an environmental emergency incident or near miss for the petroleum activity
 - (b) consideration of the risks caused by the petroleum activity including the impact of flooding and other natural events on the petroleum activity
 - (c) response procedures to be implemented to prevent or minimise the risks of environmental harm occurring
 - (d) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused
 - (e) procedures to investigate causes and impacts including impact monitoring programs for releases to waters and/or land
 - (f) training of staff to enable them to effectively respond; and
 - (g) procedures to notify the administering authority, local government and any potentially impacted landholder.

Maintenance of plant and equipment

- (A22) All plant and equipment must be maintained and operated in their proper and effective condition.
- (A23) The following infrastructure must be signed with a unique reference name or number in such a way that it is clearly observable:
- (a) low consequence dams
 - (b) sewage treatment facilities
 - (c) specifically authorised discharge points to air and waters
 - (d) any chemical storage facility associated with the environmentally relevant activity of chemical storage; and
 - (e) gas processing facilities.

Complaints

- (A24) Petroleum activities must not cause environmental nuisance at a sensitive place, other than where an alternative arrangement is in place.

Documentation

- (A25) 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.
- (A26) All plans, procedures, programs, reports and methodologies required under this environmental authority must be written and implemented.
- (A27) All documents required to be developed under this environmental authority must be kept for five years.
- (A28) 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.
- (A29) 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.

Annual Environmental Report

- (A30) An Annual Environmental Report must be submitted to the administering authority for the environmental authority in accordance with the following:
- (a) provide details regarding the status of disturbance, progressive rehabilitation and final rehabilitation associated with project activities and the schedule of disturbance submitted to the administering authority as part of the financial assurance calculations;
 - (b) identify all non-compliances with the conditions contained in the this environmental authority;
 - (c) provide details regarding complaints relating to environmental harm and environmental nuisance made during the reporting period;
 - (d) provide details regarding internal audit findings and corrective actions that have occurred during the reporting period; and
 - (e) identify any amendments needed to the following documents that relate to the conditions of this environmental authority:
 - i. any current environmental management plan for the project; and
 - ii any current Plan of Operations for the project.
- (A31) An Annual Environmental Report is to be lodged with the administering authority not more than 30 calendar days after the anniversary date of the environmental authority.

Compliance with Australian Pipeline Industry Association Code of Environmental Practice

- (A32) The holder of this environmental authority must undertake petroleum activities in relation to the planning, construction, operation and maintenance of petroleum pipelines in accordance with the Australian Pipeline Industry Association (APIA) *Code of Environmental Practice — Onshore Pipelines*, October 2013 (the code) or subsequent versions thereof and/or AS 2885.1:2012. To the extent of any inconsistency between the conditions of this environmental authority and the Code, the conditions of this authority prevail.

SCHEDULE B – WASTE MANAGEMENT

General Waste Management

- (B1) Measures must be implemented so that waste is managed in accordance with the waste and resource management hierarchy and the waste and resource management principles.
- (B2) Waste, including waste fluids, but excluding waste used in closed-loop systems, must be transported off-site for lawful re-use, remediation, recycling or disposal, unless the waste is specifically authorised by conditions (B3) to (B6) to be disposed of or used on site.
- (B3) Waste fluids, other than flare precipitant stored in flare pits, or residual drilling material or drilling fluids stored in sumps, must be contained in either:
 - (a) an above ground container; or
 - (b) a structure which contains the wetting front.
- (B4) Green waste may be used on-site for either rehabilitation or sediment and erosion control, or both.
- (B5) Vegetation waste may be burned if it relates to a state forest, timber reserve or forest entitlement area administered by the *Forestry Act 1959* and a permit has been obtained under the *Fire and Rescue Service Act 1990*.

Pipeline wastewater

- (B6) Pipeline waste water, may be released to land provided that it:
 - (a) can be demonstrated it meets the acceptable standards for release to land; and
 - (b) is released in a way that does not result in visible scouring or erosion or pooling or run-off or vegetation die-off.
- (B7) Pipeline waste water, must not be released directly or indirectly to any waters.
- (B8) CSG water is not permitted for use during the hydrostatic testing of the pipeline.
- (B9) The holder of this environmental authority must undertake integrity testing of pipe sections where pipe joints fall within a watercourse, prior to installation of these pipe sections.

Sewage Treatment

- (B10) Prior to construction of a sewage treatment facility, the minimum area of land and location to be utilised for the disposal of treated sewage effluent, excluding any necessary buffer zones, must be nominated by the holder of the environmental authority.
- (B11) All nominated locations and minimum areas of land in condition (B10) must be determined using the Model for Effluent Disposal using Land Irrigation (MEDLI) program or recognised equivalent.

- (B12) Treated sewage effluent or greywater can be released to land provided it:
- (a) meets or exceeds secondary treated class B standards for a treatment system with a daily peak design capacity of between 150EP and 1,500EP; or
 - (b) meets or exceeds secondary treated class C standards for a treatment system with a daily peak design capacity of less than 150EP.
- (B13) The release of treated sewage effluent or greywater authorised in condition (B12) must:
- (a) be to a fenced and signed contaminant release area(s)
 - (b) not result in pooling or run-off or aerosols or spray drift or vegetation die-off
 - (c) be to a contaminant release area(s) that is kept vegetated with groundcover, that is:
 - i. not a declared pest species
 - ii. kept in a viable state for transpiration and nutrient uptake; and
 - iii. grazed or harvested and removed from the contaminant release area as needed, but not less than every three months.
- (B14) Notwithstanding condition (B12), treated sewage effluent that meets or exceeds secondary treated class A standards may be used for dust suppression or construction activities.
- (B15) Sewage pump stations must be fitted with a:
- (a) stand-by pump; and
 - (b) high level alarm to warn of imminent pump station overflow, that operates without mains power or with a back-up power source that starts automatically in the event of a power failure.

Management of Drilling Fluids and Cuttings associated with Horizontal Directional Drilling

- (B16) All drilling fluids and associated materials required for horizontal directional drilling (HDD) must be stored on the HDD entry pad permitted for each of the HDD watercourse crossings as authorised in Table 1 – Schedule G of this environmental authority.
- (B17) The storage of drilling fluids and associated materials required by condition (B16) must be within bunded areas that are constructed, installed and maintained to:
- (a) prevent any release of contaminants through the bed or banks of the bunded area to any land or waters including ground water;
 - (b) ensure a freeboard to retain a 100 year Annual Recurrence Interval (ARI) 24 hour rainfall event; and
 - (c) ensure the stability of the bunds during a 100 year ARI 24 hour rainfall event.
- (B19) Where oil and synthetic-based drilling fluids are proposed to be used for HDD activities, the administering authority must be notified 20BD prior to the activity occurring.
- (B20) Drilling fluids (slurry) containing polymers, cellulose dispersants, lubricants and any other additives that preclude them from being re-used on site as detailed in condition (B21) must be lawfully transported and disposed of at an appropriately licensed facility.
- (B21) The recycling or re-use of waste drilling fluids and/or cuttings by a third party is permitted providing it is assessed and can meet the criteria as detailed in the Department of Environment and Heritage General beneficial use approval for Drilling Mud (*Waste Reduction and Recycling Act 2011*) as amended from time-to-time.

- (B22) Cuttings (waste drilling solids) that are generated during HDD activities authorised under this environmental authority that meet the criteria defined in (B21) can be reused onsite providing rehabilitation conditions (H3)(c) and (H3)(d) can be achieved.
- (B23) Cuttings (waste drilling solids) that are generated during HDD activities authorised under this environmental authority that cannot meet the criteria defined in (B21) are not authorised to be used on site and must be transported and disposed of at an appropriately licensed facility.

