Permit

Environmental Protection Act 1994

Environmental authority EPPG00853013

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

Environmental authority number: EPPG00853013

Environmental authority takes effect on 19 November 2018

Environmental authority holder(s)

Name(s)	Registered address
AUSTRALIA PACIFIC LNG PTY LIMITED	Level 4 139 Coronation Drive MILTON QLD 4064 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Schedule 2A, 07: A petroleum activity involving injection of a wastefluid into a natural underground reservoir or aquifer	PL1011
Resource Activity, Schedule 2A, 07: A petroleum activity involving injection of a wastefluid into a natural underground reservoir or aquifer	PL265
Resource Activity, Schedule 2A, 07: A petroleum activity involving injection of a wastefluid into a natural underground reservoir or aquifer	PL266
Resource Activity, Schedule 2A, 07: A petroleum activity involving injection of a wastefluid into a natural underground reservoir or aquifer	PL267
Resource Activity, Schedule 2A, 07: A petroleum activity involving injection of a wastefluid into a natural underground reservoir or aquifer	PPL186
Resource Activity, Schedule 2A, 08: A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	PL1011

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Environmentally relevant activity/activities	Location(s)
Resource Activity, Schedule 2A, 08: A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	PL265
Resource Activity, Schedule 2A, 08: A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	PL266
Resource Activity, Schedule 2A, 08: A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	PL267
Resource Activity, Schedule 2A, 08: A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	PPL186
Resource Activity, Schedule 2A, 03: A petroleum activity that is likely to have a significant impact on a category A or B environmentally sensitive area	PL1011
Resource Activity, Schedule 2A, 03: A petroleum activity that is likely to have a significant impact on a category A or B environmentally sensitive area	PL265
Resource Activity, Schedule 2A, 03: A petroleum activity that is likely to have a significant impact on a category A or B environmentally sensitive area	PL266
Resource Activity, Schedule 2A, 03: A petroleum activity that is likely to have a significant impact on a category A or B environmentally sensitive area	PL267
Resource Activity, Schedule 2A, 03: A petroleum activity that is likely to have a significant impact on a category A or B environmentally sensitive area	PPL186
Resource Activity, Schedule 2A, 06: A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam	PL1011
Resource Activity, Schedule 2A, 06: A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam	PL265
Resource Activity, Schedule 2A, 06: A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam	PL266

Environmentally relevant activity/activities	Location(s)
Resource Activity, Schedule 2A, 06: A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam	PL267
Resource Activity, Schedule 2A, 06: A petroleum activity carried out on a site containing a high hazard dam or a significant hazard dam	PPL186

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

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

Take effect

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

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

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

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

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

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

Liz Clarke
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

Date issued: 19 November 2018

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Obligations under the Environmental Protection Act 1994

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

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

SCHEDULE A – GENERAL CONDITIONS

Authorised Petroleum Activities

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

(a) the petroleum activities and specified relevant activities listed in *Schedule A, Table 1 - Authorised Petroleum Activities* to the extent they are carried out in accordance with the activity's corresponding scale or intensity or both (where applicable); and

(b) incidental activities that are not otherwise specified relevant activities.

(A2) The authorised resource activities are authorised subject to the conditions of this environmental authority.

(A3) This environmental authority does not authorise a relevant act to occur in carrying out an authorised resource activity unless a condition expressly authorises that relevant act to occur. Where there is no condition, the lack of a condition must not be construed as authorising the relevant act.

Schedule A, Table 1 – Authorised Petroleum Activities

Authorised Petroleum Activity	Scale		Intensity
	Maximum size	Location	
Petroleum activities			
Coal seam gas production and exploration	761ha (wells only)	Within project area	761 wells
Petroleum Pipeline	N/A	PPL186	Less than 150km
Specified relevant activities			
Stimulation activities	N/A	Within project area	N/A
Extracting material, other than by dredging	N/A	Within project area	N/A
Electricity generation by using gas permanent, in isolation or combined in operation, or interconnected) at a rated capacity of 10 megawatt (MW) electrical or more	N/A	Within project area	150MW for project area

Operating fuel burning equipment (permanent, in isolation or combined in operation, or interconnected) that is capable of burning more than 500kg of fuel in an hour	N/A	Within project area	N/A
Chemical storage (permanent) that meets any of the thresholds described in Schedule 2, Part 2, section 8 of the Environmental Protection Regulation 2008	>50t of chemicals of DG class 1 or 2, division 2.3 >500m3 of chemicals of class C1 or C2 combustible liquids under AS 1,940 or DG Class 3 >200m3 of chemicals that are liquids	Within project area	761 storages at well leases; N/A at other permanent facilities
Sewage treatment works, other than no-release works, where treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme; or otherwise discharged	1,500EP per facility	Within project area	8,800EP for project area
Waste disposal onsite—operating a facility for disposing of greater than 50t of non-regulated waste in a year (including land spraying while drilling, or mix-bury-cover where the drill muds do not have any substanbces that would make it a regulated waste)	N/A	Within project area	763 facilities

Waste disposal—Injection of treated water or wastewater	4.3ML/day	Within project area	3 wells
Regulated waste storage—Any structure, including regulated, low consequence dams, and other dams containing regulated waste.	N/A	Within project area	252ha across 18 dams
Water treatment activities - treating 10ML or more of raw water in a day in a way that allows waste, whether treated or untreated, to be released into the environment	60ML/day	Within project area	1 water treatment facility 1 release point
Storing waste that is not regulated waste (including coal seam gas water) in a regulated dam	N/A	Within project area	30 regulated dams
Storing coal seam gas water that is not regulated waste in a low consequence dam	N/A	Within project area	695 low consequence dams

Prevent or Minimise Likelihood of Environmental Harm

(A4) This environmental authority does not authorise environmental harm unless a condition contained in this environmental authority explicitly authorises that harm. Where there is no condition, the lack of a condition shall not be construed as authorising harm.

Maintenance of Measures, Plant and Equipment

(A5) The holder of the environmental authority must:

(a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;

(b) maintain such measures, plant and equipment in their proper and effective condition; and

(c) operate such measures, plant and equipment in a proper and effective manner.

(A6) No change, replacement or alteration of any plant or equipment is permitted if the change, replacement or alteration materially increases, or is likely to increase, the environmental harm caused by the petroleum activity(ies).

(A7) All instruments, equipment and measuring devices used for measuring or monitoring in accordance with any condition of this environmental authority must be calibrated, and operated and maintained effectively in accordance with the manufacturer's specifications.

(A8) The holder of this authority must ensure that daily operation and maintenance of all plant and equipment relating to the authorised petroleum activities are carried out be suitably qualified, competent and experienced person(s).

(A9) All laboratory analyses and tests required to be conducted under this authority must be carried out by a laboratory that has NATA certification for such analyses and tests, except as otherwise authorised by the administering authority.

(A10) Despite condition (A9), analyses and tests required to determine the receiving soil criteria and the suitability of drilling by-product for the land spraying while drilling method in accordance with condition (G20) can be carried out on site.

Financial Assurance

(A15) 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*.

(A16) 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.

(A17) 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

(A18) Compliance with the conditions of the environmental authority must be audited by an appropriately qualified third party auditor, nominated by the holder of the environmental authority and accepted by the administering authority, within one year of the commencement of these petroleum activities, and three yearly thereafter.

(A19) Notwithstanding condition (A18), 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.

(A20) An audit report must be prepared by the third party auditor presenting the findings of each audit carried out.

(A21) The third party auditor must certify the findings of the audit in the report as being an accurate and independent assessment of compliance with the conditions of the environmental authority.

(A22) The holder of this environmental authority must, within a reasonable timeframe, agreed to in writing by the administering authority, act upon any recommendations arising from the audit report.

(A23) Not more than three months following the submission of the audit report required by condition (A18), the holder of the environmental authority must provide a written report to the administering authority on the:

(a) actions taken by the holder to ensure compliance with conditions of the environmental authority; and

(b) actions taken to prevent a recurrence of any non-compliance issues identified by the report of the third part auditor.

(A24) Upon receipt of the third party audit report, the holder of the environmental authority must submit a copy of the report to the administering authority.

(A25) The financial cost of the third party audit is to be borne by the holder of this environmental authority.

Contingency procedures for emergency environmental incidents

(General 16) Petroleum activities involving significant disturbance to land cannot commence until the development of written contingency procedures for emergency environmental incidents which include, but are not necessarily limited to:

(a) a clear definition of what constitutes an environmental emergency incident or near miss for the petroleum activity.

(b) consideration of the risks caused by the petroleum activity including the impact of flooding and other natural events on the petroleum activity.

(c) response procedures to be implemented to prevent or minimise the risks of environmental harm occurring.

(d) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused.

(e) procedures to investigate causes and impacts including impact monitoring programs for releases to waters and/or land.

(f) training of staff to enable them to effectively respond.

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

Documentation and Records Management

(A28) A record of all documents required by this environmental authority must be:

(a) kept for a minimum of five years; and

(b) be made available to an authorised person upon request.

Infrastructure

(A31) The following infrastructure must be clearly and permanently marked for the life of the petroleum activity(ies) with a unique reference name / number in such a way that it is clearly observable:

(a) regulated dams;

(b) exploration, appraisal and development wells;

(c) gas processing facilities;

(d) water treatment facilities;

(e) brine encapsulation facilities;

(f) sewage treatment facilities;

(g) authorised discharge points to air, land and waters;

(h) any chemical storage facility associated with the environmentally relevant activity of chemical storage; and

(i) field compressor stations.

Annual Environmental Report

(A32) 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 following documents:

(i) the Australia Pacific LNG Project – Coordinator-General's Report on the Environmental Impact Statement, dated November 2010;

(ii) this environmental authority;

(iii) the environmental management plan supplied with the environmental authority application.

(c) provide details regarding complaints relating to environmental harm and environmental nuisance made during the reporting period; and

(d) 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;

(ii) the Constraints Planning and Field Development Protocol required by condition (A11).

(A33) 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.

Monitoring

(A37) All monitoring under this environmental authority must be conducted by a suitably qualified person.

SCHEDULE B – WATER

Contaminant Release

(B1) Contaminants must not be directly or indirectly released to any waters except as permitted under this environmental authority.

Release of Treated CSG Water to Waters

(B2) Treated CSG water may be released from the release point specified *in Schedule B, Table 1 – Treated CSG Water Release Point and Receiving Waters* to the receiving environment specified in *Schedule B, Table 1 – Treated CSG Water Release Point and Receiving Waters* until 31 December 2040.

(B3) The treated CSG water authorised to be released in accordance with condition (B2) must not contain stimulation fluid.

(B5) For the period commencing 1 January 2015 up to and including 31 December 2040, the total volume of treated CSG water authorised to be released in accordance with condition (B2) must not exceed 4.8GL in any one calendar year that falls within the peak water production period, calculated as the total volume of release from the Integrated Condabri-Talinga Coal Seam gas Water Management Scheme.

(B6) For the period commencing 1 January 2015 up to and including 31 December 2040, the total volume of treated CSG water authorised to be released in accordance with condition (B2) must not exceed 2.8GL in any one calendar year that falls within the high water production period, calculated as the total volume of release from the Integrated Condabri-Talinga Coal Seam gas Water Management Scheme.

(B7) For the period commencing 1 January 2015 up to and including 31 December 2040, the total volume of treated CSG water authorised to be released in accordance with condition (B2) must not exceed 2.3GL per annum in any one calendar year that falls within the low water production period, calculated as the total volume of release from the Integrated Condabri-Talinga Coal Seam gas Water Management Scheme.

Schedule B, Table 1 – Treated CSG Water Release Point and Receiving Waters

Release Point	Latitude (Decimal degrees GDA94)	Longitude (Decimal degrees GDA94)	Treated CSG Water Source and Location and Description of Release Point	Receiving Waters Description
U1	-26.8227	150.1934	Reverse Osmosis Treatment Plant Discharge Structure located on PL265	Condamine River downstream of the release point to the Cotswold gauging station.

(B8) The release of treated CSG water to waters in accordance with condition (B2) must not exceed any of the quality characteristic release limits specified in *Schedule B, Table 2 – Release Contaminant Limits*.

(B9) The release of treated CSG water to waters in accordance with condition (B2) must be monitored:

(a) at the monitoring point specified in *Schedule B, Table 2 – Receiving Environment Contaminant Limits*;

(b) for each of the quality characteristics specified in *Schedule B, Table 2 – Receiving Environment Contaminant Limits*; and

(c) at the monitoring frequencies specified in *Schedule B, Table 2 – Receiving Environment Contaminant Limits* for each quality characteristic.

(B10) If the monitoring required by condition (B9) indicates that any of the quality characteristic release limits specified in *Schedule B, Table 2 – Release Contaminant Limits*, other than at Condamine River - 200m upstream of release tributary confluence with Condamine River, have been exceeded at any time during any release of treated CSG water, the environmental authority holder must, within three months of notifying the administering authority of the exceedance, unless a longer time is agreed to by the administering authority:

(a) complete an investigation in accordance with the methodology ANZECC and ARMCANZ 2000 into the potential for environmental harm resulting from the exceedance; and

(b) provide a written report to the administering authority on completion of the investigation that includes:
(i) details of the investigation carried out; and
(ii) any actions taken to prevent environmental harm.

(B11) Where an exceedance of a quality characteristic release limit specified in *Schedule B, Table 2 – Release Contaminant Limits* is being investigated in accordance with condition (B10), the investigation and reporting required by condition (B10) is not required if a subsequent exceedance occurs, during investigation of the initial exceedance, which has resulted from the same cause that triggered the initial exceedance.

Schedule B, Table 2 – Release Contaminant Limits

Monitoring Point	Latitude (Decimal degrees GDA94)	Longitude (Decimal degrees GDA94)	Quality Characteristic	Release Limit	Limit Type	Monitoring Frequency
U1	-26.8227	150.1934	Dissolved Oxygen	4mg/L	Minimum	Daily during discharge
			Electrical Conductivity	500µS/cm	Maximum	
			pH	6.5–8.5 units	Range	
Condamine River - 200m upstream of release tributary confluence with Condamine River	-26.82693	150.19768	Temperature	+/- 4ºC	Range	
Condamine River - 500m downstream of release tributary confluence with Condamine River	-26.82780	150.19213				
U1	-26.8227	150.1934	Calcium	5mg/L	Minimum	Weekly during discharge
			Magnesium	2mg/L	Minimum	
			Boron	1mg/L	Maximum	

(B12) The release of treated CSG water to waters in accordance with condition (B2) must not exceed any of the quality characteristic release limits specified in *Schedule B, Table 3 – Release Contaminant Limits*.

(B13) The release of treated CSG water to waters in accordance with condition (B2) must be monitored:

(a) at the monitoring points specified in *Schedule B, Table 3 – Release Contaminant Limits*;

(b) for each of the quality characteristics specified in *Schedule B, Table 3 – Release Contaminant Limits*; and

(c) at the monitoring frequencies specified in *Schedule B, Table 3 – Release Contaminant Limits* for each quality characteristic.

(B14) If the monitoring required by condition (B13) indicates that any of the quality characteristic release limits specified in *Schedule B, Table 3 – Release Contaminant Limits* have been exceeded at any time during any release of treated CSG water, the environmental authority holder must, within three (3) months of notifying the administering authority of the exceedance, unless a longer time is agreed to by the administering authority:

(a) complete an investigation into the potential for impacts to drinking water resulting from the exceedance, which includes an analysis of the (potential and actual) causes for the exceedance; and

(b) provide a written report to the administering authority and the local Public Health Unit (https://www.health.qld.gov.au/system-governance/contact-us/contact/public-health-units/default.asp) on completion of the investigation that includes:

(i) details of the investigation carried out;
(ii) any actions taken to prevent impacts to drinking water;
(iii) the cause for the exceedance;
(iv) all water quality monitoring results pertaining to the investigation;
(v) any general observations;
(vi) methodology(ies) and any relevant calculations used; and
(vii) corrective actions to rectify the cause of the exceedance.

(B15) Where an exceedance of a quality characteristic release limit specified in *Schedule B, Table 3 – Release Contaminant Limits* is being investigated in accordance with condition (B14), the investigation and reporting required by condition (B14) is not required if a subsequent exceedance occurs, during investigation of the initial exceedance, which has resulted from the same cause that triggered the initial exceedance.

Schedule B, Table 3 – Release Contaminant Limits

Monitoring Point	Latitude (Decimal degrees GDA94)	Longitude (Decimal degrees GDA94)	Quality Characteristic	Release Limit	Limit Type	Monitoring Frequency
Condabri Central Water Treatment Facility: Supply to River 4520-5	-26.80315	150.19069	N-Nitrosodimethylamine (NDMA)	0.0001mg/L	Maximum	On first release day of each calendar year
			Alpha Activity	0.5Bq/L	Maximum	
			Beta Activity	0.5Bq/L	Maximum	
			Aluminium	0.2mg/L	Maximum	
			Ammonia	0.5mg/L	Maximum	
			Arsenic	0.01mg/L	Maximum	

Monitoring Point	Latitude (Decimal degrees GDA94)	Longitude (Decimal degrees GDA94)	Quality Characteristic	Release Limit	Limit Type	Monitoring Frequency
			Barium	0.7mg/L	Maximum	
			Bisphenol A	0.2mg/L	Maximum	
			Boron	4mg/L	Maximum	
			Bromide	7mg/L	Maximum	
			Bromoform	0.1mg/L	Maximum	
			BTEX Benzene Toluene Ethylbenzene Xylene (m & p)	0.001mg/L 0.800mg/L 0.300mg/L 0.600mg/L	Maximum	
			Cadmium	0.002mg/L	Maximum	
			Chlorine	5mg/L	Maximum	
			Chloroform	0.2mg/L	Maximum	
			Chromium	0.05mg/L	Maximum	
			Copper	2mg/L	Maximum	
			Cyanide	0.08mg/L	Maximum	
			Fluoride	1.5mg/L	Maximum	
			Iodide	0.1mg/L	Maximum	
			Iron	0.3mg/L	Maximum	
			Lead	0.01mg/L	Maximum	
			Manganese	0.5mg/L	Maximum	
			Mercury	0.001mg/L	Maximum	
			Molybdenum	0.05mg/L	Maximum	

Monitoring Point	Latitude (Decimal degrees GDA94)	Longitude (Decimal degrees GDA94)	Quality Characteristic	Release Limit	Limit Type	Monitoring Frequency
			Nickel	0.02mg/L	Maximum	
			PAH (as B(a)P TEF) Species: TEF: benz[a]anthracene 0.1 benzo[b+j]fluoranthene 0.1 benzo[k]fluoranthene 0.1 benzo[a]pyrene 1.0 chrysene 0.01 dibenz[a,h]anthracene 5.0 indeno[1,2,3-cd]pyrene 0.1	0.01 g/L	Maximum	
			Selenium	0.01mg/L	Maximum	
			Sulphate	500mg/L	Maximum	
			Strontium	4mg/L	Maximum	
			Total Petroleum Hydrocarbons (TPH)	0.2mg/L	Maximum	
			Vanadium	0.05mg/L	Maximum	
			Zinc	3mg/L	Maximum	

(B16) The daily quantity of treated CSG water released from the release point specified in *Schedule B, Table 1 – Treated CSG Water Release Point* must be measured and recorded.

(B17) A stream flow gauging station must be utilised to determine and record stream flows of the receiving waters at the location and frequency specified in *Schedule B, Table 4 – Stream Flow Gauging Station*.

Schedule B, Table 4 – Stream Flow Gauging Station

Gauging station description	Latitude (Decimal degrees GDA94)	Longitude (Decimal degrees GDA94)	Flow Record Frequency
Chinchilla Weir	−26.8001	150.57495	Continuous

(B18) The release of treated CSG water to waters in accordance with condition (B2) must not:

(a) cause erosion of the bed and banks of the receiving waters specified in *Schedule B, Table 1 – Treated CSG Water Release Point and Receiving Environment*;

(b) cause a material build-up of sediment in the receiving waters specified in *Schedule B, Table 1 – Treated CSG Water Release Point and Receiving Environment*.

