

Permit¹

Environmental Protection Act 1994

Environmental Authority

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

Permit¹ Number: EPPG00781813

Project Name: Inland Oilfield

Environmental authority takes effect on **16 February 2016**.

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

Environmental authority holder(s)

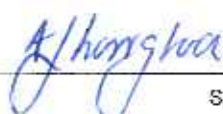
Name	Registered address
Bridgeport (Eromanga) Pty Ltd ACN: 148 013 469	Level 7 111 Pacific Highway NORTH SYDNEY NSW 2060

Environmentally relevant activity and location details

Environmentally relevant activity (ERA)	Location
A resource activity that is a petroleum activity that includes the following: - Item 8, Schedule 2A of the Environmental Protection Regulation 2008 - a petroleum activity or GHG storage activity, other than an activity mentioned in any of items 1 to 7, that includes 1 or more activities mentioned in Schedule 2 for which an aggregate environmental score is stated.	Petroleum Lease (PL) 98

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




Signature

16/2/2016
Date

Andrew Langford

Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:

Petroleum and Gas (Assessment)
Department of Environment
and Heritage Protection
Level 7, 400 George Street
GPO Box 2454
BRISBANE QLD 4001
Phone: (07) 3330 5715
Fax: (07) 3330 5634

Additional information

Environmentally relevant activities

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

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

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

Contaminated land and notifiable activities

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

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)

The environmental authority consists of the following schedules:

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

SCHEDULE A – GENERAL ENVIRONMENTAL PROTECTION

Authorised Resource 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			
Petroleum exploration and production	15 ha	Within project area	25 development wells
Specified relevant activities			
Stimulation activities	N/A	Within project area	N/A
Chemical storage – storing >500m ³ of chemicals of class C1 or C2 combustible liquids under AS 1940 or DG Class 3	0.8 ha	Within project area	1 tank farm
Evaporation ponds	1.21 ha (total)	Within project area	4

Monitoring Standards

- (A4) All monitoring must be undertaken by a suitably qualified person.
- (A5) If requested by the administering authority in relation to investigating a complaint, monitoring must be commenced within 10 business days.
- (A6) All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests.
- (A7) Notwithstanding condition (A6), where there are no NATA accredited laboratories for a specific analyte or substance, then duplicate samples must be sent to at least two separate laboratories for independent testing or evaluation.

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- (A8) Monitoring and sampling must be carried out in accordance with the requirements of the following documents (as relevant to the sampling being undertaken), as amended from time to time:
- (a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual 2009 – *Environmental Protection (Water) Policy 2009*
 - (b) for groundwater, Groundwater Sampling and Analysis – A Field Guide (2009:27 GeoCat #6890.1)
 - (c) for noise, the *Environmental Protection Regulation 2008*
 - (d) for air, the Queensland Air Quality Sampling Manual and/or Australian Standard 4323.1:1995 Stationary source emissions method 1: Selection of sampling positions, as appropriate for the relevant measurement
 - (e) for soil, the Guidelines for Surveying Soil and Land Resources, 2nd edition (McKenzie et al. 2008), and/or the Australian Soil and Land Survey Handbook, 3rd edition (National Committee on Soil and Terrain, 2009)
 - (f) for dust, Australian Standard AS3580.

Notification

- (A9) 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) unauthorised releases of any volume of prescribed contaminants to waters
 - (g) 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. 10 000 L of treated sewage effluent.
 - (h) the use of restricted stimulation fluids
 - (i) groundwater monitoring results from a landholder's active groundwater bore monitored under the stimulation impact monitoring program which is a 10% or greater increase from a previous baseline value for that bore and which renders the water unfit for its intended use
 - (j) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.

Financial Assurance

- (A10) 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*.
- (A11) 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.
- (A12) If the amount of financial assurance held by the administering authority has been discounted and either the nominated period of financial assurance has ended, or an event or change in circumstance has resulted in the holder of the environmental authority no longer being able to meet one or more of the mandatory pre-requisites or applicable discount criteria, the holder of the environmental authority must amend the financial assurance and give the administering authority the increased amount of financial assurance as soon as practicable.

Contingency Procedures for Emergency Environmental Incidents

- (A13) Petroleum activities involving significant disturbance to land cannot commence until the development of written contingency procedures for emergency environmental incidents which include, but are not necessarily limited to:
 - (a) a clear definition of what constitutes an environmental emergency incident or near miss for the petroleum activity.
 - (b) consideration of the risks caused by the petroleum activity including the impact of flooding and other natural events on the petroleum activity.
 - (c) response procedures to be implemented to prevent or minimise the risks of environmental harm occurring.
 - (d) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused.
 - (e) procedures to investigate causes and impacts including impact monitoring programs for releases to waters and/or land.
 - (f) training of staff to enable them to effectively respond.
 - (g) procedures to notify the administering authority, local government and any potentially impacted landholder.