SCHEDULE C – PROTECTING ACOUSTIC VALUES

- (C1) Notwithstanding condition (A24), 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	Metric	Short term noise event	Medium term noise event	Long term noise event
7:00am—6:00pm	<u>L_{Aeq,adj,15min}</u>	45dBA	43dBA	40dBA
6:00pm—10:00pm	<u>L_{Aeq,adj,15min}</u>	40dBA	38dBA	35dBA
10:00pm—6:00am	<u>L_{Aeq,adj,15min}</u>	28dBA	28dBA	28dBA
	<u>Max L_{pA, 15mins}</u>	55dBA	55dBA	55dBA
6:00am—7:00am	<u>L_{Aeq,adj,15min}</u>	40dBA	38dBA	35dBA

1. The noise limits in Table 1 have been set based on the following deemed background noise levels (L_{ABG}):

7:00am—6:00pm: 35dBA

6:00pm—10:00pm: 30dBA

10:00pm—6:00am: 25dBA

6:00am—7:00am: 30dBA

- (C2) 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	+ 2dBA
Tonal characteristic is clearly audible	+ 5dBA
Impulsive characteristic is detectable	+ 2 to + 5dBA

- (C3) Notwithstanding condition (C1), emission of any low frequency noise must not exceed either (C3(a)) and (C3(b)), or (C3(c)) and (C3(d)) in the event of a valid complaint about low frequency noise being made to the administering authority:
- (a) 60dB(C) measured outside the sensitive receptor; and
 - (b) the difference between the external A-weighted and C-weighted noise levels is no greater than 20dB; or
 - (c) 50dB(Z) measured inside the sensitive receptor; and
 - (d) the difference between the internal A-weighted and Z-weighted (Max L_{pZ, 15min}) noise levels is no greater than 15dB.
- (C4) A Blast Management Plan must be developed for each blasting activity in accordance with Australian Standard 2187 by a suitably qualified person prior to each planned blasting activity.

- (C5) The Blast Management Plan must include measures to minimise the likelihood of any adverse effects being caused by air-blast overpressure and/or ground borne vibrations at any sensitive receptor and demonstrate current best practice environmental management.
- (C6) Blasting operations must be designed to not exceed an airblast overpressure level of 120dB (linear peak) at any time, when measured at or extrapolated to any sensitive place.
- (C7) Blasting operations must be designed to not exceed a ground-borne vibration peak particle velocity of 10mm/s at any time, when measured at or extrapolated to any sensitive place.

SCHEDULE D – PROTECTING AIR VALUES

Venting and flaring

- (D1) Unless venting is authorised under the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923*, waste gas must be flared in a manner that complies with all of (D1(a)) and (D1(b)) and (D1(c)); or with (D1(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.
- (D2) This environmental authority does not authorise fuel burning and/or combustion equipment capable of burning at least 500kg of fuel in an hour.



SCHEDULE E – PROTECTING LAND VALUES

General

- (E1) Contaminants must not be directly or indirectly released to land except for those releases authorised by the conditions of this environmental authority.

Minimising Disturbance to Land and Soil Management

- (E2) The holder of this environmental authority must:
- (a) ensure that for land that is to be significantly disturbed by petroleum activities (except in areas of highly erosive soils), soil excavation is undertaken so that:
 - i. top soil is removed and kept separate during excavation, storage and backfilling of pipeline trenches;
 - ii. subsoils are kept separate during the excavation, storage and backfilling of pipeline trenches;
 - iii. all soils are stored in a manner that their physical, chemical and biological properties are preserved; and
 - iv. soils are used for rehabilitation purposes;
 - (b) the total length of pipeline trench open at any one time is minimised as far as practicable; and
 - (c) detailed mitigation measures and procedures are in place prior to disturbance to manage the risk of adverse soil disturbance in the carrying out of the petroleum activities.

Erosion and sediment control

- (E3) 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; and
 - (b) minimise soil erosion resulting from wind, rain, and flowing water; and
 - (c) minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain, and flowing water; and
 - (d) minimise work-related soil erosion and sediment runoff; and
 - (e) minimise negative impacts to land or properties adjacent to the activities (including roads).
- (E4) 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.
- (E5) Erosion and sediment control measure must be in accordance, to the greatest practicable extent, with the International Erosion Control Association (IECA) *Best Practice Erosion and Sediment Control (BPESC)* document.

Acid sulfate soils

- (E6) Acid sulfate soils and potential acid sulfate soil material disturbed during pipeline construction must be treated and managed in accordance with the latest edition of the *Queensland Acid Sulfate Soil Technical Manual*.

Chemical storage

- (E7) Chemicals and fuels stored, must be effectively contained and meet Australian Standards, where such a standard is applicable.

Contaminated Land

- (E8) The holder of this environmental authority must avoid disturbance in areas of contamination during pipeline activities.
- (E9) If disturbance of contaminated land is required during pipeline activities the holder of this environmental authority must:
- (a) undertake an assessment by a suitably qualified contaminated land specialist in accordance with the latest edition of the Queensland Government's *Contaminated Land Assessment Guideline*; and
 - (b) remediate or manage the contaminated land in accordance with the latest edition of the Queensland Government's Guideline – *Managing Contaminated Land under the Sustainable Planning Act 2009*.

SCHEDULE F – PROTECTING BIODIVERSITY VALUES

Confirming biodiversity values

- (F1) Prior to undertaking activities that result in significant disturbance to land in areas of native vegetation, confirmation of on-the-ground biodiversity values of the native vegetation communities at that location must be undertaken by a suitably qualified person.
- (F2) A suitably qualified person must develop and certify a methodology so that condition (F1) can be complied with and which is appropriate to confirm on-the-ground biodiversity values.
- (F3) For conditions (F4) to (F9), where mapped biodiversity values differ from those confirmed under conditions (F1) and (F2), petroleum activities may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity value.

Planning for land disturbance

- (F4) The location of the petroleum activity(ies) must be selected in accordance with the following site planning principles:
 - (a) maximise the use of areas of pre-existing disturbance
 - (b) in order of preference, avoid, minimise or mitigate any impacts, including cumulative impacts, on areas of native vegetation or other areas of ecological value
 - (c) minimise disturbance to land that may result in land degradation
 - (d) in order of preference, avoid then minimise isolation, fragmentation, edge effects or dissection of tracts of native vegetation; and
 - (e) in order of preference, avoid then minimise clearing of native mature trees.
- (F5) Remnant vegetation must not be cleared for the purposes of camps, or pipeline laydown areas associated with the construction of the pipeline except as permitted under this environmental authority.
- (F6) Measures to prevent fauna being harmed from entrapment must be implemented during the construction and operation of low hazard dams and pipeline trenches.

Planning for land disturbance—linear infrastructure

- (F7) Notwithstanding condition (A3), pipeline construction corridors must:
 - (a) maximise co-location;
 - (b) be minimised in width to the greatest practical extent; and
 - (c) be no greater than 40m in total width.