(B19) During the transitional period, the release of treated CSG water is only authorised during any of the following conditions:

(a) if the volume of the release is less than or equal to 20% of the mean daily flow (m^3/sec) of the receiving waters as measured at the gauging station specified in *Schedule B, Table 4 – Stream Flow Gauging Station*;

(b) once the design storage allowance (DSA) of the feed pond and the maximum operating level (1,873ML) in the Monreagh Dam have been reached.

(B20) During the operational period, the release of treated CSG water is only authorised during any of the following conditions:

(a) once the maximum operating level (1,873ML) in the Monreagh Dam has been reached;

(b) if the volume of produced treated water exceeds irrigation demand when measured on a daily basis.

(B21) If a release event has been triggered under conditions (B20)(a), the release is authorised to continue until the volume of water contained in the Monreagh Dam has decreased to 180ML.

(B22) The maximum release rate of treated CSG water authorised in conditions (B20) and (B21) must not exceed 40ML/d from the Condabri water treatment facility.

(B23) The release of treated CSG water to waters during no flow conditions must not cause an adverse impact to aquatic biota in the receiving waters.

Notification

(B24) If circumstances prevent the monitoring required by either condition (B9), (B13) or (B17) during or following severe weather events, the administering authority must be notified within 48 hours.

Recording

(B25) The release days into no flow conditions for the Integrated Condabri-Talinga Coal Seam Gas Water Management Scheme must be reported in the annual return consistent with the requirements of condition (B27).

(B27) Records of all releases required by condition (B25) must include the following information:

(a) release commencement date and time;
(b) expected release cessation date and time;
(c) estimated release volume and actual volume of treated CSG water released;
(d) the flow rate of the receiving waters;
(e) all in-situ water quality monitoring results;
(f) any other matters pertinent to the water release event; and
(g) any details including available data regarding likely impacts on the receiving water.

Receiving Environment Monitoring Program (REMP)

(B29) A REMP must be developed and implemented to monitor and record the effects of the release of treated CSG water to the receiving environment with the aims of identifying and describing the extent of any adverse environmental impacts to local environmental values, and monitoring any changes in the receiving water.

(B30) The REMP must be maintained by a person possessing appropriate qualifications and experience in the field of hydrology and surface water monitoring program design.

(B31) The REMP must address, but not be limited to:

(a) a description of potentially affected receiving waters including key communities and background water quality characteristics based on accurate and reliable monitoring data that takes into consideration any temporal variation (e.g. seasonality);

(b) a description of applicable environmental values, including but not limited to:

(i) hydrology (flow, duration, periodicity, connectivity with groundwater systems;

(ii) physiochemical properties;

(iii) drinking water;

(iv) aquatic ecosystem parameters including flow and fauna habitat; and

(v) geomorphological features;

(c) a description of water quality objectives to be achieved (i.e. as scheduled pursuant to the Environmental Protection (Water) Policy 2009);

(d) any relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment within which the REMP is proposed;

(e) water quality targets within the receiving environment to be achieved, and clarification of contaminant concentrations or levels indicating adverse environmental impacts during the REMP.

(f) monitoring for any potential adverse environmental impacts caused by the release including impacts to bank stability and erosion;

(g) monitoring of stream flow and hydrology;

(h) measurement of the banks and beds of the receiving environment for SAR and an assessment of soil sodicity and erosion;

(i) an assessment of bank stability and an evaluation of water course bank slumping;

(j) monitoring of contaminants should consider the limits specified in *Schedule B, Table 2 – Release Contaminant Limits* to assess the extent of the compliance of concentrations with water quality objectives and/or the ANZECC & ARMCANZ 2000 guidelines for slightly to moderately disturbed ecosystems;

(k) monitoring of contaminants including ammonia, aluminium, arsenic, cadmium, chromium, copper, cobalt, iron, fluoride, lead, manganese, mercury, molybdenum, nickel, selenium, silver, sulphate, uranium, vanadium and zinc to assess the extent of the compliance of concentrations with water quality objectives and/or the ANZECC & ARMCANZ 2000 guidelines for slightly to moderately disturbed ecosystems;

(l) monitoring of physical chemical parameters as a minimum those specified in *Schedule B, Table 2 – Release Contaminant Limits* (in addition to dissolved oxygen saturation);

(m) monitoring biological indicators (including but not limited to vertebrate and invertebrate species) for permanent, semi-permanent water holes and water storages using sampling techniques sufficient to reliably detect significant differences between impacted (test) and unimpacted sites;

(n) monitoring of a selection of zooplankton species to assess health (e.g. exoskeleton density) in respect to the availability of calcium and magnesium;

(o) the methods for analysis and interpretation all monitoring results;

(p) the locations of monitoring points (including the locations of proposed background and downstream impacted sites for each release point);

(q) the frequency or scheduling of sampling and analysis sufficient to determine water quality objectives and to derive site specific reference values within two years (depending on wet season flows) in accordance with the Queensland Water Quality Guidelines 2009. For ephemeral streams, this should include periods of flow irrespective of mine or other discharges;

(r) specify sampling and analysis methods and quality assurance and control;

(s) any historical data sets to be relied upon;

(t) description of the statistical basis on which conclusions are drawn,

(u) any control or reference sites; and

(v) recording of planned and unplanned releases to watercourses, procedures for event monitoring, monitoring methodology used and procedure to establish background surface water quality.

Erosion and sediment control

(General 20) For activities involving significant disturbance to land, control measures that are commensurate to the site specific risk of erosion, and risk of sediment release to waters must be implemented to:

(a) allow stormwater to pass through the site in a controlled manner and at non-erosive flow velocities

(b) minimise soil erosion resulting from wind, rain, and flowing water

(c) minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain, and flowing water

(d) minimise work-related soil erosion and sediment runoff; and

(e) minimise negative impacts to land or properties adjacent to the activities (including roads).

Maintenance and Cleaning

(B36) The maintenance and cleaning of vehicles and any other equipment or plant must be carried out in areas from where the resultant contaminants cannot be released into any waters.

Stormwater Management

(B37) There must be no release of stormwater runoff that has been in contact with any contaminants at the site to any waters, roadside gutter or stormwater drain.

Authorised impacts to wetlands

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

Authorised activities in waters

(Water 3) Petroleum activities must not occur in or within 200m of a:

(a) wetland of high ecological significance

(b) Great Artesian Basin Spring

(c) subterranean cave GDE.

(Water 4) Only construction or maintenance of linear infrastructure is permitted in or within any wetland of other environmental value or in a watercourse.

(Water 5A) The construction or maintenance of linear infrastructure in a wetland of other environmental value must not result in the:

(a) clearing of riparian vegetation outside of the minimum area practicable to carry out the works; or

(b) ingress of saline water into freshwater aquifers; or

(c) draining or filling of the wetland beyond the minimum area practicable to carry out the works.

(Water 5B) After the construction or maintenance works for linear infrastructure in a wetland of other environmental value are completed, the linear infrastructure must not:

(a) drain or fill the wetland

(b) prohibit the flow of surface water in or out of the wetland

(c) lower or raise the water table and hydrostatic pressure outside the bounds of natural variability that existed before the activities commenced

(d) result in ongoing negative impacts to water quality

(e) result in bank instability; or

(f) result in fauna ceasing to use adjacent areas for habitat, feeding, roosting or nesting.

(Water 6) The construction or maintenance of linear infrastructure activities in a watercourse must be conducted in the following preferential order:
(a) firstly, in times where there is no water present
(b) secondly, in times of no flow
(c) thirdly, in times of flow, providing a bankfull situation is not expected and that flow is maintained.

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

Protecting water values, Table 1—Release limits for construction or maintenance of linear infrastructure

Water quality parameters	Units	Water quality limits
Turbidity	Nephelometric Turbidity Units (NTU)	For a wetland of other environmental value, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within a 50m radius of the construction or maintenance activity. For a watercourse, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within 50m downstream of the construction or maintenance activity.
		For a wetland of other environmental value, if background water turbidity is equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within a 50m radius of the construction or maintenance activity. For a watercourse, if background water turbidity is equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within 50m downstream of the construction or maintenance activity.
Hydrocarbons	-	For a wetland of other environmental value, or watercourse, no visible sheen or slick Nephelometric Turbidity Units (NTU).

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

Register of activities in wetlands and watercourses

(Water 9) A register must be kept of all linear infrastructure construction and maintenance activities in a wetland of other environmental value and watercourses, which must include:
(a) location of the activity (e.g. GPS coordinates (GDA94) and watercourse name)
(b) estimated flow rate of surface water at the time of the activity
(c) duration of works, and
(d) esults of impact monitoring carried out under condition (Water 8).

Activities in river improvement areas

(Water 10) 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

(Water 11) 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.

Management of Hydrostatic Test Water

(Waste 6) 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.

(B59) Any release of hydrostatic test water authorised by condition (B58) must be located at least 100m from the nearest watercourse.

(B60) The holder of this authority must undertake hydrotesting of pipe sections crossing water bodies prior to installation of these pipe sections.

(B61) The holder of this environmental authority must ensure that the release of any hydrostatic test water is in accordance with the Land Release Management Plan required by condition (D65).

CSG Water Injection Trial

(B62) Prior to undertaking fluid injection, the holder of this environmental authority must develop a Stage 1 - Injection Management Plan, which must include but not necessarily be limited to:

(a) Injection fluid characteristics, including:

(i) estimated volumes and rates of water to be injected;

(ii) a description of the physical, chemical and biological components and their concentrations of the fluid to be injected

(b) target aquifer characteristics, including:

(i) the pre-existing state of the aquifer including, faults or geological features that exist in the target and adjacent aquifers to the outer extent of the hydraulic impact zone and a history of seismic events within the hydraulic impact zone;

(ii) physical characteristics including, storavity, pressure, location, accessibility, inflow, outflow and history of use;

(iii) characterisation of the physiochemical properties of the target formation;

(iv) compatibility of the injection fluid with the target formation and formation water;

(v) identification of the value of the target aquifer in respect to economic output, supported population and natural assets;

(vi) groundwater levels and/or pressure;

(c) identification of the hydraulic impact zone;

(d) identification of the water quality impact zone;

(e) identification of the environmental values and water quality objectives of the potential water quality impact zone of the target formation in accordance with the Environmental Protection (Water) Policy 1997 and the Queensland Water Quality Guidelines 2006;

(f) identification of the impacts on the environmental values due to the injection fluid;

(g) details of how and where the fluid will be produced, aggregated, stored and kept separate from other waters until it is, treated and reinjected into the target aquifer;

(h) identification of any fluid injection well, all existing bores, springs, environmental assets and watercourses connected to groundwater, faults and other geologic features that occur within the water quality impact zone and the hydraulic impact zone;

(i) an assessment of the potential for migration of injection fluid or native groundwater out of the target formation through wells, bores, springs, connected watercourses, faults or other geologic features likely to impact on other aquifers;

(j) a risk assessment consistent with the risk framework specified in Australian Guidelines for Water Recycling: Managed Aquifer Recharge, identifying potential hazards, their inherent risk, preventative measures for the management of potential hazards and after consideration of the operational monitoring to manage potential hazards identified in the risk assessment including details on sampling and analysis methods including frequency and locations, and quality assurance and control;

(k) verification methods to assess performance of the injection activities,

(l) control measures that will be implemented for fluid storage, treatment and injection to prevent or control the release of a contaminant or waste to the environment;

(m) the indicators or other criteria against which the performance of fluid injection will be assessed;

(n) procedures that will be adopted to regularly review the monitoring program and to report to management and the administering authority should unforeseen or non-compliant monitoring results be recorded;

(o) procedures that will be implemented to prevent unauthorised environmental harm from unforeseen or non-compliant monitoring results;

(p) procedures for dealing with accidents, spills, failure of containment structures, and other incidents that may arise in the course of fluid injection; and

(q) development of a public consultation program to be implemented at commencement of Stage 2 – Field test program of the CSG Water Injection Trial.

(B63) Stage 3 – Full Scale CSG Water Injection is not authorised under this environmental authority.

CSG Water Injection Trial – Stage 2

(B64) Injection activities are only authorised to be conducted at the locations and for the fluid types and maximum time periods listed in *Schedule B, Table 7 – Details of Authorised Fluid Injection Trials*.

Schedule B, Table 7 – Details of Authorised Fluid Injection Trials

Trial Reference	Well Location	Well Number	Target Formation	Fluid Type	Maximum Time Period	Water Quality Impact Zone	Hydraulic Impact Zone
1	224072, 7034174	CON-INJ3-G	Gubberamunda Sandstone	Treated[1] CSG water and surface water runoff	12 months	110m	11km
2	223988, 7034205	CON-INJ1-H	Hutton Sandstone		12 months	85m	9km
3	224050, 7034147	CON-INJ2-P	Precipice Sandstone		12 months	168m	12km

[1] *Treated means fluid that:*

- *Has undergone filtration to remove suspended solids;*
- *Disinfection by ultra-violet irradiation; and*
- *Meeting contaminant limits prescribed in* Schedule B, Table 8 – Specific Contaminant Limits for Injection Fluid*.*

Note: Well locations in easting and northing map zone 56 MGA 94,

Note: The water quality impact zone and hydraulic impact zone area shall be described as a polygon with boundary references specified in grid references to MGA 94.

Note: The maximum time period for the trial into each formation does not include the aquifer injection commissioning timeframe.

(B65) Injection must cease immediately upon becoming aware that environmental harm is caused or threatened to be caused as a result of the injection activities.

(B66) The administering authority must be notified of the commencement date of each trial listed in *Schedule B, Table 7 – Details of Authorised Fluid Injection Trials* up to seven days prior to its commencement.

Well Integrity

(B67) The construction of fluid injection wells must be carried out in accordance with well construction requirements in the most recent version of the Department of Environment and Heritage Protection Treated Coal Seam Gas (CSG) Water Injection Well Construction Requirements, as amended from time to time.

(B68) Fluid injection well(s) authorised by this environmental authority must have appropriate records and documents which support and indicate mechanical integrity and which hold a certificate of mechanical integrity prepared and certified by a suitably qualified person, available for inspection such that:

(a) there is no significant leakage in the casing, tubing, or packer; and

(b) there is no significant fluid movement into a water resource aquifer through vertical channels adjacent to the well bore hole.

(B69) For fluid injection:

(a) at depth less than 100m, the injection operation must not exceed the dry overburden pressure of the base of the overlying aquitard; or

(b) at depth greater than 100m, the injection operation must not exceed 90% of the formation fracture pressure.

Fluid Injection Quality

(B70) Fluid used in the well injection trials listed in *Schedule B, Table 7 – Details of Authorised Fluid Injection Trials* must comply with the contaminant limits prescribed in *Schedule B, Table 8 - Specific Contaminant Limits for Injection Fluid*, at the point of injection for the wells listed in *Schedule B, Table 7 – Details of Authorised Fluid Injection Trials*.

Schedule B, Table 8 – Specific Contaminant Limits for Injection Fluid

Contaminants/Parameters of concern: release limits	**Gubberamunda Sandstone**	**Hutton Sandstone**	**Precipice Sandstone**
Dissolved oxygen	200ppb	200ppb	N/A
Total dissolved solids (TDS)[2]	Mean TDS shall not exceed formation water 95%ile	Mean TDS shall not exceed formation water 95%ile	Mean TDS shall not exceed formation water 95%ile
pH units	6.5-10	6.5-10	6.5-10

[2] Electrical conductivity (EC) is an acceptable proxy measurement for measuring TDS of the injection fluid. If used, the conversion from EC to TDS must be stated and confirmed with laboratory monitoring results.

(B71) The Injection Monitoring Program described in the *Condabri Aquifer Injection Trial Management Plan Environmental Authority EPPG00853013* must be implemented.

(B72) The Injection Monitoring Program must be certified by a suitably qualified person.

(B73) The Injection Monitoring Program must include, but not necessarily be limited to:

(a) monitoring for all parameters listed in Section 6.2 of the *Condabri Aquifer Injection Trial Management Plan Environmental Authority EPPG00853013*;

(b) monitoring of radionuclides: gross alpha and beta;

(c) monitoring at monitoring bore locations listed in Section 6.1 of the Condabri Aquifer Injection Trial Management Plan Environmental Authority EPPG00853013;

(d) monitoring at injection well locations listed in *Schedule B, Table 7 – Details of Authorised Fluid Injection Trials*; and

(e) an analysis of how the measured parameters compare with the relevant water quality guidelines for environmental and human health.

(B74) Upon completion and within three months of each trial listed in *Schedule B, Table 7 – Details of Authorised Fluid Injection Trials*, a Stage 2 Report, prepared by a suitably qualified person, must be submitted to the administering authority.

(B75) The Stage 2 Report must include, but not necessarily be limited to:

For any well to be used for fluid injection activities:

(a) details of the wells including but not limited to:

  (i) location details (GDA94);

  (ii) the inferred lithology;

  (iii) casing details (type, outer diameter (mm), wall thickness (mm) & locations (depth from & to in metres));

  (iv) cementing details (type, hole diameter (mm), casing outer diameter (mm) and locations (depth from & to in metres));

  (v) target formation fracture pressure; and

  (vi) target formation pressure prior to injection;

(b) a detailed interpretation of the logs and other tests conducted during drilling and construction or refurbishment of the well against their specific objectives;

(c) a completed well schematic diagram;

(d) a temperature survey;

(e) a casing integrity assessment technique such as:

  (i) radioactive tracer survey;

  (ii) oxygen activation log;

  (iii) cement integrity log; or

  (iv) an equivalent survey technique approved by the administering authority;

(f) outcomes of the injection trial including, but not limited to:

  (i) well head injection rates versus formation pressure;

  (ii) target formation pressure within the hydraulic impact zone during and upon completion of the trial;

  (iii) hydraulic gradient of the target formation within the hydraulic impact zone upon completion of the trial;

  (iv) the effectiveness of aquitards (including the stability of the aquitard) and aquicludes of confining the injected fluid within the target formation; and

  (v) a detailed interpretation of the logs and other tests conducted during the injection trial against their specific objectives;

(g) the results of the monitoring program as required by conditions (B71) and (B73);

(h) analysis of monitoring and operational data in terms of:

(i) validation of conceptual framework for injection; and

(j) additional hazards that were not identified earlier;

(k) a revised risk analysis that identifies all potential hazards, likelihood of various risk elements and associated consequences;

(l) a re-evaluation of the hydraulic impact zone; and

(m) a re-evaluation of the water quality impact zone.

Well Closure

(B76) A Well Closure Plan which has been certified by a suitably qualified person must be submitted to the administering authority at least six months prior to the cessation of fluid injection at each well.

(B77) The Well Closure Plan must include, but not necessarily be limited to the following:

(a) details of when and under what circumstances the injection well will be decommissioned;

(b) sealing details including the method, type of material to be used and the location and the depth (metres) from ground surface of the bottom of the seal will be located; and

(c) any proposed test or measure to be made.

(B78) Actions outlined in the well closure plan must be completed within three months after the cessation of fluid injection at each injection well listed in *Schedule B, Table 7 – Details of Authorised Fluid Injection Trials*.

(B79) A well closure report demonstrating compliance with the well closure plan as required by conditions (B76) and (B77) for each well must be prepared by a suitably qualified person and submitted to the administering authority with the next annual return following completion of injection activities.

(B80) Injection wells must be decommissioned in accordance with the Minimum Construction Requirement for Water Bores in Australia as amended from time to time.

(B81) Prior to abandoning an injection well, the well must be completely sealed with concrete, cement grout or bentonite cement grout from the terminal depth to the surface.

Injection Cessation Report

(B82) A fluid injection cessation report which has been certified by a suitably qualified person must be submitted to the administering authority within two months of completion of each trial listed in *Schedule B, Table 7 – Details of Authorised Fluid Injection Trials*.

(B83) The fluid injection cessation reports required by condition (B82) must include, but not necessarily be limited to:

(a) volumes of fluid injected at each well;

(b) a risk assessment statement providing details on identified hazards including their inherent risk, summary of the results from the verification monitoring, preventative measures and the residual risk; and

(c) a monitoring report outlining the methods and results of verification monitoring undertaken to assess the performance of the injection activities and preventative measures for identified hazards.