Maintenance of Plant and Equipment

- (A14) All plant and equipment must be maintained and operated in their proper and effective condition.
- (A15) The following infrastructure must be signed with a unique reference name or number in such a way that it is clearly observable:
 - (a) regulated dams and low consequence dams
 - (b) exploration, appraisal and development wells
 - (c) specifically authorised discharge points to air and waters
 - (d) any chemical storage facility associated with the environmentally relevant activity of chemical storage
- (A16) Measures to prevent fauna being harmed from entrapment must be implemented during the construction and operation of well infrastructure, dams and pipeline trenches.

Erosion and Sediment Control

- (A17) For activities involving significant disturbance to land, control measures that are commensurate to the site-specific risk of erosion, and risk of sediment release to waters must be implemented to:
- (a) allow stormwater to pass through the site in a controlled manner and at non-erosive flow velocities
 - (b) minimise soil erosion resulting from wind, rain, and flowing water
 - (c) minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain, and flowing water
 - (d) minimise work-related soil erosion and sediment runoff; and
 - (e) minimise negative impacts to land or properties adjacent to the activities (including roads).

Complaints

- (A18) Petroleum activities must not cause environmental nuisance at a sensitive place, other than where an alternative arrangement is in place.

Documentation

- (A19) A certification must be prepared by a suitably qualified person within 30 business days of completing every plan, procedure, program and report required to be developed under this environmental authority, which demonstrates that:
- (a) relevant material, including current published guidelines (where available) have been considered in the written document
 - (b) the content of the written document is accurate and true; and
 - (c) the document meets the requirements of the relevant conditions of the environmental authority.
- (A20) All plans, procedures, programs, reports and methodologies required under this environmental authority must be written and implemented.
- (A21) All documents required to be developed under this environmental authority must be kept for five years.
- (A22) All documents required to be prepared, held or kept under this environmental authority must be provided to the administering authority upon written request within the requested timeframe.
- (A23) A record of all complaints must be kept including the date, complainant's details, source, reason for the complaint, description of investigations and actions undertaken in resolving the complaint.

SCHEDULE B – WASTE MANAGEMENT

General Waste Management

- (B1) Measures must be implemented so that waste is managed in accordance with the waste and resource management hierarchy and the waste and resource management principles.
- (B2) Waste, including waste fluids, but excluding waste used in closed-loop systems, must be transported off-site for lawful re-use, remediation, recycling or disposal, unless the waste is specifically authorised by another condition of this environmental authority to be disposed of or used on site.
- (B3) Waste fluids, other than flare precipitant stored in flare pits, or residual drilling material or drilling fluids stored in sumps, must be contained in either:
 - (a) an above ground container; or
 - (b) a structure which contains the wetting front.
- (B4) Green waste may be used on-site for either rehabilitation or sediment and erosion control, or both.

Pipeline Wastewater

- (B5) 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.

Authorised Uses of Produced Water for Petroleum Activities

- (B6) Produced water may be re-used in:
 - (a) drilling and well hole activities; or
 - (b) stimulation activities.
- (B7) Produced water may be used for dust suppression provided the following criteria are met:
 - (a) the amount applied does not exceed the amount required to effectively suppress dust; and
 - (b) the application:
 - i. does not cause on-site ponding or runoff
 - ii. is directly applied to the area being dust suppressed
 - iii. does not harm vegetation surrounding the area being dust suppressed; and
 - iv. does not cause visible salting.
- (B8) Produced water may be used for construction purposes provided the use:
 - (a) does not result in negative impacts on the composition and structure of soil or subsoils
 - (b) is not directly or indirectly released to waters
 - (c) does not result in runoff from the construction site; and
 - (d) does not harm vegetation surrounding the construction site.
- (B9) If there is any indication that any of the circumstances in condition (B7) and (B8) above is occurring the use must cease immediately and the affected area must be remediated without delay.