Authorised disturbance to Environmentally Sensitive Areas

- (F8) 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 protection zones

Environmentally sensitive area	Within the environmentally sensitive area	Primary protection zone of the environmentally sensitive area	Secondary protection zone of the environmentally sensitive area
Category A environmentally sensitive areas	No petroleum activities permitted.	Only <u>low impact petroleum activities</u> permitted.	Only essential petroleum activities permitted.
Category B environmentally sensitive areas that are other than 'endangered' regional	Only low impact petroleum activities permitted.	Only low impact petroleum activities permitted.	Only essential petroleum activities
Category B environmentally sensitive areas that are 'endangered' regional ecosystems	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.	Only essential petroleum activities permitted.
Category C environmentally sensitive areas that are 'nature refuges' or 'koala habitat'	Only low impact petroleum activities permitted.	Only low impact petroleum activities permitted.	
Category C environmentally sensitive areas 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 environmentally sensitive areas that are 'regional parks' (previously known as	Only essential petroleum activities	Only essential petroleum activities	
Category C environmentally sensitive areas that are 'state forests' or 'timber reserves'	Only essential petroleum activities	Petroleum activities permitted.	
Areas of vegetation that are 'critically limited'	Only low impact petroleum activities permitted.	Only essential petroleum activities	

- (F9) 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 (F4), (F5) and (F6)
 - 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.

17

Impacts to prescribed environmental matters

- (F10) Significant residual impacts to prescribed environmental matters are not authorised under this environmental authority or the *Environmental Offsets Act 2014* unless the impact(s) is specified in *Schedule F, Table 2—Significant residual impacts to prescribed environmental matters*.

Schedule F, Table 2—Significant residual impacts to prescribed environmental matters.

Prescribed environmental matter	Location of impact	Maximum extent of impact (ha)
REGULATED VEGETATION		
Of concern regional ecosystem (not within an urban area)		
RE 11.3.2	Within the ABP Project Area – indicative locations provided in Appendix 1	14.14
RE 11.3.3		5.18
RE 11.3.4		3.58
RE 11.3.36		1.14
Re 11.11.16		0.53
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		
Coastal bioregions and sub regions		
Stream Order 1 or 2 (10 m)	Within the ABP Project Area – indicative locations provided in Appendix 1	0.03
Stream Order 3 or 4 (25 m)		0.14
Stream Order 5 or greater (50 m)		0.61
Non-coastal bioregions and sub regions		
Stream Order 1 or 2 (25 m)	Within the ABP Project Area – indicative locations provided in Appendix 1	7.21
Stream Order 3 or 4 (50 m)		5.16
Stream Order 5 or greater (100 m)		1.18
Wetlands and watercourses		
A wetland of high ecological significance shown on the Map of referable wetlands		
RE 11.3.27	Within the ABP Project Area – indicative locations provided in Appendix 1	5.37
Protected wildlife habitat		
Habitat for an animal that is endangered wildlife		
Hemiaspis damellii (Grey Snake)	Within the ABP Project Area – indicative locations provided in Appendix 1	34.62
Habitat for an animal that is vulnerable wildlife		
Acanthophis antarcticus (Common Death Adder)	Within the ABP Project Area – indicative locations provided in Appendix 1	168.07
Habitat for an animal that is special least concern wildlife		
Ornithorhynchus anatinus (Platypus)	Within the ABP Project Area – indicative locations provided in Appendix 1	1.01

Prescribed environmental matter	Location of impact	Maximum extent of impact (ha)
Marine plants		
Marine plant (not in an urban area)		
RE's 11.1.1; 11.1.2; 11.1.4	Within the ABP Project Area – indicative locations provided in Appendix 1	1.44

- (F11) Records demonstrating that each impact to a prescribed environmental matter not listed in *Schedule F, Table 2—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:
- completed by an appropriately qualified person; and
 - kept for the life of the environmental authority.
- (F12) 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 2—Significant residual impacts to prescribed environmental matters*, unless a lesser extent of the impact has been approved in accordance with condition (F14).
- (F13) The significant residual impacts to a prescribed environmental matter authorised in condition (F8) for which an environmental offset is required by condition (F10) may be carried out in stages. An environmental offset can be delivered for each stage of the impacts to prescribed environmental matters.
- (F14) 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:
- for the forthcoming stage—the estimated significant residual impacts to each prescribed environmental matter; and
 - for the previous stage, if applicable—the actual significant residual impacts to each prescribed environmental matter, to date.
- (F15) The report required by condition (F14) must be approved by the administering authority before a notice of election for the forthcoming stage, if applicable, is given to the administering authority.
- (F16) A notice of election for the staged environmental offset referred to in condition (F15), 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.
- (F17) 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:
- 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.
- (F18) Prior to the commencement of any impacts to a prescribed environmental matter for which an environmental offset is required by condition (F12), a report completed by an appropriately qualified person that contains an analysis of the estimated maximum extent of impact to each prescribed environmental matter must be provided to the administering authority.
- (F19) The report required by condition (F18) must be approved by the administering authority before the notice of election, if applicable, is given to the administering authority.
- (F20) The notice of election for the environmental offset required by condition (F12), if applicable, must be provided to the administering authority no less than three months before the proposed commencement of the significant residual impacts for which the environmental offset is required.

SCHEDULE G – PROTECTING WATER VALUES

Authorised impacts to waters

- (G1) Contaminants must not be directly or indirectly released to any waters except as permitted under this environmental authority.
- (G2) 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.
- (G3) The Arrow Bowen Pipeline Aquatic Values Management Plan (AVMP) (B0000P10-ARW-ENV-PLA00004) must be updated (to match the final pipeline alignment), finalised and submitted to the administering authority for review and comment at least 30 business days prior to the commencement of construction activities within any Strahler Stream Order 3 or greater watercourse.
- (G4) The updated AVMP must include:
 - a) baseline monitoring of aquatic flora and fauna at watercourses with permanent or flowing water at the time of construction activities;
 - b) monitoring during construction and post-construction to manage risk of environmental harm to aquatic flora and fauna
 - c) management measures to be implemented where impacts to aquatic flora and fauna are identified.
- (G5) Construction activities within any Strahler stream order 3 or greater watercourse must not be commenced until the finalised Arrow Bowen Pipeline Aquatic Values Management Plan (AVMP) (B0000P10-ARW-ENV-PLA00004) as detailed in condition (G3) has been approved by the administering authority.
- (G6) Construction activities within any Strahler stream order 3 or greater watercourse must be undertaken in accordance with the approved Arrow Bowen Pipeline Aquatic Values Management Plan (AVMP) (B0000P10-ARW-ENV-PLA00004) submitted in accordance with condition (G3).
- (G7) The Arrow Bowen Pipeline Aquatic Values Management Plan (AVMP) (B0000P10-ARW-ENV-PLA00004) may be amended as required. A copy of the amended AVMP must be submitted to the administering authority 20 business days prior to the commencement of disturbance in those watercourses to which the amendments apply.

Authorised impacts to wetlands

- (G8) 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

- (G9) 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.
- (G10) Only construction or maintenance of linear infrastructure is permitted in or within any wetland of other environmental value or in a watercourse.

Minimising Disturbance to Watercourses

- (G11) 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.
- (G12) 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.
- (G13) The design and construction of the pipeline, including all creek crossings and waterway barriers must:
- (a) minimise impacts on riparian, aquatic and water dependent flora and fauna;
 - (b) protect flora and fauna during construction and operation, including reduction or disruption to habitat, particularly any potential disruption of endangered species habitat; and
 - (c) rehabilitate disturbed riparian areas including use of locally sourced species and intensive planting.
- (G14) Works for linear infrastructure resulting in significant disturbance to a watercourse, wetland, lake or spring must be no greater than the minimum area necessary for the purpose of the significant disturbance and be in accordance with the conditions of this environmental authority.