Fluid Injection Notification

(B84) The Department of Environment and Heritage Protection Pollution Hotline (telephone: 1300 130 373) must be contacted as soon as reasonably practicable, but within 24 hours of becoming aware of:

(a) migration of injected fluid out of the target formation; or

(b) a loss of hydraulic isolation of the target formation; or

(c) the detection of groundwater contaminants that were not detected in background samples; or

(d) an injection fluid monitoring result that does not comply with the any one of parameters in *Schedule B, Table 8 - Specific Contaminant Limits for Injection Fluid*.

Seepage Monitoring Program

(B85) A seepage monitoring program must be developed by a suitably qualified person which is commensurate with the site-specific risks of contaminant seepage from containment facilities, and which requires and plans for detection of any seepage of contaminants to groundwater as a result of storing contaminants by 31 May 2015.

(B86) The seepage monitoring program required by condition (B85) must include but not necessarily be limited to:

(a) identification of the containment facilities for which seepage will be monitored;

(b) identification of trigger parameters that are associated with the potential or actual contaminants held in the containment facilities;

(c) identification of trigger concentration levels that are suitable for early detection of contaminant releases at the containment facilities;

(d) installation of background seepage monitoring bores where groundwater quality will not have been affected by the petroleum activities authorised under this environmental authority to use as reference sites for determining impacts;

(e) installation of seepage monitoring bores that:

(i) are within formations potentially affected by the containment facilities authorised under this environmental authority (i.e. within the potential area of impact);

(ii) provide for the early detection of negative impacts prior to reaching groundwater dependent ecosystems, landholder's active groundwater bores, or water supply bores;

(iii) provide for the early detection of negative impacts prior to reaching migration pathways to other formations (i.e. faults, areas of unconformities known to connect two or more formations);

(f) monitoring of groundwater at each background and seepage monitoring bore at least biannually for the trigger parameters identified in condition (B86(b));

(g) seepage trigger action response procedures for when trigger parameters and trigger levels identified in conditions (B86(b)) and (B86(c)) trigger the early detection of seepage, or upon becoming aware of any monitoring results that indicate potential groundwater contamination;

(h) a rationale detailing the program conceptualisation including assumptions, determinations, monitoring equipment, sampling methods and data analysis; and

(i) provides for annual updates to the program for new containment facilities constructed in each annual return period.

(B87) All groundwater monitoring bores must be maintained in an operative condition and be accessible at all times to any authorised person.

(B88) The method of water sampling required by this environmental authority must comply with that set out in the most recent version of the Department of Environment and Heritage Protection Monitoring and Sampling Manual 2009 – Environmental Protection (Water) Policy 2009, Version 2 September 2010 as amended from time to time.

Coal Seam Gas Water Management Plan

(B89) The holder of this environmental authority must develop and implement a Coal Seam Gas Water Management Plan for the proper and effective management of coal seam gas water produced in the carrying out of the petroleum activity.

(B90) The holder of this environmental authority must ensure that coal seam gas water is contained, is not released to land or waters, and is only used for purposes specifically authorised:

(a) under this environmental authority; or

(b) under the *Petroleum and Gas (Production and Safety) Act 2004* as an authorised activity; or

(c) under Section 86 of the *Petroleum Act 1923*; or

(d) under an approval of resource for beneficial use as provided for under the *Waste Reduction and Recycling Act 2011.*

(B91) The holder of this environmental authority must ensure that the coal seam gas water to be used for domestic or stock purposes meets the ANZECC and ARMCANZ Water Quality Guidelines 2000 for stock and domestic purposes, as amended from time to time.

Coal Seam Gas Water Management Criteria

(B92) Prior to the commencement of each petroleum activity authorised by this environmental authority, Coal Seam Gas Water Management Criteria need to be developed and implemented which must:

(a) be developed in accordance with section 126(1)(e) of the *Environmental Protection Act 1994*;

(b) be consistent with the requirements of this environmental authority.

(B93) The Management Criteria required by condition (B92) must:

(a) be consistent with the requirements of this environmental authority;

(b) be based on the site Coal Seam Gas Water Management Plan outcomes required by condition (B94);

(c) identify the environmental values potentially affected by the petroleum activity(ies) and identified in accordance with the Environmental Protection Regulation 2008 and environmental protection policies and associated departmental guidelines as amended from time to time;

(d) identify relevant quality objectives that protect environmental values, including quality objectives prescribed under the environmental protection policies;

(e) identify any wastes generated during the management of coal seam gas water;

(f) identify disposal methods for wastes generated during the management of coal seam gas water; and

(g) identify the quantity and quality of water used, treated, stored or disposed of at the site;

(h) include performance objectives or standards against which success in achieving effective management of coal seam water generated by the project is demonstrated;

(i) include performance indicators to achieve the performance objectives, including:

(i) specific, auditable standards to demonstrate the success of each nominated management criteria for nodes or points throughout the CSG water management system;

(ii) indicators of success through quantitative results that assist in demonstrating that the performance objectives/criteria are being achieved. These will include water quality, minimisation of land and soil impacts, maintenance of vegetation and landform stability; and

(j) address all potential impacts of the water management system (e.g. management criteria for ponds should address potential dam overtopping or wildlife deaths/access).

(B94) If, within 20 business days following the submission of the amended Coal Seam Gas Water Management Criteria, the administering authority provides comments on the amended Coal Seam Gas Water Management Criteria, the holder of the environmental authority must:

(a) have due regard to that comment in the finalisation of the amended Coal Seam Gas Water Management Criteria;

(b) submit the finalised amended Coal Seam Gas Water Management Criteria within 40 business days after the administering authority provided comments; and

(c) implement the amended Coal Seam Gas Water Management Criteria.

(B95) The holder of this environmental authority must ensure the measurable criteria are not amended without the written agreement of the administering authority.

SCHEDULE C – DAMS

Management of Low Consequence Dams

(C1) All low consequence dams must be designed and constructed, operated and maintained in accordance with accepted engineering standards currently appropriate for the purpose for which they are intended.

(C2) The consequence category of each low consequence dam must be determined by a suitably qualified and experienced person:

(a) prior to its construction; or

(b) within 120 business days of the date of grant of this environmental authority for existing low consequence dams; and

(c) prior to any change in its purpose or stored contents.

(C3) Where the consequence category of a low consequence dam is for the first time assessed as significant or high, the holder of this environmental authority must ensure that the dam meets the hydraulic performance required of the assessed consequence category within 12 months of that assessment.

(C4) In the event of early signs of loss of structural or hydraulic integrity of a low consequence dam, the holder of this environmental authority must immediately take action to prevent or minimise any actual or potential environmental harm.

Regulated Dams

(C5) All regulated dams must be designed, constructed, operated, modified and decommissioned in accordance with the requirements of the most recent version of the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures as amended from time to time and under the supervision of a suitably qualified and experienced person.

(C6) The holder of this environmental authority must ensure that regulated dams are designed by a suitably qualified and experienced person to prevent:

(a) floodwaters from entering the regulated dam from a watercourse or drainage line to the annual exceedance probability specified for determining spillway capacity in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, as amended from time to time;

(b) wall failure due to erosion by floodwaters arising from the watercourse or drainage line to the annual exceedance probability specified for determining spillway capacity in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, as amended from time to time; and

(c) overtopping as a result of a flood event of the annual exceedance probability specified for determining spillway capacity in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, as amended from time to time.

Construction and Operational Requirements for New Regulated Dams

(C7) All aggregation dams must:

(a) be designed with a floor and sides of material that will contain the wetting front and any entrained contaminants within the bounds of the containment system during its operational life including any period of decommissioning and rehabilitation;

(b) have a system that will detect any passage of the wetting front or entrained contaminants through the floor or sides of the dam; and

(c) either be capable of repair to rectify any passage of the wetting front through either the floor or sides of the dam, or else be decommissioned and rehabilitated.

(C8) All brine dams must:

(a) be designed with a floor and sides of material that will contain the wetting front and any entrained contaminants within the bounds of the containment system during its operational life including any period of decommissioning and rehabilitation;

(b) have a system that will detect any passage of the wetting front or entrained contaminants through the floor or sides of the dam;

(c) have a system for the collection and proper disposal of any contaminants that move beyond the bounds of the containment system; and

(d) either be capable of repair to rectify any passage of the wetting front through either the floor or sides of the dam, or else be decommissioned and rehabilitated.

Requirements for Regulated Dam Repair

(C11) Where the holder of this environmental authority detects any passage of the wetting front through the floor or sides of a regulated dam, the holder of this environmental authority must either:

(a) repair the dam to rectify the detected passage of the wetting front through the floor or sides of the dam; or

(b) decommission and rehabilitate the dam**.**

Regulated Dam Register

(C12) The holder of this environmental authority must maintain a register of regulated dams that must include, as a minimum, the following information for each regulated dam:

(a) dam name, the coordinates (in GDA94) for its location and date of entry in the register;

(b) dam purpose and its proposed/actual contents;

(c) consequence category assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, as amended from time to time;

(d) details of the composition and construction of any liner;

(e) the system for detection of leakage through the floor and sides of the dam;

(f) dimensions (metres) and surface area (hectares) measured at the footprint of the dam;

(g) maximum operational volume (megalitres);

(h) dam crest volume (megalitres);

(i) spillway crest level (metres AHD);

(j) design storage allowance at 1 November each year (megalitres);

(k) mandatory reporting level (metres);

(l) design plan title and reference;

(m) date construction was certified as compliant with the design plan;

(n) name and qualifications of certifier;

(o) dates on which the dam was inspected for structural and operational adequacy;

(p) dates on which the report of the annual structural and operational adequacy inspection was provided to the administering authority;

(q) dates on which the dam was inspected for the detection of leakage through any liner;

(r) dates on which the dam was inspected for the purpose of annually ascertaining the available storage capacity on the 1 November each year; and

(s) dam water quality as obtained from monitoring required under conditions (C38) to (C40) as at 1 November each year;

(C13) The holder of this environmental authority must provisionally enter the required information in the register of regulated dams when a design plan for a regulated dam is submitted to the administering authority.

(C14) The holder of this environmental authority must make a final entry of the required information in the register of regulated dams once compliance with condition (C20) has been achieved.

(C15) The holder of this environmental authority must ensure that the information contained in the register of regulated dams is always current and complete.

(C16) The holder of this environmental authority must submit the register of regulated dams or information contained in the register available to the administering authority as part of the annual environmental report required under condition (A40).

Regulated Dam Design Plan and 'As Constructed' Certification

(C17) The construction and operation of regulated dams is prohibited unless the holder of this environmental authority has submitted to the administering authority a copy of the design plan, together with the certification of a suitably qualified and experienced person that the regulated dam:

(a) will deliver the performance stated in the design plan;

(b) has had its consequence category assessed and been designed in accordance with the requirements of the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, as amended from time to time; and

(c) when constructed and operated, will be compliant in all respects with the relevant conditions of this environmental authority.

(C18) The design plan must include, but not necessarily be limited to:

(a) a statement of the relevant legislation, regulatory documents and engineering practice relied upon in the design plan;

(b) a statement of the facts and data being used in the design plan and the limitations to the application and interpretation of that material;

(c) an assessment of the consequence category of the proposed dam based on the indentification of potential impacts on any relevant sensitive places for any applicable dam failure scenarios, including the cumulative impact should multiple dams fail at once;

(d) detailed specifications for the design, operation, maintenance and decommissioning of the dam;

(e) an operational plan that includes contingency/emergency response procedures designed to avoid/minimise discharges resulting from any overtopping or loss of structural integrity of the dam;

(f) design, specification and operational rules for any related structures and systems used to prevent the overtopping of the proposed dam;

(g) a detailed plan for the decommissioning and rehabilitation of the dam at the end of its operational life;

(h) any other matter required by the certifying suitably qualified and experienced person; and

(i) evidence supporting the claims of the certifier that they are a suitably qualified and experienced person.

(C19) If, within the 20 business days following the lodgement of a certified design plan the administering authority notifies the holder of this environmental authority, in writing, that the design plan is not compliant with either:

(a) the conditions of this environmental authority; or

(b) the requirements set out in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, as amended from time to time.

then the construction and operation of the regulated dam is prohibited until the administering authority provides written advice that its construction may proceed.

(C20) When construction of any regulated dam is complete, the holder of this environmental authority must submit to the administering authority one hard copy and one electronic copy of a set of 'as constructed' drawings, together with the certification of a suitably qualified and experienced person that the dam 'as constructed' will deliver the performance stated in the design plan and at the time of certification it is compliant in all respects with conditions (C6) to (C8), (C21) and (C22) of this environmental authority.

(C21) Each regulated dam must be maintained and operated in a manner that is consistent with the design plan and the certified 'as constructed' drawings for the duration of its operational life and until decommissioned and rehabilitated.

(C22) Upon any change, excluding naturally occurring physical and chemical water quality variables, in the purpose or stored contents of a regulated dam the consequence category of that dam must be determined by a suitably qualified and experienced person prior to any such change.

Mandatory Reporting Level

(C23) The mandatory reporting level must be marked on each regulated dam in such a way that it is clearly observable during routine inspections of each dam.

(C24) If the contents of a regulated dam reaches the mandatory reporting level, the holder of this environmental holder must immediately act to prevent or, if unable to prevent, to minimise any actual or potential environmental harm**.**

Annual Inspection and Report

(C25) Each regulated dam must be inspected annually by a suitably qualified and experienced person.

(C26) At each annual inspection, each regulated dam must be assessed for:

(a) its consequence category in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, as amended from time to time;

(b) its' condition and adequacy for dam safety; and

(c) its' structural, geotechnical and hydraulic performance against the criteria contained in the certified design plan.

(C27) An assessment of the adequacy of the available storage in each regulated dam is to be made, based on an actual regulated dam capacity observed in the month of May in each year.

(C28) On 1 November of each year, storage must be available in each regulated dam to meet the design storage allowance estimated for the dam in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, as amended from time to time.

(C29) The holder must, immediately on becoming aware that the regulated dam will not have the available storage to meet the design storage allowance on 1 November of any year, act to prevent or, if unable to prevent, to minimise, any actual or potential environmental harm.

(C30) For each annual inspection, a report on the condition and adequacy of each regulated dam must be prepared and certified by a suitably qualified and experienced person and include any recommended actions to be taken to ensure the integrity of each regulated dam.

(C31) The holder of this environmental authority must, upon receipt of the annual inspection report, consider the report and its recommendations and take action(s) as necessary to ensure that each regulated dam will safely perform its intended function.

(C32) Within one month of receiving the annual inspection report, the holder of this environmental authority must advise the administering authority in writing of the recommendations of the inspection report and the actions taken to ensure the integrity of each regulated dam.

Dam Decommissioning

(C33) On cessation of operation of any dam, that dam must be maintained so as to prevent environmental harm until that dam is decommissioned.

(C34) The holder of the environmental authority must assess the disposal options available for any contaminated material, including salts and dam liners, in accordance with the waste management hierarchy and submit the results to the administering authority.

(C35) Decommissioned dams are to be rehabilitated and the landform must be reinstated such that it will not function as a dam and will be stable and sustainable for the foreseeable future, unless otherwise negotiated with landholders.

(C36) A minimum depth of 0.25m topsoil must be placed over decommissioned storage dams to ensure an adequate vegetal cover can be established.

Monitoring of Low Consequence Dams

(C37) The condition of all low consequence dams must be monitored for early signs of loss of structural or hydraulic integrity, based on the advice of a suitably qualified and experienced person. The methods of monitoring and frequency of monitoring shall be as assessed by the person who conducts the consequence assessment based on the particular circumstances of each dam.

Regulated Dam Water Quality Monitoring

(C38) The holder of this environmental authority must monitor the quality of water in all regulated dams on the petroleum tenure(s) covered by this environmental authority biannually.

(C39) The monitoring of regulated dam water must include sufficient analytes and physico-chemical parameters to characterise water quality in the dam and must include, but not necessarily be limited to:

(a) pH;

(b) electrical conductivity [μS/m];

(c) anions (bicarbonate, carbonate, chloride, fluoride, sulphate) [mg/L]; and

(d) cations (calcium, magnesium, potassium, sodium) [mg/L];

(C40) Water quality samples of regulated dams must be taken from at least three different dam profile depths for each sampling event and be taken as far as practicable from the edge of the regulated dam.

SCHEDULE D – LAND

General

(D1) Contaminants must not be directly or indirectly released to land except as permitted under this environmental authority.

Disturbance to Land – General

(Biodiversity 1) Prior to undertaking activities that result in significant disturbance to land in areas of native vegetation, confirmation of on-the-ground biodiversity values of the native vegetation communities at that location must be undertaken by a suitably qualified person.

(Biodiversity 2) A suitably qualified person must develop and certify a methodology so that condition (Biodiversity 1) can be complied with and which is appropriate to confirm on-the-ground biodiversity values.

(Biodiversity 3) For conditions (Biodiversity 4) to (Biodiversity 9), where mapped biodiversity values differ from those confirmed under conditions (Biodiversity 1) and (Biodiversity 2), petroleum activities may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity value.

(D5) The holder of this environmental authority, when carrying out the petroleum activity(ies) must:

- (a) avoid, minimise or mitigate (in order of preference) any impacts on areas of vegetation or other areas of ecological value;
- (b) minimise disturbance to land that may otherwise result in land degradation;
- (c) manage topsoil in a manner that will preserve its biological and chemical properties;
- (d) utilise stockpiled soils for rehabilitation purposes;
- (e) avoid clearing mature trees; and
- (f) prior to carrying out field based petroleum activities, make all relevant staff, contractors or agents carrying out those petroleum activities, aware of the location of any Category A, B or C Environmentally Sensitive Areas and the requirements of this environmental authority.

Note: This environmental authority does not authorise the taking of protected plants, protected animals or the tampering with animal breeding places as defined under the Nature Conservation Act 1992 and Regulations and relevant approvals will need to be obtained.

(D6) Despite condition (D5), significant disturbance to land caused by the carrying out of the petroleum activities must not involve clearing vegetation or placing fill:

- (a) in a way which significantly isolates, fragments or dissects tracts of vegetation resulting in a reduction in the current level of ecosystem functioning, ecological connectivity (i.e. stepping stone or contiguous bioregional / local corridor networks) and/or results in an increase in threatening processes (e.g. potential impacts associated with edge effects or introduced species); or
- (b) in discharge areas.

Schedule D, Table 1 – Petroleum Activities in Environmentally Sensitive Areas

Category	Within the ESA	Primary Protection Zone of the ESA (within 200m of ESA)	Secondary Protection Zone of the ESA (within 300m of ESA)
Category A ESAs	No petroleum activities permitted.	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted. Subject to condition (D12) and (D13).
Category B ESAs excluding 'Endangered' Regional Ecosystems	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted. Subject to condition (D12) and (D13).	Petroleum activities permitted.
Category C ESAs that are Nature Refuges Koala Habitat, Declared Catchment Areas	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted. Subject to condition (D12) and (D13).	Petroleum activities permitted.
Category B ESAs that are 'Endangered' Regional Ecosystems Category C ESAs that are Essential Habitat, Essential Regrowth Habitat, Critically Limited or Threshold or 'Of Concern' Regional Ecosystems	Only essential petroleum activities permitted. Subject to condition (D10) and (D11)	Only essential petroleum activities permitted. Subject to condition (D12) and (D13).	Petroleum activities permitted.
Category C ESAs that are Resource Reserves	Only essential petroleum activities permitted. Subject to condition (D10) and (D11)	Only essential petroleum activities permitted. Subject to condition (D12) and (D13).	Petroleum activities permitted.
Category C ESAs that are State Forests, Timber Reserves.	Only essential petroleum activities permitted. Subject to condition (D10) and (D11)	Petroleum activities permitted.	Petroleum activities permitted.

(D8) Petroleum activities must be carried out in accordance with *Schedule D, Table 1 – Petroleum Activities in Environmentally Sensitive Areas*.