Sewage Treatment

- (B10) Treated sewage effluent or greywater can be released to land provided it:
- (a) meets or exceeds secondary treated class B standards for a treatment system with a daily peak design capacity of between 150 EP and 1500 EP; or
 - (b) meets or exceeds secondary treated class C standards for a treatment system with a daily peak design capacity of less than 150 EP.
- (B11) The release of treated sewage effluent or greywater authorised in condition (B10) must:
- (a) be to a fenced and signed contaminant release area(s)
 - (b) not result in pooling or run-off or aerosols or spray drift or vegetation die-off
 - (c) be to a contaminant release area(s) that is kept vegetated with groundcover, that is:
 - i. not a declared pest species
 - ii. kept in a viable state for transpiration and nutrient uptake; and
 - iii. grazed or harvested and removed from the contaminant release area as needed, but not less than every three months.
- (B12) Notwithstanding condition (B10), treated sewage effluent that meets or exceeds secondary treated class A standards may be used for dust suppression or construction activities, provided the use meets the criteria in condition (B7) or (B8), as relevant to the use.

Residual Drilling Material

- (B13) If sumps are used to store residual drilling material or drilling fluids, they must only be used for the duration of drilling activities.
- (B14) Residual drilling material can only be disposed of on-site:
- (a) by mix-bury-cover method if the residual drilling material meets the approved quality criteria; or
 - (b) if it is certified by a suitably qualified third party as being of acceptable quality for disposal to land by the proposed method and that environmental harm will not result from the proposed disposal.
- (B15) Records must be kept to demonstrate compliance with conditions (B13) and (B14).

Onsite Waste Disposal – General Waste

- (B16) General waste may be disposed of onsite at a dedicated landfill facility provided that the general waste:
- (a) is not a liquid
 - (b) does not contain, or is not comingled with regulated waste
 - (c) does not contain an organic fraction of more than 5% of the general waste stream
 - (d) was generated from activities permitted under this environmental authority; and
 - (e) does not exceed 50 tonnes in any year.
- (B17) The landfill used for the disposal of general waste must be:
- (a) on land owned by the holder of the relevant resource authority(ies)
 - (b) designed by a suitably qualified person and certified as being suitable for the containment of the waste
 - (c) designed and located so that the landfill is protected from any potential adverse consequences of regional or local flooding to the probable maximum flood level
 - (d) designed and operated to exclude stormwater runoff from entering the landfill; and

- (e) capped upon closure with capping methodology certified by a suitably qualified person as being suitable for containing the waste.
- (B18) Waste disposal activities must not result in any negative effect on public health particularly in relation to propagation of disease and the breeding and harbourage of flies, mosquitoes, rats and other pest organisms.
- (B19) Waste disposal must not result in litter escaping the boundary of the landfill facility.

SCHEDULE C – PROTECTING ACOUSTIC VALUES

- (C1) Notwithstanding condition (A18), emission of noise from the petroleum activities at levels less than those specified in *Schedule C, Table 2 – Noise Nuisance Limits*, are not considered to be environmental nuisance.

Schedule C, Table 2 – Noise Nuisance Limits

Time Period	Metric	Short Term Noise Event	Medium Term Noise Event	Long Term Noise Event
7:00 am – 6:00 pm	$L_{Aeq,adj, 15 \text{ min}}$	45 dBA	43 dBA	40 dBA
6:00 pm – 10:00 pm	$L_{Aeq,adj, 15 \text{ min}}$	40 dBA	38 dBA	35 dBA
10:00 pm – 6:00 am	$L_{Aeq,adj, 15 \text{ min}}$	28 dBA	28 dBA	28 dBA
	Max $L_{pA, 15 \text{ mins}}$	55 dBA	55 dBA	55 dBA
6:00 am – 7:00 am	$L_{Aeq,adj, 15 \text{ min}}$	40 dBA	38 dBA	35 dBA

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

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

- (C2) If the noise subject to a valid complaint is tonal or impulsive, the adjustments detailed in *Schedule C, Table 3 – Adjustments to be Added to Noise Levels at Sensitive Receptors*, are to be added to the measured noise level(s) to derive $L_{Aeq, adj, 15 \text{ min}}$.

Schedule C, Table 3 – Adjustments to be added to Noise Levels at Sensitive Receptors

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

- (C3) Notwithstanding condition (C1), emission of any low frequency noise must not exceed either (C3(a)) and (C3(b)), or (C3(c)) and (C3(d)) in the event of a valid complaint about low frequency noise being made to the administering authority:
- (a) 60 dB(C) measured outside the sensitive receptor; and
 - (b) the difference between the external A-weighted and C-weighted noise levels is no greater than 20 dB; or
 - (c) 50 dB(Z) measured inside the sensitive receptor; and
 - (d) the difference between the internal A-weighted and Z-weighted ($\text{Max } L_{pZ, 15 \text{ min}}$) noise levels is no greater than 15 dB.