- (G15) Material that is removed from a watercourse during construction activities must be stockpiled in accordance with condition (E3) of this environmental authority, away from the streambank and above the high bank of the watercourse.
- (G16) Sediment control measures must be used to minimise any increase in water turbidity due to carrying out petroleum activities in the bed or banks of a watercourse.

Release to Land

- (G17) The holder of this authority may allow trench water (shallow groundwater) encountered during watercourse crossings to be released to land or re-used for dust suppression provided that the water quality complies with the water quality objectives for the region under the Environmental Protection (Water) Policy 2009 and it does not have any properties nor contain any organisms or other contaminants in concentrations that are capable of causing environmental harm.
- (G18) The holder of this authority must ensure that the release of trench water to stabilised (vegetated) land must be carried out in a manner that ensures that:
- (a) vegetation is not destroyed or damaged;
 - (b) soil erosion and soil structure damage is avoided;
 - (c) the quality of groundwater is not adversely affected; and
 - (d) there are no releases of trench water to any surface waters.

(G19) Where dewatering is required within a watercourse, water must be discharged through a settlement basin meet the requirements of Schedule G Table 2.

Authorised activities in watercourses - Stream Order (SO) 3 or greater

- (G20) Horizontal directional drilling must be used for the construction of the pipeline in the watercourses as detailed in *Schedule G – Table 1*.

Schedule G, Table 1— Locations of horizontal directional drilling watercourse crossings for the Arrow Bowen Pipeline

Watercourse name	Indicative KP (Revision K pipeline alignment)	Location (based on the intersection of the RoW centreline and the watercourse centreline)	
		Latitude (GDA94)	Longitude (GDA94)
Isaac River	KP 120.41	148.699336	22.419530
Isaac River	KP 193.78	149.233118	22.763156
Fitzroy River	KP 276.91	149.870170	23.095242
Inkerman Creek (tidal)	KP 389.21	150.683285	23.639885

Raglan Creek (tidal)	KP 405.76	150.818309	23.709731
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Note: Arrow Energy are authorised to deviate up to 50m laterally either side of the coordinates given in Schedule G Table 1 during construction to allow for minor pipeline realignments, noting that disturbance to ESAs not authorised by this EA would require authorisation from the administering authority prior to the disturbance occurring.

- (G21) Following the completion of each horizontal directional drilling watercourse crossing authorised under this environmental authority the administering authority must be notified within three months the entry and exit point's final locations for each watercourse crossing.

Register of activities in wetlands and watercourses

- (G22) A register must be kept of all linear infrastructure construction and maintenance activities in a wetland of other environmental value and watercourses, which must include:
- (a) location of the activity (e.g. GPS coordinates (GDA 94) and watercourse name)
 - (b) estimated flow rate of surface water at the time of the activity
 - (c) duration of works, and
 - (d) results of impact monitoring carried out under the conditions of this environmental authority.

Activities in river improvement areas

- (G23) Measures must be taken to minimise negative impacts to, or reversal of, any river improvement works carried out in River Improvement Areas by Queensland's River Improvement Trusts.

Activities in floodplains

- (G24) Petroleum activity(ies) on floodplains must be carried out in a way that does not:
- (a) concentrate **flood flows** in a way that will or may cause or threaten a negative environmental impact; or
 - (b) divert flood flows from natural drainage paths and alter flow distribution; or
 - (c) increase the local duration of floods; or
 - (d) increase the risk of detaining flood flows.

Monitoring

- (G25) The construction or maintenance of linear infrastructure authorised under the conditions of this environmental authority must comply with the water quality limits as specified in *Schedule G, Table 2—Release limits for construction or maintenance of linear infrastructure*.

Schedule G, Table 2—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

- (G26) Monitoring must be undertaken at a frequency that is appropriate to demonstrate compliance with condition (G21).
- (G27) Monitoring of all watercourse crossings will be undertaken in accordance with the Aquatic Values Management Plan required in condition (G3) for all phases of the project including;
- (a) pre-construction (baseline monitoring);
 - (b) during construction; and
 - (a) post-construction (monitoring).

SCHEDULE H – REHABILITATION

Rehabilitation planning

- (H1) 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 (2) to (H7), inclusive; and
 - ii. provide for appropriate monitoring and maintenance.

Progressive Rehabilitation for Significantly Disturbed Land

- (H2) Pipeline trenches must be backfilled and topsoils reinstated within three months after pipe laying.
- (H3) Backfilled, reinstated and rehabilitated pipeline trenches and right of ways must be:
- (a) be a stable landform;
 - (b) exhibit no subsidence or erosion gullies for the life of the operational pipeline;
 - (c) be re-profiled to a level consistent with surrounding soils;
 - (d) be re-profiled to original contours and established drainage lines;
 - (e) be visually consistent with the surrounding land features; and
 - (f) be vegetated with groundcover which is not a declared pest species, and which is established and self-sustaining to ensure that erosion is minimised.
- (H4) Revegetation of the right of way must commence within six months after pipe laying.
- (H5) Progressive rehabilitation of significantly disturbed land caused by the carrying out of the petroleum activity(ies) must:
- (a) remediate any contaminated land
 - (b) reshape all significantly disturbed land to a stable landform consistent with condition (H3);
 - (c) reprofile all significantly disturbed land to original contours consistent with condition (H3);
 - (d) on all significantly disturbed land:
 - i. re-establish surface drainage lines;
 - ii. reinstate the top layer of the soil profile;
 - iii. establish groundcover which is not a declared pest species, and which is established and self-sustaining to ensure that erosion is minimised;
 - iv. establish vegetation of floristic species composition measured either against the highest ecological value adjacent land use or the pre-disturbed land use;
 - (e) undertake rehabilitation in a manner such that any actual and potential acid sulfate soils in or on the site are either not disturbed, or submerged, or are treated to prevent and / or minimise environmental harm.

Final rehabilitation acceptance criteria

- (H6) 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 percent of ground cover
 - (c) less than or equal to the percent 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

- (H7) Where significant disturbance to land has occurred in an environmentally sensitive area, the following final rehabilitation criteria as measured against the pre-disturbance biodiversity values assessment (required by conditions (F1) and (F2)) must be met:
- (a) greater than or equal to 70% of native ground cover species richness
 - (b) greater than or equal to the total percent ground cover
 - (c) less than or equal to the percent 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

- (H8) Conditions (H6) and (H7) continue to apply after this environmental authority has ended or ceased to have effect.

Remaining dams

- (H9) Where there is a dam (including a low hazard dam) that is being or intended to be utilised by the landholder or overlapping tenure holder, the dam must be decommissioned to no longer accept inflow from the petroleum activity(ies) and the contained water must be of a quality suitable for the intended on-going uses(s) by the landholder or overlapping tenure holder.

Project Infrastructure and Decommissioning

- (H10) All above ground petroleum infrastructure must be removed from the relevant petroleum authority prior to the surrender of this authority, except where agreed in writing by the administering authority and the current landowner.
- (H11) A detailed decommissioning and rehabilitation plan will be developed and implemented in accordance with AS2885 in consultation with landholders and the administering authority. The decommissioning and rehabilitation plan must be submitted to the administering authority six months prior to the commencement of decommissioning or abandonment activities.

2

- (H12) The holder of this authority must decommission the pipeline to a situation where ongoing, or potential environmental harm is prevented or minimised. As a minimum, the pipeline must be decommissioned such that:
- (a) it no longer contains hazardous contaminants;
 - (b) it is left in stable condition;
 - (c) all the above ground infrastructure is removed; and
 - (d) all areas disturbed by above ground infrastructure are rehabilitated in accordance with the requirements of this environmental authority.