(D9A) Despite condition (D8) of this environmental authority, the infrastructure (and associated activities necessary for construction, operational and maintenance purposes) specified in *Schedule D, Table 2 – Authorised Petroleum Activity(ies) Disturbance* and depicted in *Schedule M,* Figure 1 to Figure 3 are permitted in the location specified in *Schedule D, Table 2 – Authorised Petroleum Activity(ies) Disturbance*.

Schedule D, Table 2 – Authorised Petroleum Activity(ies) Disturbance

<table>
<tr><th>Tenure</th><th>Description of Infrastructure</th><th>Number</th><th>Location</th></tr>
<tr><td rowspan="8">Condabri South (PL265)</td><td>Gas Wells</td><td>2</td><td>Existing cleared land in the Primary Protection Zone of the Category C ‘Essential Habitat’ ESA.</td></tr>
<tr><td>Switchyard (associated with the Gas Processing Facility Power Station)</td><td>1</td><td>Existing cleared land in the Secondary Protection Zone of the Category C ‘Essential Habitat’ ESA</td></tr>
<tr><td>Water gathering station</td><td>1</td><td>Existing cleared land in the Secondary Protection Zone of the Category C ‘Of Concern Regional Ecosystem’ ESA</td></tr>
<tr><td>Laydown areas and stockpiles</td><td>1</td><td>Existing cleared land in the Secondary Protection Zone of the Category B ‘Endangered Regional Ecosystem’.</td></tr>
<tr><td>Detention/sediment basin</td><td>1</td><td>Existing cleared land in the Secondary Protection Zone of the Category B ‘Endangered Regional Ecosystem’ ESA.</td></tr>
<tr><td>30m wide Condabri South Access Track

Lot 2 on Plan SP179380</td><td>1</td><td>Within the Primary and Secondary Protection Zone of the Category C ‘Of Concern Regional Ecosystem’ ESA. 0.75ha of clearing is required in the Primary Protection Zone and 0.96 ha of clearing is required in the Secondary Protection Zone.</td></tr>
<tr><td>Property boundary access track (6m width):
<table>
<tr><th></th><th>Longitude</th><th>Latitude</th></tr>
<tr><td>Start</td><td>150.225801</td><td>-26.915513</td></tr>
<tr><td>Finish</td><td>150.232849</td><td>-26.911475</td></tr>
</table></td><td>1</td><td>Existing cleared land in the Primary and Secondary Protection Zone of the Category C 'Essential Habitat'.</td></tr>
<tr><td>Condamine River Horizontal Directional Drilling crossing of pipelines:
<table>
<tr><th></th><th>Longitude</th><th>Latitude</th></tr>
<tr><td rowspan="4">HDD Drill-rig area</td><td>A: 150.2115</td><td>A: -26.8237</td></tr>
<tr><td>B: 150.2099</td><td>B: -26.8247</td></tr>
<tr><td>C: 150.2109</td><td>C: -26.8230</td></tr>
<tr><td>D: 150.2093</td><td>D: -26.8239</td></tr>
</table></td><td>7</td><td>Existing cleared disturbed land (except minor clearing required for non-remnant vegetation) in the Primary and Secondary Protection Zones of a Category B 'Endangered' Regional Ecosystem ESA, Category C ‘Of Concern’</td></tr>
</table>

Tenure	Description of Infrastructure	Number	Location
	HDD Pipe-stringing area: A: 150.2151, A:-26.8287; B: 150.2138, B: -26.8295; C: 150.2191, C: -26.8363; D: 150.2204, D: -26.8354		Regional Ecosystem and Category C 'Referable Wetland' ESA. Underground pipelines to be located below Category C 'Of Concern' and 'Referable Wetlands' ESA.
Condabri Central (PL265)	Brine Pond: 1 Pond (4 cells)	1	Existing cleared land within the Primary Protection Zone and Secondary Protection Zone of the Category B 'Endangered' Regional Ecosystem and Category C 'Of Concern' ESA up to 100m distance from the edge of the 'Endangered' Regional Ecosystem ESA. Disturbance is allowed within existing cleared land up to 50m from the edge of the 'Endangered' and 'Of Concern' Regional Ecosystem ESA temporarily during construction only, as shown in Figure 2.
	Water Treatment Facility	1	
	Stockpiles	5	
	Gas Plant	1	
	Switchyard	1	
	Power Station	1	
	Permanent Operations Camp and IOC	1	
	Flares	3	
	Laydown Areas	2	
	Gathering Village	1	
	Temporary Construction Camp	1	
	Construction Water Pond	1	
	Ponds: 1 feed pond (2 cells) and 1 effluent pond (2 cells)	2	
	Sediment Pond	2	
	Sewage Treatment Irrigation Area	2	
	Brine Pond 7 (including embankment, access road, perimeter fencing and spillway swale)	1	Pre-existing disturbed area within the Primary Protection Zone of a Category C ESA 'Of Concern' Regional Ecosystem ESA, with a maximum disturbance area of 0.27 hectares (Schedule M, Figure 1 Area 1A and 1B)
	Brine Ponds 5 and 6, and associated operational infrastructure	2	Pre-existing disturbed area within the Primary Protection Zone of Category C 'Of Concern' Regional Ecosystem' ESA. Disturbance is allowed up to 50m from the boundary of Category C ESA as shown in *Schedule M, Figure 2*.
	Brine Pond 5, 6 and 7 Stockpile	1	Pre-existing cleared land within the Primary Protection Zone of a Category C ESA that is an Of Concern Regional Ecosystem, with a maximum

<table>
<tr><th>Tenure</th><th>Description of Infrastructure</th><th>Number</th><th>Location</th></tr>
<tr><td rowspan="5"></td><td></td><td></td><td>disturbance area of 2.64 hectares ((Schedule M, Figure 1 Area 2).</td></tr>
<tr><td>Disturbance associated with the construction of Brine Pond 7</td><td>1</td><td>Existing cleared land within the Primary Protection Zone of a Category C ESA that is an Of Concern Regional Ecosystem, with a maximum disturbance area of 2.45 hectares (Schedule M, Figure 1 Area 3). Temporary during construction of Brine Pond 7.</td></tr>
<tr><td>30m wide Co-located access road and service trench.</td><td>As outlined in Figure 2</td><td>Within the Category B ‘Endangered Regional Ecosystem’ ESA area and Primary Protection Zone, requiring clearing of approximately 36 small trees and shrubs.</td></tr>
<tr><td>Co-located access road and service trench.</td><td>As outlined in Figure 2</td><td>Within Category C ‘Of Concern’ ESA area and Primary Protection Zone, requiring clearing of up to 0.68ha.</td></tr>
<tr><td>Borrow Pit
<table><tr><th>Name</th><th>Longitude</th><th>Latitude</th></tr><tr><td>Drury 1 Borrow Pit</td><td>150.21714</td><td>-26.81598</td></tr></table></td><td>1</td><td>Existing cleared land that is within 100m of the Primary Protection Zone of a Category C ESA ‘Of concern Regional Ecosystem’.</td></tr>
<tr><td rowspan="2">Condabri Central (PL265) and Condabri North (PL267)</td><td>Gas Wells
<table><tr><th>Well</th><th>Longitude</th><th>Latitude</th></tr><tr><td>CNX367</td><td>150.231</td><td>-26.815</td></tr><tr><td>CNX372</td><td>150.229</td><td>-26.81</td></tr><tr><td>CNX235</td><td>150.228</td><td>-26.8039</td></tr><tr><td>CNX375</td><td>150.221</td><td>-26.8027</td></tr></table></td><td>4</td><td>Existing cleared land and existing access tracks (for access to the wells) in the Primary Protection Zone of the Category C ‘Referrable Wetland’ ESA.</td></tr>
<tr><td>Associated gas gathering infrastructure including gas gathering pipelines and CSG water flow lines for four wells outlined above.</td><td>-</td><td>Existing cleared land and existing access tracks (for co-locating the pipelines and for access to the wells) in the Primary Protection Zone of the Category C ‘Referrable Wetland’ ESA.</td></tr>
<tr><td>PL265</td><td>DC Campbell Temporary site office Lot 62 on Plan RG44</td><td>1</td><td>Within existing cleared land of the Secondary Protection Zone of Category B – ‘Endangered Regional Ecosystem’.</td></tr>
<tr><td>PL265</td><td>Drury South – Water gathering / transfer station
<table><tr><th>Name</th><th>Longitude</th><th>Latitude</th></tr><tr><td>WGS</td><td>150.1965</td><td>-26.8564</td></tr></table></td><td>1</td><td>Within already cleared land within the primary and Secondary Protection Zones of Category B – ‘Endangered Regional Ecosystem’.</td></tr>
<tr><td>PL265</td><td>Borrow pit
<table><tr><th>Name</th><th>Longitude</th><th>Latitude</th></tr></table></td><td>1</td><td>Within already cleared land within the Primary Protection</td></tr>
</table>

Tenure	Description of Infrastructure	Number	Location
	Keys Borrow Pit: 150.1900, -26.9267		Zone of Category C – 'Of Concern Regional Ecosystem'.
PL265	Condabri South – Pinehurst (wells and flow lines) Well lease: CON154 (Longitude 150.2256, Latitude -26.9216); CON155 (Longitude 150.2318, Latitude -26.9209)	2	Within existing cleared land in the Primary Protection Zone of Category C – 'Essential Habitat'.
PL265	Condabri WTF discharge pipeline	1	Clearing of up to 0.31ha within Category C 'Of Concern Regional Ecosystem' ESA, and up to 0.3ha of High Value Regrowth in the Primary Protection Zone as shown in Figure 3.
PL265	Extra Work Space (EWS)21	1	Existing cleared land within Primary Protection Zone of Category B ESA, Endangered Regional Ecosystem 11.4.10 (100). Maximum disturbance area of 0.5ha
PL1011	EWS100	1	Within Category C ESA, 'Of Concern' Regional Ecosystems 11.3.25 and 11.3.2. Maximum disturbance area of 0.07ha

Note: All Co-ordinates in Schedule D, Table 2 are in GDA 94 Datum.

(D9B) Despite condition (D8) of this environmental authority, monitoring bore leases are authorised within the Primary Protection Zone of Category C Environmentally Sensitive Areas that are 'Of Concern' Regional Ecosystems within existing cleared land.

(D9C) Despite condition (D8) of this environmental authority, electrical distribution equipment are authorised within Environmentally Sensitive Areas and associated Primary Protection Zones when:

(a) located within the well site; and

(b) used to provide electric power to a wellhead(s).

(D10) Prior to carrying out essential petroleum activities undertaken within environmentally sensitive areas in accordance with *Schedule D, Table 1 - Petroleum Activities in Environmentally Sensitive Areas*, it must be demonstrated, in the following order of preference that:

1. no reasonable or practicable alternative exists for carrying out the essential petroleum activities within the Environmentally Sensitive Area;
2. the essential petroleum activities are preferentially located in pre-existing areas of clearing or significant disturbance;

(D11) Linear infrastructure construction corridors must, for linear infrastructure that is an essential petroleum activity authorised in an environmentally sensitive area, be no greater than 40m in total width

(D12) Prior to carrying out essential petroleum activities subject to condition (D8) within the primary and Secondary Protection Zones of an Environmentally Sensitive Area, the holder of the environmental authority must demonstrate, in the following order of preference:

1. the essential petroleum activities are preferentially located in areas of pre-existing disturbance;
2. significant disturbance to land from the carrying out of the essential petroleum activities is minimised to the greatest extent practicable.

(D13) If petroleum or essential petroleum activity(ies) are located within a Primary Protection Zone or Secondary Protection Zone of an Environmentally Sensitive Area, that the activity(ies) must not impact the adjacent Environmentally Sensitive Area.

(D14) Details of any significant disturbance to land undertaken within the Primary Protection Zone of, or in a Category B or C Environmentally Sensitive Area, along with a record of the assessment required by conditions (D2) and (D3) must be kept and submitted to the administering authority with each annual return.

Offsets

(D15) The environmental authority holder must enter in to an environmental offset agreement with the administering authority where disturbance to land caused by the carrying out of the petroleum activities will have a remaining adverse environmental impact on an environmental value.

(D16) The environmental offset agreement must be entered into within six months after submitting the record of disturbance required by condition (D15), unless otherwise agreed to by the administering authority.

(D17) The environmental authority holder must implement any environmental offset agreement entered into in accordance with conditions (D15) and (D16) as soon as practicable after finalisation.

(D17A) Petroleum activities are not permitted in areas which are:

(a) Listed in *Schedule D, Table 2A – Offset Area Restricted from Petroleum Activities*; and

(b) Protected by a Voluntary Declaration under the *Vegetation Management Act 1999* or other legally binding mechanism.

Schedule D, Table 2A - Offset Area Restricted from Petroleum Activities

Tenure	Description of Area	Legally binding mechanism	Location (Latitude/Longitude)	
PL265	Offset area (79.79ha)	Voluntary Declaration (D13/003614)	-26.9441	150.2290
			-26.9489	150.2282
			-26.9488	150.2264
			-26.9441	150.2271
			-26.9441	150.2290
			-26.9383	150.2155
			-26.9387	150.2161
			-26.9390	150.2168
			-26.9391	150.2174
			-26.9392	150.2182
			-26.9394	150.2190
			-26.9395	150.2195
			-26.9416	150.2195
			-26.9443	150.2193
			-26.9439	150.2202
			-26.9438	150.2208
			-26.9439	150.2215
			-26.9439	150.2221
			-26.9440	150.2228
			-26.9439	150.2234
			-26.9440	150.2252
			-26.9440	150.2261
			-26.9452	150.2259
			-26.9487	150.2254
			-26.9483	150.2234
			-26.9481	150.2223
			-26.9470	150.2167
			-26.9466	150.2156
			-26.9461	150.2145

			-26.9426	150.2147
			-26.9419	150.2148
			-26.9404	150.2150
			-26.9381	150.2153

(D17B) Despite condition (D17A) of this environmental authority, offset conservation activities including weed and pest management, planting and other rehabilitation activities are permitted within the areas identified in *Schedule D, Table 2A - Offset Area Restricted from Petroleum Activities*.

Top soil management

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

Erosion and sediment control

(**General 20**) For activities involving significant disturbance to land, control measures that are commensurate to the site-specific risk of erosion, and risk of sediment release to waters must be implemented to:

(a) allow stormwater to pass through the site in a controlled manner and at non-erosive flow velocities

(b) minimise soil erosion resulting from wind, rain, and flowing water

(c) minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain, and flowing water

(d) minimise work-related soil erosion and sediment runoff; and

(e) minimise negative impacts to land or properties adjacent to the activities (including roads).

Fauna Management Procedures

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

Chemical and Fuel Storage

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

Pipelines

(D37) Pipelines must be preferentially located alongside existing linear infrastructure such as roads, tracks and powerlines.

(D38) Pipeline trenches must only be left open for the minimum time practicable.

(D39) The length of pipeline trench open at any one time must be minimised as far as practicable.

Access Tracks in Environmentally Sensitive Areas

(D41) New access tracks are not permitted within Category B or C Environmentally Sensitive Areas unless they are co-located with gas collection or CSG associated water pipelines, unless otherwise authorised by the administering authority.

Pad Drilling

(D42) The environmental authority holder must assess the use of pad drilling wherever medium or high environmental values, including strategic cropping lands are impacted by the petroleum activities. The environmental authority holder must demonstrate that where pad drilling is shown not to be feasible, alternative ways of siting drilling rigs and other petroleum facilities are proposed to protect environmental values.

Gas Trunkline Easements

(D44) The construction of co-located trunklines must be undertaken in a manner to minimise width and total disturbance required for the right of way.

Buried Transmission Pipeline and Flowline Rehabilitation Monitoring

(D45) The holder of this environmental authority must monitor rehabilitated buried transmission pipeline corridors and flowlines for subsidence and erosion at least every 20 business days for the first 120 business days after rehabilitation.

Sewage Treatment Plants >21 EP

(D46) Sewage pump stations must be fitted with a stand-by pump and a visible or audible high level alarm. All alarms must be able to operate without mains power.

(D47) Treated effluent may only be released to land within the petroleum tenure at a designated, fenced and delineated contaminant release area(s).

(D48) Prior to construction of a sewage treatment facility, the minimum area of land and location to be utilised for irrigation of treated sewage effluent, excluding any necessary buffer zones, must be nominated by the holder of the environmental authority.

(D49) All nominated locations and minimum areas of land must be determined using the Model for Effluent Disposal using Land Irrigation (MEDLI) program or recognised equivalent.

(D50) A copy of the MEDLI program results required in condition (D49) must be submitted to the administering authority.

(D51) If, within 20 business days following the submission of the MEDLI program results the administering authority provides comments on the submission, the holder of this environmental authority must:

(f) implement that comment in the finalisation of the amended MEDLI program results; and

(g) submit the finalised amended MEDLI program results within 40 business days after the administering authority provided comments; and

(h) implement the amended MEDLI program results.

(D52) All treated effluent released to land must be in accordance with the contaminant release limits and monitoring frequency stated in *Schedule D: Table 3 – Treated Sewage Effluent Release Limits to Land* and the conditions of this environmental authority.

(D53) Notwithstanding the quality characteristic limits specified in *Schedule D: Table 3 – Treated Sewage Effluent Release Limits to Land*, releases of effluent must not have any properties nor contain any organisms or other contaminants in concentrations that are capable of causing environmental harm.

(D54) The daily volume of contaminants released to land must be determined or estimated by an appropriate method, for example a flow meter, and records kept of such determinations and estimates.

(D55) Notices must be prominently displayed on areas undergoing effluent irrigation, warning the employees and the general public that the area is irrigated with effluent and not to use or drink the effluent. These notices must be maintained in a visible and legible condition.

(D56) When circumstances prevent the irrigation of treated sewage effluent to land, such as during or following rain events, waters must be directed to wet weather storage or alternative measures must be taken to store or lawfully dispose of effluent.

(D57) The wet weather storage capacity outlined in condition (D56) must have a capacity to hold effluent for a minimum of three days.

(D58) Pipelines and fittings associated with the effluent irrigation system must be clearly identified.

(D59) Lockable valves or removable handles must be fitted to all release pipes situated in public access areas.

(D60) The irrigation of treated sewage effluent must be carried out in accordance with the Land Release Management Plan required by condition (D65).

Treated Sewage Effluent Dust Suppression or Construction Activities

(D61) Notwithstanding condition (D47), treated sewage effluent that meets or exceeds the standards specified in *Schedule D, Table 3 – Treated Sewage Effluent Limits to Land* may be used for dust suppression or construction activities, provided the use meets the criteria in condition (D62), as relevant to the use.

(D62) The release of treated sewage effluent under condition (new condition inserted above) must:

(a) not exceed the amount required to effectively supress dust; and

(b) not cause on-site ponding or runoff; and

(c) be directly applied to the area being dust supressed; and

(d) not harm vegetation surrounding the area the subject of condition (new conditions inserted above).

Schedule D, Table 3 – Treated Sewage Effluent Release Limits to Land

Discharge Type	Quality Characteristic / Contaminant	Sampling and *in situ* measurement point location	Limit Type	Release Limit	Frequency
Irrigation at designated contaminant release areas	5-day Biochemical oxygen demand (BOD)	e.g. release pipe from sewage treatment plant	Maximum	20mg/L	Quarterly
	e.Coli		80th percentile based on at least 5 samples with not less than 30 minutes between samples	1000cfu per 100mL	
			Maximum	10,000cfu per 100mL	
	pH		Range	6.0–8.5	Monthly
	Electrical Conductivity		Monitor only		
Use for dust suppression or construction activities	5-day Biochemical oxygen demand (inhibited)	e.g. Release pipe from sewage treatment plant	maximum	20mg/L	Monthly
	pH		range	6.0-8.5	
	e-Coli (use for dust suppression or construction activities)		80th percentile based on at least 5 samples with not less than 30 minutes between samples.	100cfu per 100mL	
			maximum	1000cfu per 100mL	

Sewage Treatment Plants <21 EP

(D63) Treated sewage effluent may only be released to land by irrigation at designated, fenced contaminant release area(s).