SCHEDULE D – PROTECTING AIR VALUES

Dust Nuisance

- (D1) If the environmental authority holder can provide evidence through monitoring that the following limits are not being exceeded then the holder is not in breach of (A18):
- (a) dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with AS 3580.10.1 *Methods for sampling and analysis of ambient air - Determination of particulates - Deposited matter - Gravimetric method of 1991*; and
 - (b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM10) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time, at a sensitive place or commercial place downwind of the operation land, when monitored in accordance with AS3580.9.6 *'Ambient air – Particulate matter – Determination of suspended particulate PM10 high-volume sampler with size-selective inlet Gravimetric method'*; or
 - (c) particulate matter – Determination of suspended particulate PM10 high volume sampler with size-selective inlet – Gravimetric method, when monitored in accordance with AS 3580.9.6. *Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM(sub) 10 high volume sampler with size-selective inlet – Gravimetric method of 1990*; or any alternative method of sampling PM10, which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority.

Note: You must propose which monitoring method is appropriate in accordance with (D1)(a) or (b) or both.

SCHEDULE E – PROTECTING LAND VALUES

General

- (E1) Contaminants must not be directly or indirectly released to land except for those releases authorised by Conditions (B6), (B8) and (B9).

Top Soil Management

- (E2) Top soil must be managed in a manner that preserves its biological and chemical properties.

Land Management

- (E3) Land that has been significantly disturbed by the petroleum activities must be managed to ensure that mass movement, gully erosion, rill erosion, sheet erosion and tunnel erosion do not occur on that land.

Chemical Storage

- (E4) Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.

Pipeline Operation and Maintenance

- (E5) Pipeline operation and maintenance must be in accordance, to the greatest practicable extent, with the relevant section of the APIA Code of Environmental Practice: Onshore Pipelines (2009).

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SCHEDULE F – PROTECTING BIODIVERSITY VALUES

Confirming Biodiversity Values

- (F1) Only low impact petroleum activities are permitted within matters of state environmental significance.
- (F2) 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.
- (F3) A suitably qualified person must develop and certify a methodology so that condition (F2) can be complied with and which is appropriate to confirm on-the-ground biodiversity values.
- (F4) Where mapped biodiversity values differ from those confirmed under conditions (F2) and (F3), petroleum activities may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity value.

Planning for Land Disturbance

- (F5) The location of the petroleum activities must be selected in accordance with the following site planning principles:
 - (a) maximise the use of areas of pre-existing disturbance
 - (b) in order of preference, avoid, minimise or mitigate any impacts, including cumulative impacts, on areas of native vegetation or other areas of ecological value
 - (c) minimise disturbance to land that may result in land degradation
 - (d) in order of preference, avoid then minimise isolation, fragmentation, edge effects or dissection of tracts of native vegetation; and
 - (e) in order of preference, avoid then minimise clearing of native mature trees.
- (F6) Linear infrastructure construction corridors must:
 - (a) maximise co-location
 - (b) be minimised in width to the greatest practicable extent; and
 - (c) for linear infrastructure that is an essential petroleum activity authorised in an Environmentally Sensitive Area or its protection zone, be no greater than 40m in total width.
- (F7) Petroleum activities are not permitted in Category A, B or C Environmentally Sensitive Areas.
- (F8) Essential petroleum activities may be undertaken in areas of pre-existing disturbance in the primary protection zones of Category B Environmentally Sensitive Areas that are 'endangered' regional ecosystems and Category C Environmentally Sensitive Areas other than 'nature refuges' or 'koala habitat' areas, providing those activities do not have a measurable negative impact on the adjacent Environmentally Sensitive Area.

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SCHEDULE G – PROTECTING WATER VALUES

Authorised Impacts to Waters

- (G1) Contaminants that, as a result of the authorised petroleum activities, will or have the potential to cause environmental harm must not be released directly or indirectly to any waters, except as permitted under the conditions of this environmental authority.
- (G2) The release of water affected by petroleum activities must only occur from the release point specified in *Schedule G, Table 4 - Water Release Points*.

Schedule G, Table 4 - Water Release Points

Release Point/ Monitoring Point	Coordinates (GDA94 MGA z54)		Source	Receiving Waters Description
	Easting	Northing		
Discharge Gully	S 25°32'37.79"	E 141°38'11.40"	Produced water and storm water collected in evaporation ponds	Unnamed Gully

- (G3) The release of water affected by petroleum activities from the release points must be monitored at the locations specified in *Schedule G, Table 4 - Water Release Points*, Sources and Receiving Waters for each quality characteristic and at the frequency specified in *Schedule G, Table 5 - Water Release Limits*.