SCHEDULE I – DAMS

Structures that are dams or levees

- (I1) The consequence category of any dam or levee to be used in carrying out petroleum activities must be assessed in accordance with the Queensland Government *Manual for assessing consequence categories and hydraulic performance of structures*
- (I2) Low consequence dams must be:
 - (a) constructed, operated and maintained in accordance with accepted engineering standards currently appropriate for the purpose for which the dam is intended to be used; and
 - (b) designed with a floor and sides made of material that will contain the wetting front and any entrained contaminants within the bounds of the containment system during both its operational life and including any period of decommissioning and rehabilitation.
- (I3) All low consequence dams must be monitored for early signs of loss of structural or hydraulic integrity as specified in the initial hazard assessment.
- (I4) When no longer required all low consequence dams must be decommissioned to no longer accept inflow from the petroleum activities and be either:
 - (a) rehabilitated; or
 - (b) agreed to in writing by the administering authority and managed as per condition (H6).

SCHEDULE J- Definitions

acceptable standards for release to land	means wastewater of the following quality as determined by monitoring results or by characterisation: (a) electrical conductivity (EC) not exceeding 3,000µS/cm (b) sodium adsorption ratio (SAR) not exceeding 8 (c) pH between 6.0 and 9.0 (d) heavy metals (measured as total) meets the respective short term trigger value in section 4.2.6, Table 4.2.10—Heavy metals and metalloids in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (e) does not contain biocides.
acid sulfate soil(s)	means a soil or soil horizon which contains sulfides or an acid soil horizon affected by oxidation of sulfides.
adjacent land use(s)	means the <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: (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the <i>Environmental Protection Act 1994</i>—the local government; or (b) for all other matters—the Chief Executive of the Department of Environment and Heritage Protection; or (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.
alternative arrangement	means a written agreement about the way in which a particular 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 return period	means the most current 12 month period between two anniversary dates.	
appropriately qualified person / suitably qualified person	means a person who has professional qualifications, training or skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis about performance relevant to the subject matters using relevant protocols, standards, methods or literature.	
approved quality criteria	for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards:	
	Part A In all cases:	
	Parameter	Maximum concentration
	pH	6–10.5 (range)
	Electrical Conductivity	20dS/m (20,000µS/cm)
	Chloride*	8,000mg/L
	*Chloride analysis is only required if an additive containing chloride was used in the drilling process solids prior to mixing. The limits in Part A must be measured in the clarified filtrate of oversaturated	
	Part B If any of the following metals are a component of the drilling	
	Parameter	Maximum concentration
	Arsenic	20mg/kg
Selenium	5mg/kg	
Boron	100mg/kg	
Cadmium	3mg/kg	
Chromium (total)	400mg/kg	
Copper	100mg/kg	
Lead	600mg/kg	

The limits in Part B and Part C refer to the post soil/by-product mix. <u>Part C</u> If a hydrocarbon sheen is visible, the following hydrocarbon fractions:	
TPH	Maximum concentration
C6-C10	170mg/kg
C10-C16	150mg/kg
C16-C34	1300mg/kg
C34-C40	5,600mg/kg
Total Polycyclic Aromatic Hydrocarbons (PAHs)	20mg/kg
Phenols (halogenated)	1mg/kg
Phenols (non-halogenated)	60mg/kg
Monocyclic aromatic hydrocarbons (<i>Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene</i>)	7mg/kg
Benzene	1mg/kg
areas of pre-existing disturbance	means areas where environmental values have been negatively impacted as a result of anthropogenic activity and these impacts are still evident. Areas of pre-disturbance may include areas where legal clearing, logging, timber harvesting, or grazing activities have previously occurred, where high densities of weed or pest species are present which have inhibited re-colonisation of native regrowth, or where there is existing infrastructure (regardless of whether the infrastructure is associated with the authorised 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	means an assessment prepared by a suitably qualified and experienced person containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan); (a) against recommendations contained in previous annual inspections reports; (b) against recognised dam safety deficiency indicators; (c) for changes in circumstances potentially leading to a change in consequence category; (d) for conformance with the conditions of this authority; (e) for conformance with the 'as constructed' drawings; (f) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems); (g) for evidence of conformance with the current operational plan.
associated works	in relation to a dam, means: (a) operations of any kind and all things constructed, erected or installed for that dam; and (b) any land used for those operations.
Australian Standard 3580	means any of the following publications: • AS3580.10.1 Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter—Gravimetric method. • AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 high volume sampler with size-selective inlet—Gravimetric method • AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 low volume sampler—Gravimetric sampler.
background noise level	means the sound pressure level, measured in the absence of the noise under investigation, as the L A90,T being the A-weighted sound pressure level exceeded for 90% of the measurement time period T of not less than 15 minutes (or LA 90, adj, 15 mins), using Fast response.

bankfull	means the channel flow rate that exists when the water is at the elevation of the channel bank above which water begins to spill out onto the floodplain. The term describes the condition of the channel relative to its banks (e.g. overbank, in-bank, bankfull, low banks, high bank).
bed	of any waters, has the meaning in Schedule 12 of the Environmental Protection Regulation 2008 and— (a) includes an area covered, permanently or intermittently, by tidal or non-tidal waters; but (b) does not include land adjoining or adjacent to the bed that is from time to time covered by floodwater.
being or intended to be utilised by the landholder or overlapping tenure holder	for significantly disturbed land, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use of the land such that rehabilitation standards for revegetation by the holder of the environmental authority are not required. For dams, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use for the dam such that rehabilitation standards for revegetation by the holder of the environmental authority are not required.
biodiversity values	for the purposes of this environmental authority, means environmentally sensitive areas, prescribed environmental matters and wetlands.
Category A Environmentally Sensitive Area	means any area listed in Schedule 12, Section 1 of the Environmental Protection Regulation 2008.
Category B Environmentally Sensitive Area	means any area listed in Schedule 12, Section 2 of the Environmental Protection Regulation 2008.

Category C Environmentally Sensitive Area	means any of the following areas: • nature refuges as defined in the conservation agreement for that refuge under the <i>Nature Conservation Act 1992</i> • koala habitat areas as defined under the Nature Conservation (Koala) Conservation Plan 2006 • state forests or timber reserves as defined under the <i>Forestry Act 1959</i> • regional parks (previously known as resource reserves) under the <i>Nature Conservation Act 1992</i> • an area validated as 'essential habitat' from ground-truthing surveys in accordance with the <i>Vegetation Management Act 1999</i> for a species of wildlife listed as endangered or vulnerable under the <i>Nature Conservation Act 1992</i> • 'of concern regional ecosystems' that are remnant vegetation and identified in the database called 'RE description database' containing regional ecosystem numbers and descriptions.
certified or certification	in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding dams means, a Statutory Declaration by a suitably qualified person or suitably qualified third party accompanying the written document stating: • the person's qualifications and experience relevant to the function • that the person has not knowingly included false, misleading or incomplete information in the document • that the person has not knowingly failed to reveal any relevant information or document to the administering authority • that the document addresses the relevant matters for the function and is factually correct; and • that the opinions expressed in the document are honestly and reasonably held.
clearing	has the meaning in the dictionary of the <i>Vegetation Management Act 2000</i> and for vegetation— (a) means remove, cut down, ringbark, push over, poison or destroy in any way including by burning, flooding or draining; but (b) does not include destroying standing vegetation by stock, or lopping a tree.