(D64) The release of contaminants to land authorised under this environmental authority must be carried out in a manner such that:

(a) vegetation is not damaged;

(b) soil quality is not adversely impacted;

(c) there is no surface ponding or runoff to waters;

(d) there is no aerosols or odours;

(e) deep drainage below the root zone of any vegetation is minimised;

(f) the quality of shallow aquifers is not adversely affected.

SCHEDULE E – ENVIRONMENTAL NUISANCE

Noise Management Plan

(E1) A Noise Management Plan which has been certified by a suitably qualified person must be developed prior to the commencement of the petroleum activity(ies) authorised under this environmental authority.

(E2) The Noise Management Plan must include, but not necessarily be limited to:

(a) a commitment by the Chief Executive Officer for the holder of this environmental authority, or their delegate, to ensure adequate allocation of staff and resources to the establishment and operation of the Noise Management Plan;

(b) definition of roles, responsibilities and authorities within the staffing of the Noise Management Plan;

(c) delivery of training to staff and contractors and maintenance of competencies;

(d) risk/constraint analysis methods to be undertaken prior to any new operation (e.g. drill site) or installation of new equipment that has the potential to create noise nuisance;

(e) procedures and methods to undertake assessments to determine compliance with the noise limits in *Schedule E, Table 1 - Noise limits at Sensitive Receptors* in the event of a valid complaint being received and when there are no alternative arrangements in place, taking in to account any tonal or impulsive noise impacts;

(f) procedures for handling noise complaints;

(g) community liaison and consultation procedures including but not limited to consultation for when night time petroleum activities (i.e. between 10:00pm and 7:00am) are likely to exceed 25dBA;

(h) procedures for managing records associated with all aspects of the Noise Management Plan including standardised forms for recording monitoring results and complaints;

(i) details of petroleum activities and measured and / or predicted noise levels of noise sources associated with those activities;

(j) reasonable and practicable control or abatement measures (including relocating the activity, altering the hours of operation, or having an alternate arrangement in place with any potentially affected person) that can be undertaken to ensure compliance with the noise limits in *Schedule E, Table 1 - Noise limits at Sensitive Receptors*;

(k) the level of noise at sensitive receptors that would be achieved from implementing the measures detailed under condition (E2)(j); and

(l) mediation processes to be used in the event that noise complaints are not able to be resolved.

(E3) The holder of this environmental authority must implement the Noise Management Plan.

(E4) Prior to undertaking petroleum activities that will result in short-term, medium-term or long term noise events that are likely to impact on a sensitive receptor, the holder of this environmental authority must model or calculate any potential noise emissions from the relevant petroleum activity(ies) to ensure that noise emissions will not exceed the noise levels specified in *Schedule E - Table 1: Noise limits at Sensitive Receptors*.

(E5) The emission of noise from the petroleum activity(ies) authorised under this environmental authority must not result in levels greater than those specified in *Schedule E - Table 1: Noise limits at Sensitive Receptors* in the event of a valid complaint about noise being made to the administering authority.

Schedule E, Table 1 – Measured Noise Limits at Sensitive Receptors

Time Period	Metric	Short Term Noise Event	Medium Term Noise Event	Long Term Noise Event
7:00am–6:00pm	$L_{Aeq,adj,15\ min}$	45dBA	43dBA	40dBA
6:00pm–10:00pm	$L_{Aeq,adj,15\ min}$	40dBA	38dBA	35dBA
Noise from drilling activities undertaken from 10:00pm–7:00am	$L_{Aeq,adj,15\ min}$	30dBA (measured indoors any sensitive receiver)		
Noise from fixed plant in gas fields undertaken from 10:00pm–7:00am	$L_{Aeq,adj,15\ min}$	28dBA (measured indoors any sensitive receiver)		

Noise limits in Table 1 are taken to be measured noise levels outside a sensitive receptor unless stated otherwise.

L_{Aeq} and Max L_{pA} *are to be measured over any 15 minute period*

L_{ABG} is the deemed background noise levels which for the purposes of Schedule E, Table 1 - Noise Limits at Sensitive Receptors are:
7:00am-6:00pm: 35dBA
6:00pm–10:00pm: 30dBA
10:00pm–6:00am: 25dBA
6:00am–7:00am: 30dBA

(E6) If the noise subject to a complaint is tonal or impulsive, the adjustments detailed in *Schedule E, 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 E, 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 just audible	+2dBA
Impulsive characteristic is clearly audibly	+5dBA

(E7) Where alternative arrangements are in place with an affected person(s) at a sensitive receptor as referred to by condition (E2)(j), the noise limits in *Schedule E, Table 1 – Noise limits at Sensitive Receptors* do not apply at that sensitive receptor for the duration for which the alternative arrangements are in place.

Low Frequency Noise

(E8) Notwithstanding condition (E4), emission of any low frequency noise must not exceed the following limits 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 internal 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 noise levels is no greater than 15dB.

Vibration and Blasting

(E9) A Blast Management Plan must be developed in accordance with Australian Standard 2187 by a suitably qualified person prior to each blasting activity.

(E10) The Blast Management Plan must include measures to minimise the likelihood of any adverse effects being caused by airblast overpressure and / or ground borne vibrations at any sensitive receptor and demonstrate current best practice environmental management.

(E11) All blasting must be carried out in a proper manner by a suitably qualified person.

(E12) All blasting must be carried out in accordance with the Blast Management Plan.

(E13) Noise from blasting operations must not exceed an airblast overpressure level of 120dB (linear peak) at any time, when measured at or extrapolated to any sensitive receptor.

(E14) Ground-borne vibration peak particle velocity caused by blasting operations must not exceed 10mm/s at any time, when measured at or extrapolated to any sensitive receptor.

Noise Monitoring

(E15) The holder of this environmental authority must undertake noise monitoring as soon as practicable when requested by the administering authority.

(E16) The holder of this environmental authority must report the results of noise monitoring to the administering authority within three business days of completion of the monitoring event.

(E17) Noise monitoring and recording must include, but not necessarily be limited to:

(a) $L_{AN,T}$ (where N equals the statistical levels of 1, 10 and 90 and T=15 mins);

(b) $L_{Aeq\ adj,\ 15\ mins}$;

(c) background noise level as $L_{A\ 90,\ 15\ mins}$;

(d) Max $L_{pA,\ 15\ mins;}$

(e) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to measured noise levels levels;

(f) atmospheric conditions including temperature, relative humidity and wind speed and directions;

(g) effects due to any extraneous factors such as traffic noise;

(h) location, date and time of monitoring;

(i) if the complaint concerns low frequency noise, Max $L_{pZ,\ 15\ mins}$; and

(j) if the complaint concerns low frequency noise, one third octave band measurements in dB(LIN) for centre frequencies in the 10–200Hz range for both the noise source and the background noise in the absence of the noise source.

(E18) The method of measurement and reporting of noise levels and background sound pressure levels must comply with the Department of Environment and Resource Management *Noise Measurement Manual* 2000 or Australian Standard 1055 as amended from time to time.

Blast and Vibration Monitoring

(E19) Monitoring and recording of the air blast overpressure and ground borne vibration of every blast must be undertaken.

(E20) Blast and vibration monitoring must include but not necessarily be limited to:

(a) maximum instantaneous charge;

(b) location of the blast within the site (including any bench level);

(c) airblast overpressure level (dB Linear Peak);

(d) peak particle velocity (mm/s);

(e) location, date and time of recording;

(f) measurement instrumentation and procedure;

(g) meteorological conditions for blast monitoring (including temperature, relative humidity, temperature gradient, cloud cover, wind speed and direction); and

(h) distances from the blast site to potentially noise-affected buildings or structures.

SCHEDULE F – AIR

Odour, dust and other airborne contaminants

(F1) The release of odour, dust or any other airborne contaminant(s), or light from the petroleum activity(ies) must not cause an environmental nuisance at any sensitive place.

Fuel Burning or Combustion Equipment

(F2) Contaminants emitted from fuel burning and combustion equipment point sources, excluding ground flares that are capable of burning at least 500kg in an hour, must be directed vertically upwards.

(F3) Prior to the installation of any new or additional fuel burning and combustion equipment that is capable of burning at least 500kg of fuel in an hour, following the issue of this environmental authority, the holder of this environmental authority must conduct air dispersion modelling to calculate the ground level concentrations of emissions from the fuel burning or combustion equipment under maximum operating conditions within the relevant airshed and identify any potential impacts to air quality within the study area.

(F4) The holder of this environmental authority must ensure that the calculated ground level concentrations required under condition (F3) do not exceed the criteria for each air contaminant in *Schedule F, Table 1 – Maximum Ground Level Concentration Criteria*.

Schedule F, Table 1 – Maximum Ground Level Concentration Criteria

Contaminant	Concentration at 0°Celsius	Units	Averaging time
NOx as Nitrogen Dioxide	250	µg/m^3	1 hour
NOx as Nitrogen Dioxide	33	µg/m^3	1 year
Carbon monoxide	11	mg/m^3	8 hour

(F5) The holder of this environmental authority must undertake verification monitoring of the air dispersion modelling post commissioning of fuel burning equipment that is capable of burning at least 500kg of fuel in an hour.

(F6) Where the verification monitoring required under condition (F5) demonstrates that the air dispersion modelling required under condition (F3) under-predicted actual concentrations, the holder of this environmental authority must:

(a) provide details to the administering authority within 10 business days;

(b) re-undertake the modelling based on the new information; and

(c) determine and implement appropriate pollution control measures to bring the emissions into compliance with the limits specified in *Schedule F, Table 1 – Maximum Ground Level Concentration Criteria*.

(F7) The holder of this environmental authority must maintain a register of fuel burning and combustion equipment that is capable of burning at least 500kg of fuel in an hour that must include, as a minimum, the following information for each piece of equipment:

(a) fuel burning or combustion equipment name and location;

(b) stack emission height (m);

(c) minimum efflux velocity (m/s);

(d) mass emission rates (g/s); and

(e) contaminant concentrations (mg/Nm^3 @ x %O_2 dry gas at 0°C and 1atm).

(F8) The holder of this environmental authority must ensure that the information contained in the register of fuel burning and combustion equipment is always current and complete.

(F9) All entries in the register of fuel burning and combustion equipment must be as being accurate and correct.

Fuel Burning and Combustion Equipment in Hubs and/or Places within 5 km of Populated Areas

(F10) Fuel burning or combustion equipment must only release contaminants to the atmosphere as provided for in *Schedule F, Table 2 - Release of Contaminants to Air*.

(F11) Releases of contaminants to air from fuel burning or combustion equipment must be monitored for minimum velocities and maximum release limits at the frequency specified in *Schedule F, Table 2 - Release of Contaminants to Air.*

Schedule F, Table 2 - Releases of contaminants

Equipment	Minimum Release Height (m)	Minimum Velocity(m/s)	Contaminant Released	Maximum Release Limit	Monitoring Frequency
Gas Reciprocating Engine	7.5	35.9	NOx as Nitrogen Dioxide	500mg/ Nm^3 (dry) at 5% O_2 and 0.9g/s at 0ºC and 101.3kPa	Annually
Gas Turbine	6	35.4	NOx as Nitrogen Dioxide	53mg/ Nm^3 (dry) at 15% O_2 and 3.01g/s at 0ºC and 101.3kPa	Annually

Flare conditions

(F12) The flare must be equipped with a flare tip design to provide good mixing with air, flame stability and achieve a minimum Volatile Organic Compound (VOC) removal efficiency of 98% under varied gas flow rate and meteorological conditions and meet the best practice design standards (e.g. NSW EPA: Protection of the Environmental Operations (Clean Air) Amendment (Industrial and Commercial Activities) Regulation 2005, or the US EPA Code of Federal Regulations*:* 40 CFR 60.18 and 40 CFR 63.11).

(F13) The flare must be equipped with a continuously burning pilot or other automatic ignition system that assures gas ignition and provides immediate notification to appropriate personnel when the ignition system ceases to function.

(F14) The flare must be designed to handle large fluctuations in both the volume and the chemical content of gases.

(F15) Visible smoke and particulate emissions must not be permitted for more than five minutes in any two hour period during normal operating conditions.

Fugitive Emissions

(F16) The holder of this environmental authority must ensure that all reasonable and practicable measures are taken in the design and operation of the plant to minimise fugitive VOC emissions. Reasonable and practicable measures include but are not limited to:

(a) implementation of a monitoring program to regularly leak test all units/components including pumps, piping and controls, vessels and tanks; and

(b) operating, maintenance and management practices to be implemented to mitigate fugitive VOC sources.

(F18) In the event of emissions of contaminants occurring from industrial plant or ducting systems that transfer effluent gases from one location to another, the fault or omission that resulted in that emission must be corrected as soon as practicable.

Air Monitoring (Point Source)

(F19) The holder of this environmental authority must conduct a monitoring program of contaminants released to the atmosphere at each release point recorded in the register of fuel burning and combustion equipment (as required by condition (F7)) for the contaminants listed in *Schedule F, Table 1 – Maximum Ground Level Concentration Criteria* and at the frequencies specified in *Schedule F, Table 3 – Monitoring Frequency for Contaminants*.

Schedule F, Table 3 – Monitoring Frequency for Contaminants

Contaminant	Monitoring frequency
NOx as Nitrogen Dioxide	Annually
Carbon monoxide	Annually

(F20) The monitoring program must include, but not necessarily be limited to:

(a) monitoring provisions for the release points which complies with the most recent edition of Australian Standard 4323.

(b) tests for each sample taken at each release point specified in the register of fuel burning or combustion equipment (condition (F7)), excluding flares, including:

(i) gas velocity, volume and mass flow rate;

(ii) temperature; and

(iii) water vapour concentration (for non-continuous sampling);

(c) representative samples of the contaminants discharged when operating under normal and operating conditions;

(d) the collection of production rate and plant status during sampling periods; and

(e) monitoring of contaminant release carried out in accordance with the latest edition of the Department of Environment and Resource Management Air Quality Sampling Manual 1997, as amended from time to time.

(F21) When the administering authority advises the holder of this environmental authority of a complaint alleging nuisance other than noise, the holder must investigate the complaint as soon as practicable.

(F22) The holder of this environmental authority must advise the administering authority in writing of the action proposed or undertaken to resolve the complaint within three business days of completing the complaint investigation.

(F23) When requested by the administering authority, the holder of this environmental authority must undertake monitoring as specified by the administering authority, within a reasonable and practical timeframe nominated by the administering authority to investigate any complaint of environmental harm at any sensitive place.

(F24) The results of the investigation (including an analysis and interpretation of the monitoring results) and the abatement measures implemented must be provided to the administering authority within five (5) business days of receiving the advice under condition (F23), unless a longer time is agreed to by the administering authority.

(F25) If monitoring in accordance with condition (F23) and (F24), indicates that emissions exceed the limits set in this environmental authority or are causing environmental nuisance, then the holder of this environmental authority must:

(a) address the complaint including the use of alternative dispute resolution services if required; and/or

(b) implement abatement or attenuation measures so that the authorised petroleum activity(ies) do not result in further environmental nuisance.

(F26) For the purposes of monitoring in accordance with condition (F23) dust and particulate matter from concrete batching activities must not exceed the following levels at any sensitive or commercial place, when monitored in accordance with Australian Standard AS3580.10.1 of 2003 (or more recent versions):

(a) dust deposition of 120mg/m^2/day;

(b) PM10 concentration of 50µg/m^3 over a 24 hour averaging time;

(c) PM2.5 concentration of 25µg/m^3 over a 24 hour averaging time.

SCHEDULE G – WASTE

General

(G1) All general waste must only be removed from the site and sent to a recycling facility or disposal facility licensed to accept the waste under the *Environmental Protection Act 1994*.

(G2) All regulated waste must only be removed from the site by a person who holds a current authority to transport such waste under the provisions of the *Environmental Protection Act 1994* and sent to a recycling facility or disposal facility licensed to accept the waste.

(G3) Waste must not be burned or be allowed to be burned on the site.

(G4) All waste fluids and muds resulting from drilling and exploration petroleum activities must be contained in a dam or containment structure for disposal, remediation or reuse where applicable.

(G5) Waste, including waste fluids, but excluding waste used in closed-loop systems, must be transported off-site for lawful re-use, remediation, recycling or disposal, unless the waste is specifically authorised to be disposed of or used on site under this environmental authority.

Waste Management

(Waste 1) 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.**

Brine and Salt Management

(G14) The holder of this environmental authority must develop and implement a Brine and Salt Management Plan.

(G15) The Brine and Salt Management Plan required by condition (G14) must address, but not be limited to:

- (a) the Queensland Government policy on Coal Seam Gas Water Management;
- (b) the administrating authority guideline Preparing an environmental management plan (EM Plan) for Coal Seam Gas (CSG) activities;
- (c) a plan for the containment, use and disposal of salt brought to the surface through CSG production, and produced through the treatment of CSG water;
- (d) any plan for reinjection of brine or untreated water;
- (e) any long term plan for the utilisation of salts extracted from CSG water;
- (f) an assessment of the potential impacts of options considered and appropriate mitigation measures for the preferred option having regard to the decision hierarchy identified in government policy and guidelines;
- (g) a risk assessment methodology which will identify the potential for secondary salinity due to the company's activities. This must include an investigation into wind-borne salt from brine ponds and aggregation dams;
- (h) a list of identified management tools and mitigations that will be used in those locations to minimise and manage the risk of secondary salinity;

(i) a commitment to assess and report to the administering authority disturbance and rehabilitation activities which affect salinity risk for each 12 month period of the environmental authority.

(G16) Following the completion of the petroleum activity(ies), any residual brine and/or solid salt present in any dam must be removed and transported to a facility that can lawfully reuse, recycle or dispose of such waste under the *Environmental Protection Act 1994*.

Investigation into Alternative Coal Seam Gas Water Management Options

(G17) The holder of the environmental authority must investigate:

(a) the viability of waste reuse or recycling through chemically processing or treating brine or salt residues to create useable or saleable products;

(b) the viability of the injection of brine into a natural underground structure that is geologically isolated and does not contain groundwater that does or could supply water for potable or agricultural purposes;

(c) report the outcomes of the investigations in each annual return until the information required by condition (G18) has been provided to the administering authority.

(G18) By 31 December 2015, the holder of this environmental authority must submit to the administering authority the following:

(a) updated Brine and Salt Management Plan documenting information required by condition (G14);

(b) report on the results of investigations required by condition (G15);

(c) a summary and ranking from most to least preferred of all brine management options investigated; and

(d) the preferred management option for the beneficial use of brine and salt.

Residual drilling material

(Waste 16) Residual drilling material may be disposed of on-site by the mix-bury-cover method if the residual drilling material meets the approved quality criteria.

(Waste 17) Residual drilling material or drilling by-products may be disposed of on-site if the method is certified by a suitably qualified third party as being of acceptable quality for disposal to land by the proposed method and that environmental harm will not result from the proposed disposal.

SCHEDULE H – REHABILITATION

Rehabilitation Plan

(H1) A Rehabilitation Plan which has been certified by a suitably qualified person must be developed prior to carrying out of the petroleum activity(ies).