Note: The administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition (G3) is contravened due to a temporary lack of safe or practical access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.

- (G4) The release of water in accordance with condition (B2) must not exceed the release limits for each quality characteristic at the monitoring frequency stated in *Schedule G, Table 5 - Water Release Limits* when measured at the monitoring point specified in *Schedule G, Table 4 - Water Release Points*.

Schedule G, Table 5 - Water Release Limits

Quality Characteristic	Release Limits	Monitoring Frequency
pH	6.0 (minimum) 9.0 (maximum)	Quarterly
Oil and Grease	No Visible Oil and Grease	
Total Dissolved Solids (mg/L)	4,000	

- (G5) Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build-up of sediment in such waters.
- (G6) In the event that the water quality within any evaporation pond does not comply with the quality characteristics specified in *Schedule G, Table 5 - Water Release Limits*, the holder of this environmental authority must implement measures to prevent access by all livestock and minimise access by fauna to the evaporation pond.

Stormwater and Water Sediment Controls

- (G7) An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the petroleum activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.
- (G8) Stormwater, other than water affected by petroleum activities, is permitted to be released to waters from erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition (G7).

SCHEDULE H – REHABILITATION

Rehabilitation Planning

- (H1) A Rehabilitation Plan must be developed by a suitably qualified person and must include the:
- (a) rehabilitation goals; and
 - (b) procedures to be undertaken for rehabilitation that will:
 - i. achieve the requirements of conditions (H1) to (H5), inclusive; and
 - ii. provide for appropriate monitoring and maintenance.

Transitional Rehabilitation

- (H2) Significantly disturbed areas that are no longer required for the on-going petroleum activities, must be rehabilitated within 12 months (unless an exceptional circumstance in the area to be rehabilitated (e.g. a flood event) prevents this timeframe being met) and be maintained to meet the following acceptance criteria:
- (a) contaminated land resulting from petroleum activities is remediated and rehabilitated
 - (b) the areas are:
 - i. non-polluting
 - ii. a stable landform
 - iii. re-profiled to contours consistent with the surrounding landform
 - (c) surface drainage lines are re-established
 - (d) top soil is reinstated; and
 - (e) either:
 - i. groundcover, that is not a declared pest species, is growing; or
 - ii. an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained.

Final Rehabilitation Acceptance Criteria

- (H3) All significantly disturbed areas caused by petroleum activities which are not being or intended to be utilised by the landholder or overlapping tenure holder, must be rehabilitated to meet the following final acceptance criteria measured either against the highest ecological value adjacent land use or the pre-disturbed land use:
- (a) greater than or equal to 70% of native ground cover species richness
 - (b) greater than or equal to the total per cent of ground cover
 - (c) less than or equal to the per cent species richness of declared plant pest species; and
 - (d) where the adjacent land use contains, or the pre-clearing land use contained, one or more regional ecosystem(s), then at least one regional ecosystem(s) from the same broad vegetation group, and with the equivalent biodiversity status or a biodiversity status with a higher conservation value as any of the regional ecosystem(s) in either the adjacent land or pre-disturbed land, must be present.

Continuing Conditions

- (H4) Conditions (H2) and (H3) continue to apply after this environmental authority has ended or ceased to have effect.

Remaining Dams

- (H5) Where there is a dam (including a low consequence dam) that is being or intended to be utilised by the landholder or overlapping tenure holder, the dam must be decommissioned to no longer accept inflow from the petroleum activity(ies) and the contained water must be of a quality suitable for the intended on-going uses(s) by the landholder or overlapping tenure holder.

SCHEDULE I – DAMS

- (I1) Any dam or evaporation pond containing hazardous waste within the operational land must comply with *Schedule I, Table 8 - Size and Purpose of Dam or Evaporation Pond Containing Hazardous Waste*.

Schedule I, Table 8 - Size and Purpose of Dam or Evaporation Pond Containing Hazardous Waste

Name of Dam / Evaporation Pond Containing Hazardous Waste ⁽¹⁾	Maximum Surface Area of Dam / Evaporation Pond (HA)	Maximum Volume of Dam / Evaporation Pond (ML)	Maximum Depth of Dam / Evaporation Pond (M) ⁽²⁾	Purpose of Dam / Evaporation Pond ⁽³⁾
Interceptor Pond 1	0.09	1.1	2.5	To skim free oil from production water
Evaporation Pond 2	0.4	1.5	3	Holding pond for further oil removal
Evaporation Pond 3	0.32	1	2	
Evaporation Pond 4	0.4	4.57	3	

Note ⁽¹⁾ The name of the dam or evaporation pond containing hazardous waste should refer to the name of the dam/evaporation pond e.g. process residue facility or evaporation pond 1A.