closed-loop systems	means using waste on site in a way that does not release waste or contaminants in the waste to the environment.
control measure	has the meaning in section 47 of the Environmental Protection Regulation 2008 and means a device, equipment, structure, or management strategy used to prevent or control the release of a contaminant or waste to the environment.
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.
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 (ESR/2016/1933)</i> .
critically limited regional ecosystem	means the regional ecosystems defined and listed in Appendix 5 of the Queensland Biodiversity Offset Policy.
daily peak design capacity	for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the Environmental Protection Regulation 2008 as the 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.
declared plant pest species	has the meaning in the Land Protection (Pest and Stock Route Management) Regulation 2003 and is a plant declared to be a declared pest under section 36 (Declaring Pests by Regulation) or section 37(2) (Declaring Pest under Emergency Pest Notice) of that Act and includes reproductive material of the plant.

designated precinct	has the meaning in Part 5 section 15(3) of the Regional Planning Interests Regulation 2014 and means: • for a strategic environmental area mentioned in section 4(1) – the area identified as a designated precinct on the strategic environmental area map for the strategic environmental are; or • if a strategic environmental area is shown on a map in a regional plan – the area identified on the map as a designated precinct for the strategic environmental area.
design storage allowance or DSA	means an available volume, estimated in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635), 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.
document	has the meaning in the <i>Acts Interpretation Act 1954</i> and means: • any paper or other material on which there is writing; and • any paper or other material on which there are marks; and • figures, symbols or perforations having a meaning for a person qualified to interpret them; and • any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).
ecologically dominant layer	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means the layer making the greatest contribution to the overall biomass of the site and the vegetation community (NLWRA 2001). This is also referred to as the ecologically dominant stratum or the predominant canopy in woody ecosystems.
ecosystem function	means the interactions between and within living and nonliving components of an ecosystem and generally correlates with the size, shape and location of the vegetation community.

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— (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— (a) aerosols, fumes, light, noise, odour, particles or smoke; or (b) an unhealthy, offensive or unsightly condition because of contamination; or (c) another way prescribed by regulation.
environmental offset	has the meaning in section 7 of the <i>Environmental Offsets Act 2014</i> .
environmentally sensitive area	means Category A, B or C environmentally sensitive areas (ESAs)
equivalent person or EP	has the meaning under section 3 of the Planning Guidelines For Water Supply and Sewerage, 2005, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the Environmental Protection Regulation 2008 where: • $EP = V/200$ where V is the volume, in litres, of the average dry weather flow of sewage that can be treated at the works in a day; or • $EP = M/2.5$ where M is the mass, in grams, of phosphorus in the influent that the works are designed to treat as the inlet load in a day.
essential petroleum activities	means activities that are essential to bringing the resource to the surface and are only the following: • low impact petroleum activities • geophysical, geotechnical, geological, topographic and cadastral surveys (including seismic, sample / test / geotechnical pits, core holes) • single well sites not exceeding 1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance

essential petroleum activities	• well sites with monitoring equipment (including monitoring bores): ○ for single well sites, not exceeding 1.25 hectares disturbance ○ for multi-well sites, not exceeding 1.75 hectares disturbance • well sites with monitoring equipment (including monitoring bores) and tanks (minimum 1ML) for above ground fluid storage: ○ for single well sites, not exceeding 1.5 hectares disturbance ○ for multi-well sites, not exceeding 2.0 hectares disturbance • associated infrastructure located on a well site necessary for the construction and operations of wells: ○ water pumps and generators ○ flare pits ○ chemical / fuel storages ○ sumps for residual drilling material and drilling fluids ○ tanks, or dams which are not significant or high consequence dams to contain wastewater (e.g. stimulation flow back waters, produced water) ○ pipe laydown areas ○ soil and vegetation stockpile areas ○ a temporary camp associated with a drilling rig that may involve sewage treatment works that are no release works ○ temporary administration sites and warehouses ○ dust suppression activities using water that meets the quality and operational standards approved under the environmental authority • communication and power lines that are necessary for the undertaking of petroleum activities and that are located within well sites, well pads and pipeline right of ways without increasing the disturbance area of petroleum activities • supporting access tracks • gathering / flow pipelines from a well head to the initial compression facility activities necessary to achieve compliance with the conditions of the environmental authority in relation to another essential petroleum activity (e.g. sediment and erosion control measures, rehabilitation).
existing authority	has the meaning in section 94 of the <i>Environmental Offsets Act 2014</i> .

flare pit	has the meaning in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (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— • 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.
flood flow	Means flow over the defined flood plain where the watercourse is in a state of flood. This does not include temporary overland flow associated with short term rain events.
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
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 500kg of fuel in an hour.
GDA	means Geocentric Datum of Australia.
Great Artesian Basin (GAB) spring	means an area protected under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> because it is considered to be a Matter of National Environmental Significance and identified as a: • community of native species dependent on natural discharge of groundwater from the Great Artesian Basin; or • Great Artesian Basin spring; or • Great Artesian Basin discharge spring wetland. A GAB spring includes a spring vent, spring complex or watercourse spring and includes the land to which water rises naturally from below the ground and the land over which the water then flows.

	Note: The Australian Government's Protected Matters Search Tool should be used to get an indication of whether the area of interest may contain an MNES spring. Note: The GAB springs dataset can be requested from the Queensland Government Herbarium.
green waste	means waste that is grass cuttings, trees, bushes, shrubs, material lopped from trees, untreated timber or other waste that is similar in nature but does not include declared pest species.
greywater	means wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Greywater does not include sewage.
groundwater dependent ecosystem (GDE)	means ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services. For the purposes of the environmental authority, groundwater dependent ecosystems do not include those mapped as "unknown".
growing	means to increase by natural development, as any living organism or part thereof by assimilation of nutriment; increase in size or substance.
hydraulic integrity	refers to the capacity of a dam to contain or safely pass flowable substances based on its design.
impulsive (for noise)	means sound characterised by brief excursions of sound pressure (acoustic impulses) that significantly exceed the background sound pressure. The duration of a single impulsive sound is usually less than one second.
integrity testing	means relevant testing or inspection, depending on the construction crossing methodology, and in accordance with AS2885.2:2016 Pipelines - Gas and Liquid Petroleum. Part 2: Welding
LA 90, adj, 15 mins	means the A-weighted sound pressure level, adjusted for tonal character that is equal to or exceeded for 90% of any 15 minutes sample period equal, using Fast response.
LAeq, adj, 15 mins	means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within any 15 minute period has the same square sound pressure as a sound level that varies with time.

land degradation	has the meaning in the <i>Vegetation Management Act 1999</i> and means the following: • soil erosion • rising water tables • the expression of salinity • mass movement by gravity of soil or rock • stream bank instability • a process that results in declining water quality.
landholder's active groundwater bore	means bores that are able to continue to provide a reasonable yield of water in terms of quantity for the bores authorised purpose or use. This term does not include monitoring bores owned by the administering authority of the <i>Water Act 2000</i> .
linear infrastructure	means powerlines, pipelines, flowlines, roads and access tracks.
liquid	means a substance which is flowing and offers no permanent resistance to changes of shape.
long term noise event	means a noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five days, even when there are respite periods when the noise is inaudible within those five days.
low consequence dam	means any dam that is not classified as high or significant as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, 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.
Map of referable wetlands	has the meaning in Schedule 12 of the Environmental Protection Regulation 2008 and means the 'Map of referable wetlands', a document approved by the chief executive on 4 November 2011 and published by the department, as amended from time to time by the chief executive under section 144D.
Max LpA, 15 min	means the absolute maximum instantaneous A-weighted sound pressure level, measured over 15 minutes.