(H2) The Rehabilitation Plan must include strategies for the determination of final land use(s) and rehabilitation goals and details of how rehabilitation objectives will be achieved. The Rehabilitation Plan must include:

(a) a rehabilitation hierarchy for:

(i) reinstating a native ecosystem as similar as possible to the original ecosystem as the preferred option; then

(ii) establishing an alternative outcome with a higher environmental value than the previous land use; then

(iii) reinstating the previous land use (e.g. grazing or cropping); and

(b) methods to achieve rehabilitation goals including, but not necessarily being limited to:

(i) establishing final land use(s) in consultation with affected landholder(s) and the administering authority;

(ii) identifying suitable analogue sites to measure rehabilitation success that may either be the pre-disturbed area or another area that has equivalent values and characteristics as the intended final land use(s);

(iii) for sites that are being reinstated to a land use other than a native ecosystem, the Rehabilitation Plan must identify any additional and relevant indicators to be measured at both the analogue and rehabilitation site(s) so as to assess progressive and final rehabilitation success for that land use;

(iv) for sites that are being reinstated to native ecosystems and the analogue site is the pre-disturbed site, the Rehabilitation Plan must include indicators that, as a minimum include those in condition (H2(b)(iii))and will be able to measure success against the progressive and final rehabilitation criteria in this environmental authority;

(v) identification of any land use constraints which have resulted from the petroleum activity(ies);

(vi) residual pollution risks with strategies for managing and mitigating them;

(vii) landscape planning and landform design principles to achieve stable landforms including slope designs, erosion controls and drainage lines;

(viii) integrating rehabilitated areas so they are compatible with the surrounding landscape, including linking rehabilitated areas of native vegetation with undisturbed native vegetation to provide larger areas and wildlife corridors where feasible;

(ix) ensuring that significantly disturbed areas are rehabilitated progressively and that the progressive rehabilitation criteria are routinely measured;

(x) site preparation such as re-profiling, re-instating surface drainage systems;

(xi) top soil management such as top soil handling and stockpiling to preserve soil fertility and biota, respreading techniques, planned thickness, ripping, top soil treatments/amendments and mulching in consideration of analogue data;

(xii) flora to be established, including required species diversity, abundance and composition and projective cover in consideration of analogue data;

(xiii) plant propagation and/or supply methods including using seeds/spores of local provenance where feasible;

(xiv) establishment methods to maximise rehabilitation success such as seed treatments, seed spreading, timing of seeding to suit best local climatic conditions, hydroseeding, transplanting;

(xv) weed control;

(xvi) sourcing habitat structures for native fauna and installation methods in consideration of matching analogue data;

(xvii) on going maintenance program for rehabilitated areas; and

(xviii) rehabilitation monitoring program as required by conditions (H13) and (H14) of this environmental authority; and

(c) timeframes for commencing rehabilitation of significantly disturbed areas not required for the ongoing conduct of the petroleum activity(ies), not greater than three months for the rehabilitation of buried pipelines and not greater than nine months for any other disturbed area.

(H3) The holder of this environmental authority must implement the Rehabilitation Plan.

Progressive Rehabilitation for Significantly Disturbed Land

(H4) Pipelines trenches must be backfilled immediately after pipe laying and rehabilitated as soon as practicable but not longer than three months after completion.

(H5) During backfilling of pipeline trenches, soils must be replaced in accordance with the soil management plan required by condition (D17).

(H6) Backfilled and rehabilitated pipeline trenches must:

(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 as a minimum to ensure that erosion is minimised.

(H7) Progressive rehabilitation of significantly disturbed land caused by the carrying out of the petroleum activity(ies) (other than constructing pipelines) which is not required for the ongoing conduct of the petroleum activity(ies) must commence as soon as practicable, but not longer than nine months following the completion of any construction or operational works associated with the petroleum activity(ies).

(H8) Progressive rehabilitation of significantly disturbed land must be undertaken in accordance with the Schedule of Disturbance submitted to the administering authority as part of the financial assurance calculations.

(H9) Progressive rehabilitation of significantly disturbed land caused by the carrying out of the petroleum activity(ies) must:

(a) remediate any contaminated land (e.g. contaminated soils, decommissioned dams containing salt);

(b) reshape all significantly disturbed land to a stable landform;

(c) reprofile all significantly disturbed land to original contours;

(d) on all significantly disturbed land:

(i) re-establish surface drainage lines;

(ii) reinstate the top layer of the soil profile;

(iii) establish groundcover to ensure that erosion is minimised;

(iv) establish vegetation of floristic species composition found in analogue sites;

(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 Acceptance Criteria for Significantly Disturbed Land

(H10) All significantly disturbed land caused by the carrying out of the petroleum activity(ies) must be rehabilitated to meet the following final acceptance criteria:

(a) all significantly disturbed land is reinstated to the pre-disturbed land use unless otherwise agreed to between the holder of this environmental authority, the landholder and the administering authority;

(b) all significantly disturbed land is reinstated to the pre-disturbed soil suitability class;

(c) the landform is safe for humans and fauna;

(d) the landform is stable with no subsidence or erosion gullies for at least five years;

(e) a minimum of 80% foliage cover of analogue sites is maintained in the rehabilitated sites for at least three years;

(f) a minimum of 80% of the flora species diversity in analogue sites is maintained in the rehabilitated sites for at least three years;

(g) a minimum equal density of habitat structures, including but not limited to litter cover, fallen woody material and hollow logs, as that in analogue sites;

(h) erosion is minimised with appropriate sediment traps and erosion control measures installed as determined by a suitably qualified person;

(i) the water quality of any residual void or water bodies constructed by the petroleum activity(ies) meets criteria for subsequent uses and does not have potential to cause environmental harm;

(j) there is no ongoing contamination to waters;

(k) there is no ongoing contamination to groundwater from dams or monocells (demonstrated via groundwater monitoring and leak detection monitoring systems); and

(l) the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance caused by carrying out the petroleum activity(ies).

(H11) Notwithstanding condition (H10), all buried pipelines must be decommissioned in accordance with the requirements of Australian Standard 2885.

(H12) Despite condition (H10), any dam may be decommissioned for a beneficial use provided that it:

(a) no longer contains contaminants that will migrate in to the environment; and

(b) the administering authority and the landholder agree in writing that the dam will be used by the landholder following the cessation of the petroleum activity(ies).

Rehabilitation Monitoring Program

(H13) A Rehabilitation Monitoring Program which has been certified by a suitably qualified person must be developed by 9 September 2011.

(H14) The Rehabilitation Monitoring Program must include, but not necessarily be limited to:

(a) methods to measure subsidence and erosion rates at rehabilitated buried transmission pipeline corridors and buried flow lines;

(b) monitoring of indicators identified in the Rehabilitation Plan at analogue sites to measure progressive and final rehabilitation success relevant to the final land use(s);

(c) frequency and seasonality of monitoring analogue sites and rehabilitated areas to assess rehabilitation success; and

(d) identification of the experimental design for analysing analogue and rehabilitated site data including statistical methods of analyses.

(H15) The holder of this environmental authority must implement the Rehabilitation Monitoring Program.

Monitoring of Final Rehabilitation Success

(H16) At least yearly monitoring of rehabilitated areas must be undertaken to demonstrate compliance with the requirements of condition (H10) for a minimum of five years after rehabilitation is completed.

Progressive Rehabilitation Monitoring

(H17) Regular maintenance and at least yearly monitoring of rehabilitated areas must take place to measure compliance with the requirements of condition (H6).

SCHEDULE I – STIMULATION ACTIVITIES

Well Drilling, Completion and Stimulation

(I1) Restricted stimulation fluids must not be used in stimulation.

(I2) The holder of this environmental authority must ensure that polycyclic aromatic hydrocarbons are not added by design to stimulation fluids to be injected into the target gas producing formation.

(I3) Oil based drilling muds must not be used in the carrying out of the petroleum activity(ies).

(I4) Synthetic based drilling muds must not be used in the carrying out of the petroleum activity(ies).

(I5) Accurate and current material safety data sheets (MSDS) for all fluids used in stimulation activities must be published on the environmental authority holder's website.

(I6) Prior to undertaking well stimulation activities, the holder of this environmental authority must update the stimulation risk assessment in the Environmental Management Plan titled Hydraulic Fracturing Environmental Assessment, dated 1 June 2011 to ensure that stimulation activities are managed to prevent environmental harm and meet the additional requirements within this environmental authority.

(I7) The stimulation risk assessment must include, but not necessarily be limited to:

- (a) a process description of the stimulation activity to be applied, including equipment and a comparison to best international practice;
- (b) provide details of where, when and how often stimulation is to be undertaken on the tenures covered by this environmental authority;
- (c) a geological model of the field to be stimulated including geological names, descriptions and depths of the target gas producing formation(s);
- (d) naturally occurring geological faults;
- (e) seismic history of the region (e.g. earth tremors, earthquakes);
- (f) proximity of overlying and underlying aquifers;
- (g) description of the depths that aquifers with environmental values occur, both above and below the target gas producing formation;
- (h) the environmental values of groundwater in the area;
- (i) description of overlying and underlying formations in respect of porosity, permeability, hydraulic conductivity, faulting and fracture propensity;
- (j) consideration of barriers or known direct connections between the target gas producing formation and the overlying and underlying aquifers;
- (k) a description of the well mechanical integrity testing program;
- (l) process control and assessment techniques to be applied for determining extent of stimulation activities (e.g. microseismic measurements, modelling, etc.);
- (m) practices and procedures to ensure that the stimulation activities are designed to be contained within the target gas producing formation;
- (n) locations of landholders' active groundwater bores;

(o) groundwater transmissivity, flow rate, hydraulic conductivity and direction(s) of flow;

(p) a description of the chemicals used in stimulation activities (including estimated total mass, estimated composition, chemical abstract service numbers and properties), their mixtures and the resultant compounds that are formed after stimulation;

(q) a mass balance estimating the concentrations and absolute masses of chemicals that will be reacted, returned to the surface or left in the target gas producing formation subsequent to stimulation;

(r) an environmental hazard assessment of the chemicals used including their mixtures and the resultant chemicals that are formed after stimulation including:

(i) toxicological and ecotoxicological information of chemicals used;

(ii) information on the persistence and bioaccumulation potential of the chemicals used; and

(iii) identification of the stimulation fluid chemicals of potential concern derived from the risk assessment;

(s) an environmental hazard assessment of use, formation of, and detection of polycyclic aromatic hydrocarbons in stimulation activities;

(t) an environmental hazard assessment of leaving stimulation chemicals in the target gas producing formation for extended periods subsequent to stimulation;

(u) human health exposure pathways to operators and the regional population;

(v) risk characterisation of environmental impacts based on the environmental hazard assessment; and

(w) potential environmental or health impacts which may result from stimulation activities including but not limited to water quality, air quality (including suppression of dust and other airborne contaminants), noise and vibration.

(I8) The stimulation risk assessment must be carried out for every well to be stimulated prior to stimulation activities being carried out at that well.

(I9) Stimulation activities must not result in a change in water quality other than that within the stimulation impact zone of the target gas producing formation.

(I10) Stimulation activities must not cause the connection of the target gas producing formation and another aquifer.

(I11) The holder of this authority must ensure the internal and external mechanical integrity of the well system prior to well stimulation such that there is:

(a) no significant leakage in the casing, tubing, or packer; and

(b) there is no significant fluid movement into another aquifer through vertical channels adjacent to the well bore hole.

(I12) Practices and procedures must be in place to detect, as soon as practicable, any fractures that cause the connection of a target gas producing formation and another aquifer.

(I13) Rectification measures must be taken immediately if the holder of this environmental authority either becomes aware that stimulation activities have resulted in a change in water quality other than that

within the stimulation impact zone of the target gas producing formation or that stimulation activities have caused the connection of the target gas producing formation and another aquifer.

Stimulation Monitoring

(I14) Prior to undertaking any stimulation activity, the holder of this environmental authority must undertake a baseline bore assessment of the quality of:

(a) all active landholders' groundwater bores (subject to access being permitted by the landholder) that are located within:

(i) a 1km horizontal radius from the location of the stimulation initiation point;

(ii) 200m vertically of the target location for stimulation activity(ies); and

(b) any other bore that could potentially be adversely impacted by the stimulation activity(ies) in accordance with the findings of the risk assessment required by conditions (I6) and (I7).

(I15) Prior to undertaking any stimulation activity(ies) at a well, the holder of this environmental authority must have sufficient water quality data to accurately represent the water quality in the well to be stimulated. The data must include as a minimum the results of analyses for the parameters in condition (I16).

(I16) The baseline bore and well assessments must include relevant analytes and physico-chemical parameters to be monitored in order to establish baseline water quality and must include, but not necessarily be limited to:

(a) pH;

(b) electrical conductivity [μS/m];

(c) total dissolved solids [mg/L];

(d) temperature [ºC];

(e) dissolved gases (e.g. methane, chlorine, carbon dioxide, hydrogen sulfide) [mg/L];

(f) alkalinity (bicarbonate, carbonate, hydroxide and total as $CaCO_3$) [mg/L];

(g) residual alkali [mg/L];

(h) sodium adsorption ratio (SAR);

(i) anions (bicarbonate, carbonate, hydroxide, chloride, fluoride, sulphate) [mg/L];

(j) cations (aluminium, calcium, magnesium, potassium, sodium) [mg/L];

(k) dissolved metals (including but not necessarily being limited to: aluminium, arsenic III, barium, borate, cadmium, chromium III, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc) [μg/L];

(l) total petroleum hydrocarbons [μg/L];

(m) BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene and total xylene) [μg/L];

(n) polycyclic aromatic hydrocarbons (including but not necessarily being limited to: naphthalene, phenanthrene, benzo[a]pyrene) [μg/L];

(o) sodium hypochlorite [mg/L];

(p) sodium hydroxide [mg/L];

(q) formaldehyde [mg/L];

(r) ethanol [mg/L]; and

(s) gross alpha radiation [Bq/L].

(I17) A Stimulation Impact Monitoring Program which has been certified by a suitably qualified person must be developed prior to the carrying out of stimulation activities.

(I18) The Stimulation Impact Monitoring Program must be able to detect adverse impacts to water quality from stimulation activities and must consider the findings of the risk assessment required by conditions (I6) and (I7) that relate to stimulation activities and must include, as a minimum, monitoring of:

(a) the stimulation fluids to be used in stimulation activities at sufficient frequency and which sufficiently represents the quantity and quality of the fluids used;

(b) flow back waters from stimulation activities at sufficient frequency and which sufficiently represents the quality of that flow back water;

(c) flow back waters from stimulation activities at sufficient frequency and accuracy to demonstrate that 150% of the volume used in stimulation activities has been extracted from the stimulated well;

(d) all active landholders' groundwater bores (subject to access being permitted by the landholder) that are located within a 1km horizontal radius from the location of the stimulation initiation point;

(e) all active landholders' groundwater bores (subject to access being permitted by the landholder) within 200m vertically of the stimulation initiation point; and

(f) any other bore that could potentially be adversely impacted by the stimulation activities in accordance with the findings risk assessment required by conditions (I6) and (I7).

(I19) The Stimulation Impact Monitoring Program must provide for monitoring of:

(a) analytes and physico-chemical parameters relevant to baseline bore and well assessments to enable data referencing and comparison including, but not necessarily being limited to the analytes and physico-chemical parameters in condition (I16); and

(b) any other analyte or physico-chemical parameters that will enable detection of adverse water quality impacts and the inter-connection with a non-target aquifer as a result of stimulation activities including chemical compounds that are actually or potentially formed by chemical reactions with each other or coal seam materials during stimulation activities.

(I20) The Stimulation Impact Monitoring Program must provide for monitoring of the bores in condition (I18)(d) to (I18)(f) at the following minimum frequency:

(a) monthly for the first six months subsequent to the stimulation activities being undertaken; then

(b) annually for the first five years subsequent to the stimulation activities being undertaken or until analytes and physico-chemical parameters listed in condition (I16)(b), (I16)(m) – (I16)(s) are not detected in concentrations above baseline bore monitoring data on two consecutive monitoring occasions.

(I21) The holder of this environmental authority must implement the Stimulation Impact Monitoring Program.

(I23) The results of the Stimulation Impact Monitoring Program must be made available to any potentially affected landholder upon request by that landholder.

SCHEDULE J – COMMUNITY ISSUES

(J1) The holder of this environmental authority must maintain a record of complaints and incidents causing environmental harm, and actions taken in response to the complaint or incident.

(J2) The holder of this environmental authority must record the following details for all complaints received:

(a) name, address and contact number for complainant;

(b) time and date of complaint;

(c) reasons for the complaint as stated by the complainant;

(d) investigations undertaken in response to the complaint;

(e) conclusions formed;

(f) actions taken to resolve complaint;

(g) any abatement measures implemented to mitigate the cause of the complaint; and

(h) name and contact details of the person responsible for resolving the complaint.

SCHEDULE K – NOTIFICATION PROCEDURES

(K1) In addition to the requirements under Chapter 7, Part 1, Division 2 of the *Environmental Protection Act 1994*, the administering authority must be notified through the Pollution Hotline and in writing, as soon as possible, but within 48 hours of becoming aware of any of the following events:

(a) any unauthorised significant disturbance to land

(b) potential or actual loss of structural or hydraulic integrity of a dam

(c) when the level of the contents of any regulated dam reaches the mandatory reporting level

(d) when a regulated dam will not have available storage to meet the design storage allowance on 1 November of any year

(e) potential or actual loss of well integrity

(f) when the seepage trigger action response procedure required under condition (B86(g)) is or should be implemented

(g) unauthorised releases of any volume of prescribed contaminants to waters

(h) unauthorised releases of volumes of contaminants, in any mixture, to land greater than:

(i) 200 L of hydrocarbons; or

(ii) 200 L of stimulation additives; or

(iii) 500 L of stimulation fluids; or

(iv) 1 000 L of brine; or

(v) 5 000 L of untreated coal seam gas water; or

(vi) 5 000 L of raw sewage; or

(vii) 10 000 L of treated sewage effluent.

(i) the use of restricted stimulation fluids

(j) groundwater monitoring results from a landholder's active groundwater bore monitored under the stimulation impact monitoring program which is a 10% or greater increase from a previous baseline value for that bore and which renders the water unfit for its intended use

(k) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.

(K2) Notwithstanding condition (K1), the holder of this environmental authority must telephone the local Public Health Unit (https://www.health.qld.gov.au/system-governance/contact-us/contact/public-health-units/default.asp) and any affected drinking water service provider as soon as reasonably practicable, but within 24 hours after becoming aware of any release of contaminants not in accordance with conditions (B12) and (B13).

(K3) The notification of emergencies or incidents as required by condition (K1) must be submitted to the administering authority using a Notice Duty to Notify Harm (EM468).

SCHEDULE L – DEFINITIONS

Term	Definition
acid sulfate soils	means soil or sediment containing highly acidic soil horizons or layers affected by the oxidation of iron sulfides (*actual acid sulfate soils*) and / or soil or sediment containing iron sulfides or other sulfidic material that has not been exposed to air and oxidised (*potential acid sulfate soils*). The term acid sulfate soil generally includes both actual and potential acid sulfate soils. Actual and potential acid sulfate soils are often found in the same soil profile, with actual acid sulfate soils generally overlying potential acid sulfate soil horizons.
acceptable standards for release to land	means wastewater of the following quality as determined by monitoring results or by characterisation: (a) electrical conductivity (EC) not exceeding 3000µS/cm (b) sodium adsorption ratio (SAR) not exceeding 8 (c) pH between 6.0 and 9.0 (d) heavy metals (measured as total) meets the respective short term trigger value in section 4.2.6, Table 4.2.10—Heavy metals and metalloids in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (e) does not contain biocides.
accepted engineering standards	in relation to dams, means those standards of design, construction, operation and maintenance that are broadly accepted within the profession of engineering as being good practice for the purpose and application being considered. In the case of dams, the most relevant documents would be publications of the Australian National Committee on Large Dams (ANCOLD), guidelines published by Queensland government departments and relevant Australian and New Zealand Standards.
active	for the purposes of landholders' groundwater bores 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.
aggregation dam	means a regulated dam that receives and contains coal seam gas water or coal seam gas concentrate. The primary purpose of the dam must not be to evaporate the water even though this will naturally occur.
AHD	means Australian Height Datum and is the datum used for the determination of elevations in Australia. The determination uses a national network of benchmarks and tide gauges and sets mean sea level at zero elevation.
alternative arrangement	means a written agreement between the holder of this environmental authority and an affected or potentially affected person at a sensitive receptor for a defined noise nuisance impact and may include an agreed period of time for which the arrangement is in place. An agreement for alternative arrangements may include, but not necessarily be limited to a range of noise abatement measures to be installed at a sensitive receptor and / or provision of alternative accommodation for the duration of the defined noise nuisance impact.
analogue site	means an undisturbed area of land against which land significantly disturbed by the carrying out of petroleum activities may be compared.