Note ⁽²⁾ For dams / evaporation ponds that do not require a dam wall, input the maximum void depth e.g. where dams / evaporation ponds are formed by excavating below the land surface.

Note ⁽³⁾ Purpose of the dam / evaporation pond should outline the designed function, e.g. 'the permanent containment of associated water resulting from the petroleum processing facility at the XYZ Petroleum Refinery'.

- (I2) Any dam or evaporation pond containing hazardous waste constructed or operated within the operational land must be located within the control points defined in *Schedule I, Table 9 - Location of Dams/Evaporation Ponds Containing Hazardous Waste*.

Schedule I, Table 9 - Location of Dams/Evaporation Ponds Containing Hazardous Waste

Name of Dam / Evaporation Pond Containing Hazardous Waste ⁽¹⁾	Latitude ⁽⁴⁾ (GDA 94)	Longitude ⁽⁴⁾ (GDA 94)
Interceptor Pond 1	S 25° 33' 07" / S 25° 33' 07" / S 25° 33' 06"	E 141° 38' 06" / E 141° 38' 08" / E 141° 38' 11"
Evaporation Pond 2	S 25° 31' 54" / S 25° 33' 05" / S 25° 33' 06"	E 141° 38' 12" / E 141° 38' 15" / E 141° 38' 16"
Evaporation Pond 3	S 25° 33' 06" / S 25° 33' 07" / S 25° 33' 05"	E 141° 38' 11" / E 141° 38' 15" / E 141° 38' 16"
Evaporation Pond 4	S 25° 32' 37.2" / S 25° 32' 37.5" / S 25° 32' 37.9" / S 25° 32' 38.5"	E 141° 38' 09.1" / E 141° 38' 11.3" / E 141° 38' 08.8" / E 141° 38' 11.0"

Note ⁽⁴⁾ A minimum of 3 control points is required to constrain the location of all activities associated with the dam / evaporation pond containing hazardous waste. Additional infrastructure which forms part of any dam / evaporation pond containing hazardous waste may include seepage collection systems, runoff diversion bunds, containment systems, pressure relief wells, decant and recycle water systems.

- (13) The holder of the environmental authority must design, construct and operate all high-hazard dams containing hazardous waste in accordance with the *Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste*.
- (14) The holder of the environmental authority for all high hazard dams must decommission the dams such that they are stable, cannot store water, and do not give rise to leachates where after they will be considered a landform which must comply with the rehabilitation requirements defined herein.
- (15) The holder of the environmental authority must design, construct, operate, maintain and decommission all low-hazard dams and evaporation ponds in accordance with the criteria outlined in Appendix B of the *Code of Environmental Compliance for Petroleum Exploration and Production*.

AD

SCHEDULE J – WELL CONSTRUCTION AND MAINTENANCE

Drilling Activities

- (J1) Oil based or synthetic based drilling muds must not be used in the carrying out of the petroleum activities.
- (J2) Drilling activities must not result in the connection of the target oil producing formation and another aquifer.
- (J3) Practices and procedures must be in place to detect, as soon as practicable, any fractures that have or may result in the connection of a target formation and another aquifer as a result of drilling activities.
- (J4) Polycyclic aromatic hydrocarbons or products that contain polycyclic aromatic hydrocarbons must not be used in stimulation fluids in concentrations above the reporting limit.
- (J5) Stimulation activities must not negatively affect water quality, other than that within the stimulation impact zone of the target oil producing formation.
- (J6) Stimulation activities must not cause the connection of the target oil producing formation and another aquifer.
- (J7) The internal and external mechanical integrity of the well system prior to and during stimulation must be ensured such that there is:
 - (a) no significant leakage in the casing, tubing, or packer; and
 - (b) no significant fluid movement into another aquifer through vertical channels adjacent to the well bore hole.
- (J8) Practices and procedures must be in place to detect, as soon as practicable, any fractures that cause the connection of a target oil producing formation and another aquifer.