Max LpZ, 15 min	means the maximum value of the Z-weighted sound pressure level measured over 15 minutes.
maximum extent of impact	means the total, cumulative, residual extent and duration of impact to a prescribed environmental matter that will occur over a project's life after all reasonable avoidance and reasonable on-site mitigation measures have been, or will be, undertaken.
medium term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than five days and does not re-occur for a period of at least four weeks. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a difference source or source location.
methodology	means the science of method, especially dealing with the logical principles underlying the organisation of the various special sciences, and the conduct of scientific inquiry.
month	has the meaning in the <i>Acts Interpretation Act 1954</i> and means a calendar month and is a period starting at the beginning of any day of one (1) of the 12 named months and ending— - immediately before the beginning of the corresponding day of the next named month; or - if there is no such corresponding day—at the end of the next named month.
NATA accreditation	means accreditation by the National Association of Testing Authorities Australia.
notice of election	has the meaning in section 18(2) <i>Environmental Offsets Act 2014</i> .
prescribed environmental matters	has the meaning in section 10 of the <i>Environmental Offsets Act 2014</i> , limited to the matters of State environmental significant listed in schedule 2 of the Environmental Offsets Regulation 2014.
pipeline waste water	means hydrostatic testing water, flush water or water from low point drains.
pre-disturbed land use	means the function or use of the land as documented prior to significant disturbance occurring at that location.
predominant species	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means a species that contributes most to the overall above-ground biomass of a particular stratum.

prescribed contaminants	has the meaning in section 440ZD of the <i>Environmental Protection Act 1994</i> and means:
primary protection zone	means an area within 200m from the boundary of any Category A, B or C ESA.
produced water	has the meaning in Section 15A of the <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 3.2 August 2012) and means a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil. Regional ecosystems of Queensland were originally described in Sattler and Williams (1999). The Regional Ecosystem Description Database (Queensland Herbarium 2013) is maintained by Queensland Herbarium and contains the current descriptions of regional ecosystems.
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 0.005ug/L–0.02ug/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.
revegetation or revegetating or revegetate	means to actively re-establish vegetation through seeding or planting techniques in accordance with site specific management plans.
secondary protection zone	in relation to a Category A or Category B ESA means an area within 100 metres from the boundary of the primary protection zone.
secondary treated class A standards	means treated sewage effluent or greywater which meets the following standards: • total phosphorous as P, maximum 20mg/L • total nitrogen as N, maximum 30mg/L • 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L • suspended solids, maximum 30mg/L • pH, range 6.0 to 8.5 • e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 100cfu per 100mL, maximum 1,000cfu per 100mL.
secondary treated class B standards	means treated sewage effluent or greywater which meets the following standards: • total phosphorous as P, maximum 20mg/L • total nitrogen as N, maximum 30mg/L • 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L • suspended solids, maximum 30mg/L • pH, range 6.0 to 8.5 • e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 1,000cfu per 100mL, maximum 10,000cfu per 100mL.

secondary treated class C standards	means treated sewage effluent or greywater which meets the following standards: • total phosphorous as P, maximum 20mg/L • total nitrogen as N, maximum 30mg/L • 5-day biochemical oxygen demand (inhibited) (e.g. Release pipe from sewage treatment plant), maximum 20mg/L • suspended solids, maximum 30mg/L • pH, range 6.0 to 8.5 • e-Coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 10,000cfu per 100mL, maximum 100,000cfu per 100mL.
sensitive place	means: • a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel) • a library, childcare centre, kindergarten, school, university or other educational institution • a medical centre, surgery or hospital • a protected area • a public park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment • a work place used as an office or for business or commercial purposes, which is not part of the petroleum activity(ies) and does not include employees accommodation or public roads • for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 2008.
sensitive receptor	is defined in Schedule 2 of the Environmental Protection (Noise) Policy 2008, and means an area or place where noise is measured.
short term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven days. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.
significant residual impact	has the meaning in section 8 <i>Environmental Offsets Act 2014</i> .

significantly disturbed or significant disturbance or significant disturbance to land or areas	has the meaning in Schedule 12, section 4 of the Environmental Protection Regulation 2008. Land is significantly disturbed if— (i) to a condition required under the relevant environmental authority; or (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.
species richness	means the number of different species in a given area.
stable	has the meaning in Schedule 5 of the Environmental Protection Regulation 2008 and, for a site, means the rehabilitation and restoration of the site is enduring or permanent so that the site is unlikely to collapse, erode or subside.
statement of compliance	for a condition in an environmental authority has the meaning in section 208 of the <i>Environmental Protection Act 1994</i> and is a condition that requires the holder to give the administering authority a statement of compliance about a document or work relating to a relevant activity. The condition must also state— (a) the criteria (the compliance criteria) the document or work must comply with; and (b) that the statement of compliance must state whether the document or work complies with the compliance criteria; and (c) the information (the supporting information) that must be provided to the administering authority to demonstrate compliance with the compliance criteria; and (d) when the statement of compliance and supporting information must be given to the administering authority.
strategic	has the meaning in section 11(1) of the <i>Regional Planning Interest Act 2014</i> .
structure	means a dam or levee.