<table>
<tr><td>analytes</td><td>means a chemical parameter determined by either physical measurement in the field or by laboratory analysis.</td></tr>
<tr><td>annual exceedance probability or AEP</td><td>is the probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.</td></tr>
<tr><td>appraisal well</td><td>means a petroleum well to test the potential of one or more natural underground reservoirs for producing or storing petroleum.
For clarity, an appraisal well does not include an exploration well.</td></tr>
<tr><td>approved quality criteria for mix–bury-cover</td><td>for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards:

Part A In all cases:

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

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

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

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

<table>
<tr><th>Parameter</th><th>Maximum concentration</th></tr>
<tr><td>Arsenic</td><td>20mg/kg</td></tr>
<tr><td>Selenium</td><td>5mg/kg</td></tr>
<tr><td>Boron</td><td>100mg/kg</td></tr>
<tr><td>Cadmium</td><td>3mg/kg</td></tr>
<tr><td>Chromium (total)</td><td>400mg/kg</td></tr>
<tr><td>Copper</td><td>100mg/kg</td></tr>
<tr><td>Lead</td><td>600mg/kg</td></tr>
</table>

The limits in Part B and Part C refer to the post soil/by-product mix.
Part C If a hydrocarbon sheen is visible, the following hydrocarbon fractions:</td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><th>TPH</th><th>Maximum concentration</th></tr>
<tr><td>C6-C10</td><td>170mg/kg</td></tr>
<tr><td>C10-C16</td><td>150mg/kg</td></tr>
<tr><td>C16-C34</td><td>1300mg/kg</td></tr>
<tr><td>C34-C40</td><td>5600mg/kg</td></tr>
<tr><td>Total Polycyclic Aromatic Hydrocarbons (PAHs)</td><td>20mg/kg</td></tr>
<tr><td>Phenols (halogenated)</td><td>1mg/kg</td></tr>
<tr><td>Phenols (non-halogenated)</td><td>60mg/kg</td></tr>
<tr><td>Monocyclic aromatic hydrocarbons

(Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene)</td><td>7mg/kg</td></tr>
<tr><td>Benzene</td><td>1mg/kg</td></tr>
</table>
</td></tr>
<tr><td>associated works</td><td>in relation to a dam, means:
○ any kind and all things associated with the construction and operation of a dam; and
○ any land used for those operations.</td></tr>
<tr><td>Australian Standard 1055</td><td>means Australian Standard 1055.1:1997 Description and Measurement of Environmental Noise – General procedures.</td></tr>
<tr><td>Australian Standard 2187</td><td>means Australian Standard 2187.0:1998 Explosives—Storage, transport and use, Part 0, Australian Standard 2187.1:1998 Explosives—Storage, transport and use Part 1 and Australian Standard 2187.2:2006 Explosives—Storage and use, Part 2 or any updated versions that becomes available from time to time.</td></tr>
<tr><td>Australian Standard 2885</td><td>means Australian Standard 2885.0:2008 Pipelines – Gas and Liquid Petroleum General Requirements, Australian Standard 2885.1:2007 Pipelines – Gas and Liquid Petroleum Design and Construction and Australian Standard 2885.3:2001 Pipelines – Gas and Liquid Petroleum Operation and Maintenance, or any updated versions that becomes available from time to time.</td></tr>
<tr><td>Australian Standard 4323</td><td>means Australian Standard 4323.1:1995 Stationary source emissions method 1: Selection of sampling positions.</td></tr>
<tr><td>Australian / New Zealand Standard 5667.11</td><td>means Australian/New Zealand Standard 5667.11: 1998 Water Quality – Sampling – Guidance on sampling at Groundwaters.</td></tr>
<tr><td>Australian / New Zealand Standard 5667.12</td><td>means Australian / New Zealand Standard 5667.12:1999 Guidance on Sampling of Bottom Sediments for permanent, semi-permanent water holes and water storages.</td></tr>
</table>

authorised person	means a person holding office as an authorised person under an appointment under the *Environmental Protection Act 1994* by the chief executive or chief executive officer of a local government.
authorised petroleum activities	for this environmental authority means the resource activities authorised to be carried out under condition (A1).
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 percent of the measurement time period T of not less than 15 minutes, using Fast response.
bed and banks	for a watercourse or wetland means land over which the water of the watercourse or wetland normally flows or that is normally covered by the water, whether permanently or intermittently; but does not include land adjoining or adjacent to the bed or banks that is from time to time covered by floodwater.
beneficial use	means ○ with respect to dams, that the current or proposed owner of the land on which a dam stands, has found a use for that dam that is: • of benefit to that owner in that it adds real value to their business or to the general community, • in accordance with relevant provisions of the *Environmental Protection Act 1994*, • sustainable by virtue of written undertakings given by that owner to maintain that dam, and • the transfer and use have been approved or authorised under any relevant legislation; or ○ with respect to coal seam gas water, refer to the Queensland Government Operational Policy - Management of water produced in association with petroleum activities and Notice of decision to approve a resource for beneficial use – CSG water as amended from time to time which can be accessed on the Department of Environment and Heritage Protection website at www.ehp.qld.gov.au.
biodiversity values	for the purposes of this environmental authority, means environmentally sensitive areas, prescribed environmental matters and wetlands.
black earth	means a type of soil**,** also known as vertosols and is a soil order of the Australian Soil Classification. These are clay soils with shrink / swell properties that display strong cracks when dry and/or lenticular structural aggregates at depth. They have high soil fertility and a large water holding capacity.
bore	means a water observation bore or a water supply bore that is either sub-artesian or artesian.
brine	means saline water with a total dissolved solid concentration greater than 40 000 mg/l.
brine dam	means a regulated dam that is designed to receive, contain or evaporate brine.
bund or **bunded**	in relation to spill containment systems for fabricated or manufactured tanks or containers designed to a recognised standard means an embankment or wall of brick, stone, concrete or other impervious material which may form part or all of the perimeter of a compound and provides a barrier to retain liquid. Since the bund is the main part of a spill containment system, the whole system (or bunded area) is sometimes colloquially referred to within industry as the bund. The bund

	is designed to contain spillages and leaks from liquids used, stored or processed above ground and to facilitate clean-up operations. As well as being used to prevent pollution of the receiving environment, bunds are also used for fire protection, product recovery and process isolation.
business day	has the meaning in the *Acts Interpretation Act 1954* and means a day that is not— o a Saturday or Sunday; or o a public holiday, special holiday or bank holiday in the place in which any relevant act is to be or may be done.
BTEX	means benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene and total xylene.
calendar year	means a period of 365 or 366 days beginning 1 January and ending 31 December.
Category A Environmentally Sensitive Area (ESA)	means any area listed in Section 12, Part 1, section 1 of the Environmental Protection Regulation 2008.
Category B Environmentally Sensitive Area (ESA)	means any area listed in Section 12, Part 1, section 2 of the Environmental Protection Regulation 2008.
Category C Environmentally Sensitive Area (ESA)	means any of the following areas: o Nature Refuges as defined in the conservation agreement for that refuge under the *Nature Conservation Act 1992* o Koala Habitat Areas as defined under the Nature Conservation (Koala) Conservation Plan 2006 o *State Forests or Timber Reserves as defined under the Forestry Act 1959* o Resource Reserves under the *Nature Conservation Act 1992* o an area validated as “Essential Habitat” or “Essential Regrowth Habitat” from ground-truthing surveys in accordance with the *Vegetation Management Act 1999* for a species of wildlife listed as endangered or vulnerable under the *Nature Conservation Act 1992* o Of Concern Regional Ecosystems that are remnant vegetation and identified in the database called ‘RE description database’ containing Regional Ecosystem numbers and descriptions.
certification or certified by a suitably qualified and experienced person	in relation to a design plan, ‘as constructed’ drawings or an annual report regarding dams, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time: o exactly what is being certified and the precise nature of that certification. o the relevant legislative, regulatory and technical criteria on which the certification has been based; o the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and o the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

certify or **certification** or **certified**	in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding dams in this environmental authority means a Statutory Declaration by a suitably qualified person accompanying the written document stating that: ○ all relevant material has been considered in the written document; and ○ that the content of the written document is accurate and true; and ○ that the written document meets the requirements of the relevant conditions of the environmental authority.
clearing	means: ○ in relation to grass, scrub or bush—the removal of vegetation by disturbing root systems and exposing underlying soil (including burning), but does not include— • the flattening or compaction of vegetation by vehicles if the vegetation remains living; or • the slashing or mowing of vegetation to facilitate access tracks; or • the clearing of noxious or introduced plant species; or • destroying standing vegetation by stock ; and ○ in relation to trees—cutting down, ringbarking, pushing over, poisoning or destroying in any way, but does not include – • lopping a tree.
coal seam gas (CSG) water	means groundwater that is necessarily or unavoidably brought to the surface in the process of coal seam gas exploration or production. Coal seam gas water typically contains significant concentrations of salts, has a high sodium adsorption ratio and may contain other contaminants that have the potential to cause environmental harm if released to land or waters through inappropriate management. Coal seam gas water is a waste, as defined under section 13 of the *Environmental Protection Act 1994*.
coal seam gas (CSG) evaporation dam	is defined as a impoundment, enclosure or structure that is designed to be used to hold coal seam gas water for evaporation.
closed-loop systems	means using waste on site in a way that does not release waste or contaminants in the waste to the environment.
consequence category	means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures.
construction	in relation to a dam includes building a new dam and modifying or lifting an existing dam but does not include investigations and testing necessary for the purposes of preparing a design plan.
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.
dam	means a land-based structure or a void that is designed to 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. A dam does *not* mean a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container.

<table>
<tr><td>dam crest volume</td><td>means the volume of material that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls without regard to flows entering or leaving (e.g. via a spillway).</td></tr>
<tr><td>design plan</td><td>is the documentation required to describe the physical dimensions of the dam, the materials and standards to be used for construction of the dam, and the criteria to be used for operating the dam. The documents must include design and investigation reports, specifications and certifications, together with the planned decommissioning and rehabilitation works and outcomes. A design plan may include ‘as constructed’ drawings.</td></tr>
<tr><td>design storage allowance or DSA</td><td>means an available volume, estimated in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, prepared by the Department of Environment and Heritage Protection, as amended from time to time, that must be provided in a dam to an annual exceedance probability specified in that Manual.</td></tr>
<tr><td>development well</td><td>means a petroleum well which produces or stores petroleum.
For clarity, a development well does not include an appraisal well.</td></tr>
<tr><td>discharge area</td><td>means:
that part of the land surface where groundwater discharge produces a net movement of water out of the groundwater; and
identified by an assessment process consistent with the document Salinity Management Handbook Queensland Department of Natural Resources, 1997, as amended from time to time; or
identified by an approved salinity hazard map held by the Department of Environment and Heritage Protection.</td></tr>
<tr><td>document</td><td>has the meaning in the Acts Interpretation Act 1954 and means:
any paper or other material on which there is writing; and
any paper or other material on which there are marks; and
figures, symbols or perforations having a meaning for a person qualified to interpret them; and
any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).</td></tr>
<tr><td>drilling by-product</td><td>means waste drilling materials including muds, liquids and cuttings from well holes which do not contain hydrocarbon sheen above the following hydrocarbon fractions:
<table>
<tr><th>TPH</th><th>Maximum concentration</th></tr>
<tr><td>C6-C10</td><td>170mg/kg</td></tr>
<tr><td>C10-C16</td><td>150mg/kg</td></tr>
<tr><td>C16-C34</td><td>1300mg/kg</td></tr>
<tr><td>C34-C40</td><td>5600mg/kg</td></tr>
<tr><td>Total Polycyclic Aromatic Hydrocarbons (PAHs)</td><td>20mg/kg</td></tr>
<tr><td>Phenols (halogenated)</td><td>1mg/kg</td></tr>
</table></td></tr>
</table>

	<table><tr><td>Phenols (non-halogenated)</td><td>60mg/kg</td></tr><tr><td>Monocyclic aromatic hydrocarbons *(Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene)*</td><td>7mg/kg</td></tr><tr><td>Benzene</td><td>1mg/kg</td></tr></table>
drilling by-product assessment	means taking representative composite samples of each surface hole, top hole and main hole sections inclusive of changes in mud systems to determine material suitability for land spraying while drilling. Samples must be analysed for a minimum of pH, EC, SAR and weight.
ecosystem functioning	means the interactions between and within living and nonliving components of an ecosystem and generally correlates with the size, shape and location of an area of vegetation.
electrical distribution equipment	means infrastructure that does not exceed a capacity of 500 kilo-volt amps (kVA) and is necessary for providing electric power to wellheads for undertaking petroleum activities.
end	means the stopping of the particular activity that has caused a significant disturbance in a particular area. It refers to, among other things, the end of a seismic survey or the end of a drilling operation. It does not refer to the end of all related petroleum activities such as rehabilitation. In other words, it does not refer to the 'completion' of the petroleum activity(ies), the time at which the petroleum authority ends or the time that the land in question ceases to be part of an authority.
equivalent person or EP	means an equivalent person under volume 1, section 2 of the Guidelines for Planning and Design of Sewerage Schemes, October 1991, published by the Water Resources Commission, Department of Primary Industries, Fisheries and Forestry.
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 1ha of disturbance and multi-well sites not exceeding 1.5ha of disturbance. ○ Well sites with monitoring equipment (including monitoring bores) or tanks for above ground fluid storage: (a) for single well sites, not exceeding 1.25ha disturbance; (b) for multi-well sites, not exceeding 1.75ha disturbance. ○ Well sites with monitoring equipment (including monitoring bores) and tanks (minimum 1ML) for above ground fluid storage: (a) for single well sites, not exceeding 1.5ha disturbance; (b) for multi-well sites, not exceeding 2.0ha disturbance. ○ Associated infrastructure located on a well site necessary for the construction and operations of wells: (a) water pumps and generators; (b) flare pits; (c) chemical/fuel storages;

	(d) sumps for residual drilling material and drilling fluids; (e) tanks, or dams which are not significant or high consequence dams to contain wastewater (e.g. stimulation flow back waters, produced water) (f) pipe laydown areas; (g) soil and vegetation stockpile areas; (h) a temporary camp associated with a drilling rig that may involve sewage treatment works that are no release works; (i) temporary administration sites and warehouses; (j) dust suppression activities using water that meets the quality and operational standards approved under the environmental authority o Communication and powerlines 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. o Supporting access tracks; o Gathering / flow pipelines from a well head to the initial compression facility; o 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).
evaporation dam	means a land based structure designed to contain or impound coal seam gas water, the purpose of which is to contain or impound the water, until the water content has been removed by evaporation.
exploration well	means a petroleum well that is drilled to: o explore for the presence of petroleum or natural underground reservoirs suitable for storing petroleum; or o obtain stratigraphic information for the purpose of exploring for petroleum. For clarity, an exploration well does not include an appraisal or development well.
exploring for petroleum	means carrying out an activity for the purpose of finding petroleum or natural underground reservoirs as per section 14 of the *Petroleum and Gas (Production and Safety) Act 2004* for example including: o conducting a geochemical, geological or geophysical survey; o drilling a well; o carrying out testing in relation to a well; o taking a sample for chemical or other analysis.
facilities	in the context of waste disposal, refers to the definition provided in Schedule 2, Part 12 (60)(4)(a) of the Environment Protection Regulation 2008.
feed pond	means a land based structure used to contain untreated coal seam gas water prior to its treatment in a water treatment facility.
fill	means any kind of material in solid form (whether or not naturally occurring) capable of being deposited at a place but does not include material that forms a part of, or is associated with, a structure constructed in a watercourse, wetland or spring including a bridge, road, causeway, pipeline, rock revetment, drain outlet works, erosion prevention structure or fence.
floodplains	has the meaning in the *Water Act 2000* and means an area of reasonably flat land adjacent to a watercourse that— o is covered from time to time by floodwater overflowing from the watercourse; and

	○ does not, other than in an upper valley reach, confine floodwater to generally follow the path of the watercourse; and ○ has finer sediment deposits than the sediment deposits of any bench, bar or in-stream island of the watercourse.
flowable substance	means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.
foreseeable future	means the period used for assessing the total probability of an event occurring. Permanent structures and ecological sustainability should be expected to still exist at the end of a 150 year foreseeable future with an acceptably low probability of failure before that time.
GDA	means Geocentric Datum of Australia.
general ecologically significant wetland	otherwise known as "wetlands of other environmental value", is a wetland that meets the definition of a wetland and that is shown as a general ecologically significant wetland or "wetlands of other environmental value" on the map of referable wetlands.
Great Artesian Basin Spring	means an area protected under the *Environment Protection and Biodiversity Conservation Act 1999* because it is considered to be a Matter of National Environmental Significance and identified as a: • community of native species dependent on natural discharge of groundwater from the Great Artesian Basin; or • Great Artesian Basin spring; or • Great Artesian Basin discharge spring wetland. A GAB spring includes a spring vent, spring complex or watercourse spring and includes the land to which water rises naturally from below the ground and the land over which the water then flows. *Note: The Australian Government's Protected Matters Search Tool should be used to get an indication of whether the area of interest may contain an MNES spring.* *Note: The GAB springs dataset can be requested from the Queensland Government Herbarium.*
high bank	means the defining terrace or bank or, if no bank is present, the point on the active floodplain, which confines the average annual peak flows in a watercourse.
hub	means more than one large compressor station and multiple items of fuel burning or combustion units located within five km of each other and capable of burning fuel at a rate of at least 500kg/hr.
hydraulic performance	means the capacity of a regulated dam to contain or safely pass flowable substances based on a probability (AEP) of performance failure specified for the relevant consequence category Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, prepared by the Department of Environment and Heritage Protection, as amended from time to time.
impulsive noise	means sound characterised by brief excursions of sound pressure (acoustic impulses) that significantly exceed the background sound pressure. The duration of a single impulsive sound is usually less than one second.

incidental activity	for this environmental authority means an activity that is reasonably necessary for carrying out a petroleum activity.
Inferred lithology	means the best available description of the lithology based upon historical drilling records, interpretation of logs and any other information that the suitably qualified person may have discovered.
infrastructure	means plant or works including for example, communication systems, compressors, powerlines, pumping stations, reservoirs, roads and tracks, water storage dams, evaporation or storage ponds and tanks, equipment, buildings and other structures built for the purpose and duration of the conduct of the petroleum activity(ies) including temporary structures or structures of an industrial or technical nature, including, for example, mobile and temporary camps. Infrastructure does not include other facilities required for the long term management of the impact of those petroleum activities or the protection of potential resources. Such other facilities include dams other than water storage dams (e.g. evaporation dams), pipelines and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.
Integrated Condabri-Talinga Coal Seam Gas Water Management Scheme	means the coal seam gas water management activities authorised under EPPG00968013 and EPPG00853013.
irrigation demand	means the total volume of treated coal seam gas water supplied to landholders for irrigation purposes when measured at all off-take points along the Fairymeadow Road pipeline (PPL185).
$L_{Aeq, adj, 15 mins}$	means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within any 15 minute period has the same square sound pressure as a sound level that varies with time.
$L_{A 90, adj, 15 mins}$	means the A-weighted sound pressure level, adjusted for tonal character, that is equal to or exceeded for 90% of any 15 minutes sample period equal, using Fast response.
lake	means: ○ a lagoon, swamp or other natural collection of water, whether permanent or intermittent; and ○ the bed and banks and any other element confining or containing the water.
land spraying while drilling method	means the management of drilling by-products that do not contain active biocides by spraying onto vegetated land at a rate up to $40m^3$/ha per spray area every 6 months.
leachate	means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of on-site which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.
levee	means a dyke or bund that is designed only to provide for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from unplanned releases from other works of infrastructure, during the progress of those stormwater or flood flows or those unplanned releases; and does not store any significant volume of water or flowable substances at any other times.