Stimulation Risk Assessment

- (J9) Prior to undertaking stimulation activities, a risk assessment must be developed to ensure that stimulation activities are managed to prevent environmental harm.
- (J10) The stimulation risk assessment must be carried out for every well to be stimulated prior to stimulation being carried out at that well and address issues at a relevant geospatial scale such that changes to features and attributes are adequately described and 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 oil 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 oil producing formation
 - (h) identification and proximity of landholder' active groundwater bores in the area where stimulation activities are to be carried out
 - (i) the environmental values of groundwater in the area

- (j) an assessment of the appropriate limits of reporting for all water quality indicators relevant to stimulation monitoring in order to accurately assess the risks to environmental values of groundwater
- (k) description of overlying and underlying formations in respect of porosity, permeability, hydraulic conductivity, faulting and fracture propensity
- (l) consideration of barriers or known direct connections between the target oil producing formation and the overlying and underlying aquifers
- (m) a description of the well mechanical integrity testing program
- (n) process control and assessment techniques to be applied for determining extent of stimulation activities (e.g. microseismic measurements, modelling etc.)
- (o) practices and procedures to ensure that the stimulation activities are designed to be contained within the target oil producing formation
- (p) groundwater transmissivity, flow rate, hydraulic conductivity and direction(s) of flow
- (q) a description of the chemical compounds used in stimulation activities (including estimated total mass, estimated composition, chemical abstract service numbers and properties), their mixtures and the resultant compounds that are formed after stimulation
- (r) a mass balance estimating the concentrations and absolute masses of chemical compounds that will be reacted, returned to the surface or left in the target oil producing formation subsequent to stimulation
- (s) an environmental hazard assessment of the chemicals used including their mixtures and the resultant chemicals that are formed after stimulation including:
 - i. toxicological and ecotoxicological information of chemical compounds used
 - ii. information on the persistence and bioaccumulation potential of the chemical compounds used; and
 - iii. identification of the chemicals of potential concern in stimulation fluids derived from the risk assessment
- (t) an environmental hazard assessment of use, formation of, and detection of polycyclic aromatic hydrocarbons in stimulation activities
- (u) identification and an environmental hazard assessment of using radioactive tracer beads in stimulation activities
- (v) an environmental hazard assessment of leaving chemical compounds in stimulation fluids in the target oil producing formation for extended periods subsequent to stimulation
- (w) human health exposure pathways to operators and the regional population
- (x) risk characterisation of environmental impacts based on the environmental hazard assessment
- (y) potential impacts to landholder bores as a result of stimulation activities
- (z) an assessment of cumulative underground impacts, spatially and temporally of the stimulation activities to be carried out on the tenures covered by this environmental authority; and
- (aa) 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.

Water Quality Baseline Monitoring

- (J11) Prior to undertaking any stimulation activity, a baseline bore assessment must be undertaken of the water quality of:
- (a) all landholder's active groundwater bores (subject to access being permitted by the landholder) that are spatially located within a two (2) kilometre horizontal radius from the location of the stimulation initiation point within the target oil producing formation; and
 - (b) all landholders' active groundwater bores (subject to access being permitted by the landholder) in any aquifer that is within 200m above or below the target oil producing formation and is spatially located with a two (2) kilometre radius from the location of the stimulation initiation point; and
 - (c) any other bore that could potentially be adversely impacted by the stimulation activities in accordance with the findings of the risk assessment required by conditions (J9) and (J10).
- (J12) Prior to undertaking stimulation activities at a well, there must be sufficient water quality data to accurately represent the water quality in the well to be stimulated. The data must include as a minimum the results of analyses for the parameters in condition (J13).
- (J13) 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 [$\mu\text{S/m}$]
 - (c) turbidity [NTU]
 - (d) total dissolved solids [mg/L]
 - (e) temperature [$^{\circ}\text{C}$]
 - (f) dissolved oxygen [mg/L]
 - (g) dissolved gases (methane, chlorine, carbon dioxide, hydrogen sulfide) [mg/L]
 - (h) alkalinity (bicarbonate, carbonate, hydroxide and total as CaCO_3) [mg/L]
 - (i) sodium adsorption ratio (SAR)
 - (j) anions (bicarbonate, carbonate, hydroxide, chloride, sulphate) [mg/L]
 - (k) cations (aluminium, calcium, magnesium, potassium, sodium) [mg/L]
 - (l) dissolved and total metals and metalloids (including but not necessarily being limited to: aluminium, arsenic, barium, borate (boron), cadmium, total chromium, copper, iron, fluoride, lead, manganese, mercury, nickel, selenium, silver, strontium, tin and zinc) [$\mu\text{g/L}$]
 - (m) total petroleum hydrocarbons [$\mu\text{g/L}$]
 - (n) BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para- and meta-xylene, and total xylene) [$\mu\text{g/L}$]
 - (o) polycyclic aromatic hydrocarbons (including but not necessarily being limited to: naphthalene, phenanthrene, benzo[a]pyrene) [$\mu\text{g/L}$]
 - (p) sodium hypochlorite [mg/L]
 - (q) sodium hydroxide [mg/L]
 - (r) formaldehyde [mg/L]
 - (s) ethanol [mg/L]; and
 - (t) gross alpha + gross beta or radionuclides by gamma spectroscopy [Bq/L].