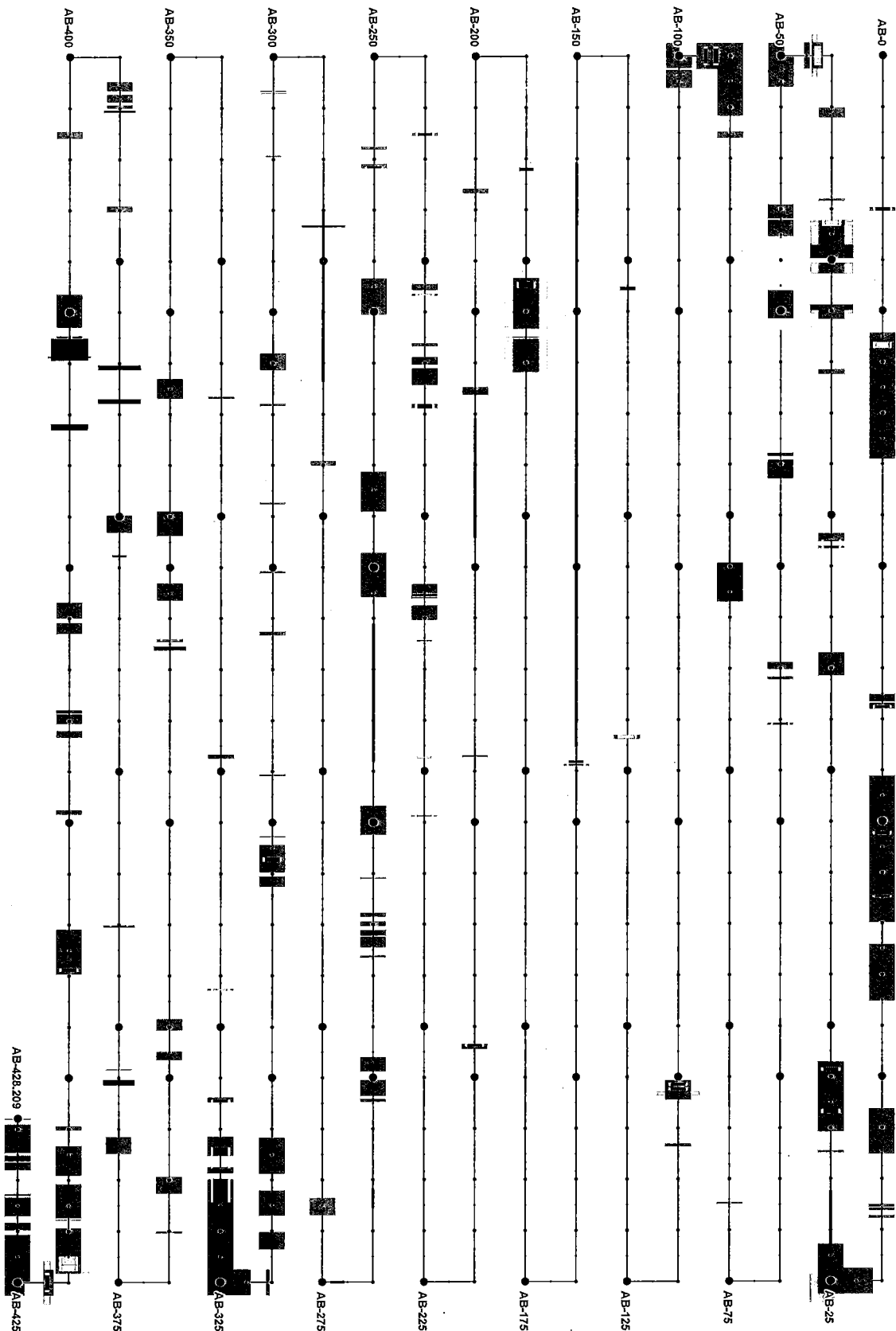
subterranean cave GDE	- means an area identified as a subterranean cave in the mapping produced by the Queensland Government and identified in the Queensland Government Information System, as amended from time to time; and - means a cave ecosystem which requires access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain its communities of plants and animals, ecological processes and ecosystem services. Subterranean cave GDEs are caves dependent on the subterranean presence of groundwater. Subterranean cave GDEs have some degree of groundwater connectivity and are indicated by either high moisture levels or the presence of stygofauna, or both, referred to in the Queensland Government WetlandsInfo mapping program, as amended from time to time. Note: the Subterranean GDE (caves) dataset can be displayed through the Queensland Government WetlandInfo mapping program.
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	means a person who: (a) has qualifications and experience relevant to performing the function including but not limited to: - a bachelor's degree in science or engineering; and 3 years' experience in undertaking soil contamination assessments; and (b) is a member of at least one organisation prescribed in Schedule 8 of the Environmental Protection Regulation 2008; and (c) not be an employee of, nor have a financial interest or any involvement which would lead to a conflict of interest with the holder(s) of the
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.

top soil	means the surface (top) layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from the natural surface.
total density of coarse woody material	means the total length of logs on the ground greater than or equal to 10cm diameter per hectare and number of logs on the ground greater than or equal to 10cm diameter per hectare.
transmissivity	means the rate of flow of water through a vertical strip of aquifer which is one unit wide and which extends the full saturated depth of the aquifer.
valid complaint	means all complaints unless considered by the administering authority to be frivolous, vexatious or based on mistaken belief.
void	means any constructed, open excavation in the ground.
waste and resource management hierarchy	has the meaning provided in section 9 of the Waste Reduction and Recycling Act 2011 and is the following precepts, listed in the preferred order in which waste and resource management options should be considered— (a) AVOID unnecessary resource consumption (b) REDUCE waste generation and disposal (c) RE-USE waste resources without further manufacturing (d) RECYCLE waste resources to make the same or different products (e) RECOVER waste resources, including the recovery of energy (f) TREAT waste before disposal, including reducing the hazardous nature
waste and resource management principles	has the meaning provided in section 4(2)(b) of the Waste Reduction and Recycling Act 2011 and means the: (a) polluter pays principle (b) user pays principle (c) proximity principle (d) product stewardship principle.

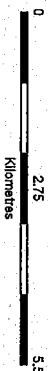
waste fluids	has the meaning in section 13 of the <i>Environmental Protection Act 1994</i> in conjunction with the common meaning of "fluid" which is "a substance which is capable of flowing and offers no permanent resistance to changes of shape". Accordingly, to be a waste fluid, the waste must be a 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: 1) a river, creek or stream in which water flows permanently or intermittently— (a) in a natural channel, whether artificially improved or not; or (b) in an artificial channel that has changed the course of the watercourse. 2) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.
waters	includes all or any part of a creek, river, stream, lake, lagoon, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.
wetland	for the purpose of this environmental authority, wetland means: • 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 attributes: ○ at least periodically, the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle, or ○ the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers, or ○ the substratum is not soil and is saturated with water, or covered by water at some time.

	The term wetland includes riverine, lacustrine, estuarine, marine and palustrine wetlands; and it does not include a Great Artesian Basin Spring or a subterranean wetland that is a cave or aquifer.
wetland of high ecological significance	means a wetland that meets the definition of a wetland and that is shown as a wetland of 'high ecological significance' or wetland of 'high ecological value' on the Map of referable wetlands.
wetland of other environmental value	means a wetland that meets the definition of a wetland and that is shown as a wetland of 'general environmental significance' or wetland of 'other environmental value' on the Map of referable wetlands.

Appendix 1: Location of Impacts to Prescribed Environmental Matters



Arrow Bowen Pipeline - Prescribed Environmental Matters



Scale: 1:80,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

Source:

Arrow Energy Pty Ltd, Major Pipelines
Geoscience Australia
Dept. Env. and Resource Mgmt.

Based on or contains data provided by the State of Queensland (Department of Environment and Resource Management) 2015, in consideration of the State permitting use of this data for the purposes of the Arrow Bowen Pipeline. The data is provided as a reference only and is not intended to be used for any other purpose. The data is provided as a reference only and is not intended to be used for any other purpose. The data is provided as a reference only and is not intended to be used for any other purpose.

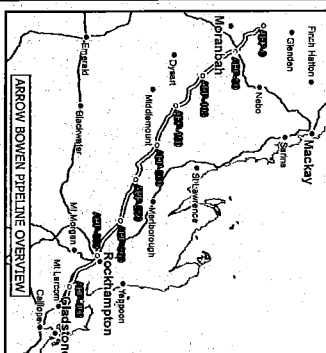
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The dimensions, areas, number of lots, size and location of corridor
information are approximate only and may vary.

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is true and correct, Arrow Energy Pty Ltd does not warrant, represent or make any statement as to the accuracy or reliability of the information. The user of this map is responsible for verifying the accuracy of all information prior to using it. The information shown on this map is a copyright of Arrow Energy Pty Ltd and, where applicable, its affiliates and licensors.



NOT FOR CONSTRUCTION



Changeage

- KP - 5km Marker
- KP - 1km Marker
- KP - 500m Marker

— Representation of ABP Rev K
— Variation from Rev J
(Matters to be verified)

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

- SO 1 and 2: Coastal (10m)
- SO 1 and 2: Non Coastal (25m)
- SO 3 and 4: Coastal (25m)
- SO 3 and 4: Non Coastal (50m)
- SO 5+: Coastal (50m)
- SO 5+: Non Coastal (100m)

- Protected wildlife habitat
- A wetland of high ecological significance shown on the Map of Referable wetlands
- Marine plants

Of concern regional ecosystem (not within an urban area)

- 11.3.2
- 11.3.3
- 11.3.4
- 11.3.36

To be verified prior to disturbance