linear infrastructure	means powerlines, pipelines, flowlines, roads and access tracks.
long term noise event	is 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 a high or significant consequence category as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures.
low impact petroleum activities	means petroleum activities which do not result in the clearing of native vegetation, earthworks or excavation work that cause either a significant disruption to the soil profile, permanent damage to vegetation, or negative impacts that cannot be easily rehabilitated (e.g. using hand tools) immediately 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, installation of environmental monitoring equipment and traversing land by car or foot via existing access tracks or routes.
low water production period	means any year commencing 1 January up to and including 31 December of that same year when the total rate of produced treated water under the Integrated Condabri-Talinga Coal Seam Gas Water Management Scheme is less than 38ML/d as an annual average.
Max $L_{pZ, 15\ min}$	means the maximum value of the Z-weighted sound pressure level measured over 15 minutes.
Max $L_{pA, 15\ min}$	means the absolute maximum instantaneous A-weighted sound pressure level, measured over 15 minutes.
mandatory reporting level or **MRL**	means a warning and reporting level determined in accordance with the criteria in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures prepared by the Department of Environment and Heritage Protection, as amended from time to time.
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.
meter	means a device for measuring, or giving an output signal proportional to, quantities of water passed and/or the rate of flow in a pipe.
mix-bury-cover method	means the stabilisation of residual drilling solids in the bottom of a sump by mixing with subsoil and which occurs in accordance with the following methodology: ○ the base of the subsoil and residual solid mixture must be separated from the groundwater table by at least one metre of a continuous layer of impermeable subsoil material (kw=10–8m/s) or subsoil with a clay content of greater than 20%; and ○ the residual solids is mixed with subsoil in the sump and cover; and ○ the subsoil and residual solids is mixed at least three parts subsoil to one part waste (v/v); and ○ a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and topsoil is replaced.

monitoring bore lease	means single well site monitoring bore leases not exceeding 1ha of disturbance.
Monreagh Dam	means a dam located on Lot35 SP142792 used to contain treated CSG water to be used for irrigation.
month	has the meaning in the *Acts Interpretation Act 1954* and means a calendar month and is a period starting at the beginning of any day of one of the 12 named months and ending— o immediately before the beginning of the corresponding day of the next named month; or o if there is no such corresponding day—at the end of the next named month.
NATA certification	means accreditation by the National Association of Testing Authorities Australia.
no flow conditions	means any 24-hour period when the mean river flow of the receiving waters specified in *Schedule B, Table 1 – Treated CSG Water Release Point and Receiving Environment* is less than 1ML/d.
operational period	means the period commencing immediately after the Transitional Period.
peak water production period	means any year commencing 1 January up to and including 31 December of that same year when the total rate of produced treated water under the Integrated Condabri-Talinga Coal Seam Gas Water Management Scheme exceeds 45 ML/d as an annual average.
permanent	means infrastructure or facilities that are lasting or intended to last for the life of the project and is not temporary or mobile.
pest	means species: o declared under the *Land Protection (Pest and Stock route Management) Act 2002*; o declared under Local Government model local laws; and o which may become invasive in the future.
petroleum activity	for this environmental authority means an authorised resource activity listed under the heading “Petroleum activities” in *Schedule A, Table 1 - Authorised Petroleum Activities*.
pipeline waste water	means hydrostatic testing water, flush water or water from low point drains.
prescribed storage gases	has the meaning provided in section 12 of the *Petroleum and Gas (Production and Safety) Act 2004.*
Primary Protection Zone	means an area within a 200m buffer from the boundary of any Category A, B or C Environmentally Sensitive Area.
produced treated water	means the total volume of treated CSG water produced by the Talinga and Condabri water treatment facilities measured at the outlets of each water treatment facility.
project area	means the area located within the boundaries of Petroleum Lease (PL) 265, PL 266, PL 267, PL 1011 and Petroleum Pipeline Licence (PPL) 186.
receiving soil assessment	means an assessment undertaken of background soil conditions prior to land spraying while drilling activities. The receiving soil assessment must include taking a minimum of three (3) representative samples. Collected samples must

<table>
<tr><td></td><td>be analysed for a minimum of pH, EC, SAR and CEC, total N, total metals (aluminium, arsenic, barium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, tin, strontium, uranium, vanadium and zinc), TPH and BTEX.</td></tr>
<tr><td>receiving soil criteria</td><td>means the receiving soil criteria meets the following quality standards:

<table><tr><th>Parameter</th><th>Analysis Method</th><th>Maximum concentration</th></tr><tr><td>Electrical Conductivity</td><td>1:5</td><td>3 dS/m (3000 uS/cm)</td></tr><tr><td>Sodium Adsorption Ratio (SAR)</td><td>Saturated paste</td><td>5</td></tr><tr><td>pH</td><td>1:5</td><td>6-10.5 (range)</td></tr></table></td></tr>
<tr><td>release day</td><td>means the 24-hour period when treated CSG water is released from the release point specified in Schedule B, Table 1 – Treated CSG Water Release Point and Receiving Environment.</td></tr>
<tr><td>regulated dam</td><td>means any dam in the significant or high consequence category as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structure, prepared by the Department of Environment and Heritage Protection , as amended from time to time.</td></tr>
<tr><td>rehabilitation</td><td>means the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.</td></tr>
<tr><td>remnant vegetation</td><td>means vegetation, part of which forms the predominant canopy of the vegetation—
○ covering more than 50% of the undisturbed predominant canopy; and
○ averaging more than 70% of the vegetation’s undisturbed height; and
○ composed of species characteristic of the vegetation’s undisturbed predominant canopy cover.</td></tr>
<tr><td>residual drilling material</td><td>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.</td></tr>
<tr><td>restricted stimulation fluids</td><td>means fluids used for the purpose of stimulation, including fracturing, that contain the following chemicals, unless otherwise provided for under the Environmental Protection Regulation 2008:
○ petroleum hydrocarbons containing benzene, ethylbenzene, toluene or xylene; or
○ chemicals that produce, or are likely to produce, benzene, ethylbenzene, toluene or xylene as the chemical breaks down in the environment.</td></tr>
<tr><td>Secondary Protection Zone</td><td>in relation to a Category A, Category B or Category C Environmentally Sensitive Area means an area within a 100m buffer from the boundary of the Primary Protection Zone.</td></tr>
<tr><td>sensitive place</td><td>means:
○ a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel; or</td></tr>
</table>

	○ a library, childcare centre, kindergarten, school, university or other educational institution; ○ a medical centre, surgery or hospital; or ○ a protected area; or ○ 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; or ○ 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.
sensitive receptor	means an area or place where noise (including low frequency, vibration and blasting) is measured investigate whether nuisance impacts are occurring and includes: ○ a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel; or ○ a library, childcare centre, kindergarten, school, university or other educational institution; ○ a medical centre, surgery or hospital; or ○ a protected area; or ○ 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; or ○ 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.
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.
significantly disturbed land or **significant disturbance to land** or **significant disturbance**	means disturbance to land as defined in schedule 12, section 4 of the Environmental Protection Regulation 2008.
soil end point assessment	means an assessment of soil conditions following land spraying while drilling. The soil end point assessment must include taking a minimum of three (3) samples within a 60 day period from commencing land spraying while drilling. Collected samples must be analysed for a minimum of pH, EC, SAR and CEC, total N, total metals (aluminium, arsenic, barium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, tin, strontium, uranium, vanadium and zinc), TPH and BTEX.
specified relevant activity	for this environmental authority means an activity that: (a) but for being carried out as a resource activity, would otherwise be a prescribed ERA; (b) stimulation activities; (c) extracting material, other than dredging; (d) point source discharge of treated produced water to surface waters; (e) storing waste that is not regulated waste (including coal seam gas water) in a regulated dam; or

	(f) storing coal seam gas water that is not regulated waste in a low consequence dam.
spring	means the land to which water rises naturally from below the ground and the land over which the water then flows.
spillway	means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges from the dam, normally under flood conditions or in anticipation of flood conditions.
stable	in relation to land, means landform dimensions are or will be stable within tolerable limits now and in the foreseeable future. Stability includes consideration of geotechnical stability, settlement and consolidation allowances, bearing capacity (trafficability), erosion resistance and geochemical stability with respect to seepage, leachate and related contaminant generation.
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.* *Note: the Subterranean GDE (caves) dataset can be obtained from the Queensland Government Information System.*
sump	means a pit in which waste residual drilling material or drilling fluids are stored only for the duration of drilling activities.
stage 1 – Injection Management Plan	means data gathering, well construction for hydrology and geochemistry, injection fluid characterisation, hydrological assessment, initial hydrogeologcial conceptual modelling.
stage 2 – Field Test Program of the CSG Water Injection Trial	means the CSG injection trial, hydrogeochemical reaction assessment, full field hydrogeological model development and injection system design.
stage 3 – Full Scale CSG Water Injection	means the construction and operation of a full scale system for CSG water injection and hydrogeological model verification and refinement.
stimulation	means a technique used to increase the permeability of natural underground reservoir that is undertaken above the formation pressure and involves the addition of chemicals. It includes hydraulic fracturing / hydrofraccing, fracture acidizing and the use of proppant treatments. This definition is restricted from that in the *Petroleum and Gas (Production and Safety) Act 2004* in order to only

	capture the types of stimulation activities that pose a risk to environmental values of water quality in aquifers.
stimulation impact zone	means a 100m maximum radial distance from the stimulation target location within a gas producing formation.
stormwater management infrastructure	means structural and engineered control devices designed to capture, manage or treat stormwater. Stormwater management infrastructure can include, but not necessarily be limited to: o levees; o culverts; and o swales.
suitably qualified person	means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis to performance relative to the subject matter using the relevant protocols, standards, methods or literature.
suitably qualified and experienced person	in relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 2002*, and has demonstrated competency and relevant experience: o for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design. o for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments. Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.
suitably qualified third party	means a person who: (a) has qualifications and experience relevant to performing the function including but not limited to: i. a bachelor's degree in science or engineering; and ii. 3 years' experience in undertaking soil contamination assessments; and (b) is a member of at least one organisation prescribed in Schedule 8 of the Environmental Protection Regulation 2008; and not be an employee of, nor have a financial interest or any involvement which would lead to a conflict of interest with the holder(s) of the environmental authority.
third party auditor	means a suitably qualified person who is either a certified third party auditor or an internal auditor employed by the holder of the environmental authority and the person is independent of the day to day management and operation of the petroleum activity(ies) covered by this environmental authority.
threatening processes	means processes, features and actions that can have a detrimental effect upon the health and viability of an area of vegetation (e.g. altered hydrology, land use practices, invasion by pest and weed species, land degradation, edge effects and fragmentation).
tolerable limits	means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values (e.g. a range of settlement for a tailings capping, rather than a single value, could still meet the objective of draining the cap quickly, preventing damage and limiting infiltration and percolation).

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.
transitional period	means the period until the earlier of either a) when the irrigation demand reaches a maximum of 12.8GL/annum average for a 30-day period, or b) 30 June 2015.
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.
unacceptable risk	is when the results of a hazard assessment indicates that there is both a high hazard and a high likelihood of an event occurring such that the risk is classified as “high”, “very high” or “extreme”.
underground gas storage	means evaluating, developing and using natural underground reservoirs for petroleum storage or to store prescribed storage gases, including, for example, to store petroleum or prescribed storage gases for others.
valid complaint	means a complaint the administering authority considers is not frivolous, nor vexatious, nor based on mistaken belief.
void	means any man-made, open excavation in the ground (includes borrow pits, drill sumps, frac pits, flare pits, cavitation pits and trenches).
waste and resource management hierarchy	has the meaning provided in section 9 of the *Waste Reduction and Recycling Act 2011* and is the following precepts, listed in the preferred order in which waste and resource management options should be considered— (a) AVOID unnecessary resource consumption (b) REDUCE waste generation and disposal (c) RE-USE waste resources without further manufacturing (d) RECYCLE waste resources to make the same or different products (e) RECOVER waste resources, including the recovery of energy (f) TREAT waste before disposal, including reducing the hazardous nature of waste (g) DISPOSE of waste only if there is no viable alternative.
waste and resource management principles	has the meaning provided in section 4(2)(b) of the *Waste Reduction and Recycling Act 2011* and means the: (a) polluter pays principle (b) user pays principle (c) proximity principle (d) product stewardship principle.
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.
watercourse	has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means: 1) a river, creek or stream in which water flows permanently or intermittently— (a) in a natural channel, whether artificially improved or not; or (b) in an artificial channel that has changed the course of the watercourse.

	2) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.
well lease infrastructure	means infrastructure required for the construction and completion of a well including but not limited to cellar pits, dams and drill sumps.
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: o 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 o the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers; or o 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.
year	means a period of 12 months.
80th percentile	in relation to release limits means that not more than one of the measured values is to exceed the stated release limit for any five consecutive samples where: o the consecutive samples are taken over a five month period; and o the consecutive samples are taken at approximately equal periods.

End of Conditions

SCHEDULE M –FIGURES

Figure 1 – Site Constraints: Condabri Brine Pond 7 and Stockpile Area (associated with Ponds 5,6,7)

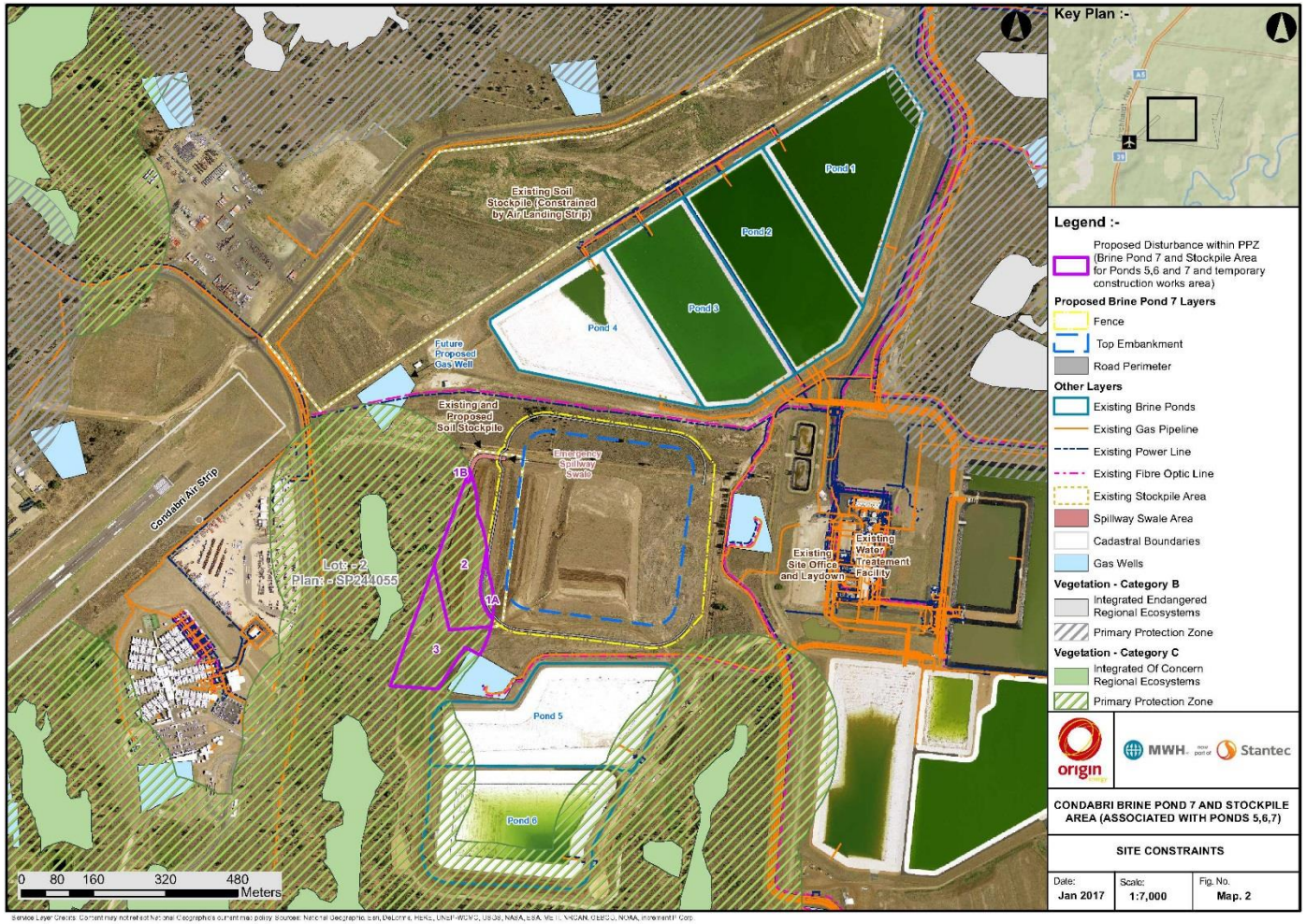

Figure 2 - Condabri Central disturbance footprint within ESA buffers

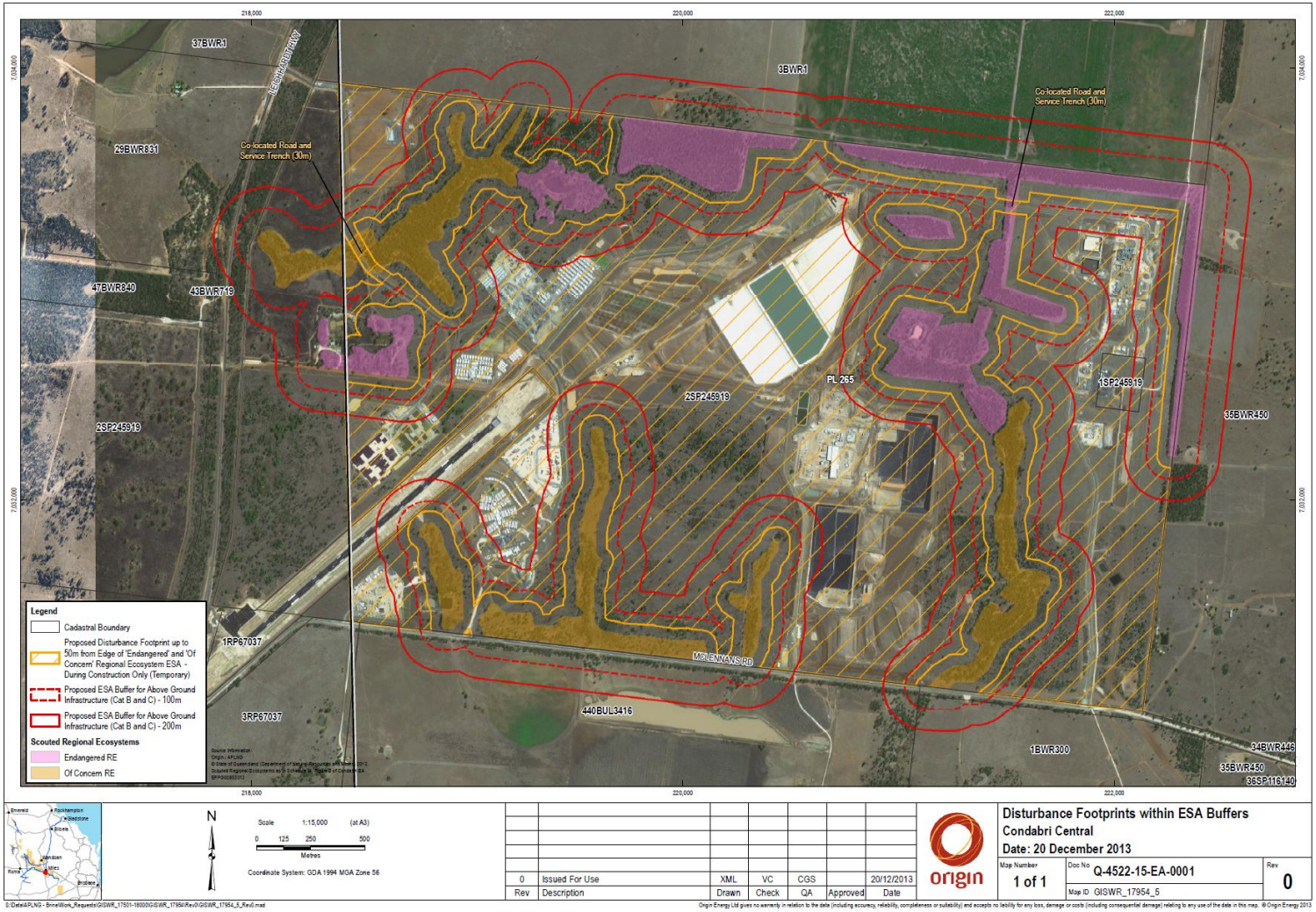

Figure 3 – Condabri WTF discharge pipeline