Stimulation Impact Monitoring Program

- (J14) A Stimulation Impact Monitoring Program must be developed prior to the carrying out of stimulation activities which must be able to detect adverse impacts to water quality from stimulation activities and must consider the findings of the risk assessment required by conditions (J9) and (J10) that relate to stimulation activities and must include, as a minimum, monitoring of:
- (a) the stimulation fluids to be used in stimulation activities at sufficient frequency and which sufficiently represents the quantity and quality of the fluids used
 - (b) flow back waters from stimulation activities at sufficient frequency and which sufficiently represents the quality of that flow back water
 - (c) flow back waters from stimulation activities at sufficient frequency and accuracy to demonstrate that 150% of the volume used in stimulation activities has been extracted from the stimulated well; and
 - (d) all bores in accordance with condition (J11).
- (J15) 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 (J13); 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.
- (J16) The Stimulation Impact Monitoring Program must provide for monitoring of the bores in condition (J14) at the following minimum frequency:
- (a) monthly for the first six months subsequent to stimulation activities being undertaken; then
 - (b) annually for the first five years subsequent to stimulation being undertaken or until analytes and physico-chemical parameters listed in conditions (J13(a)) to (J13(t)) inclusive, are not detected in concentrations above baseline bore monitoring data on two consecutive monitoring occasions.
- (J17) The results of the Stimulation Impact Monitoring Program must be made available to any potentially affected landholder upon request by that landholder.

SCHEDULE K - DEFINITIONS

Where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations and Environmental Protection Policies, then the *Acts Interpretation Act 1954*, then the Macquarie Dictionary, then the *Petroleum and Gas (Production and Safety) Act 2004* or its regulations, must be used in that order.

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.
acid sulfate soil(s)	means a soil or soil horizon which contains sulfides or an acid soil horizon affected by oxidation of sulfides.
adjacent land use(s)	means the ecosystem function adjacent to an area of significant disturbance, or where there is no ecosystem function, the use of the land. An adjacent land use does not include an adjacent area that shows evidence of edge effect.
administering authority	means: (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the <i>Environmental Protection Act 1994</i>—the local government; or (b) for all other matters—the Chief Executive of the Department of Environment and Heritage Protection; or (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.
alternative arrangement	means a written agreement about the way in which a particular environmental nuisance impact will be dealt with at a sensitive place, and may include an agreed period of time for which the arrangement is in place. An alternative arrangement may include, but is not limited to, a range of nuisance abatement measures to be installed at the sensitive place, or provision of alternative accommodation for the duration of the relevant nuisance impact.
annual return period	means the most current 12-month period between two anniversary dates.
appraisal well	means a petroleum well to test the potential of one (1) or more natural underground reservoirs for producing or storing petroleum. For clarity, an appraisal well does not include an exploration well.

approved quality
criteria

for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards:

Part A In all cases:

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

*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:

Parameter	Maximum concentration
Arsenic	20mg/kg
Selenium	5mg/kg
Boron	100mg/kg
Cadmium	3mg/kg
Chromium (total)	400mg/kg
Copper	100mg/kg
Lead	600mg/kg

The limits in Part B and Part C refer to the post soil/by-product mix.

Part C If a hydrocarbon sheen is visible, the following hydrocarbon fractions:

TPH	Maximum concentration
C6-C10	170mg/kg
C10-C16	150mg/kg
C16-C34	1300mg/kg
C34-C40	5600mg/kg
Total Polycyclic Aromatic Hydrocarbons (PAHs)	20mg/kg
Phenols (halogenated)	1mg/kg

	Phenols (non-halogenated)	60mg/kg
	Monocyclic aromatic hydrocarbons (Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene)	7mg/kg
	Benzene	1mg/kg
areas of pre-existing disturbance	means areas where environmental values have been negatively impacted as a result of anthropogenic activity and these impacts are still evident. Areas of pre-disturbance may include areas where legal clearing, logging, timber harvesting, or grazing activities have previously occurred, where high densities of weed or pest species are present which have inhibited re-colonisation of native regrowth, or where there is existing infrastructure (regardless of whether the infrastructure is associated with the authorised petroleum activities). The term 'areas of pre-disturbance' does not include areas that have been impacted by wildfire/s, controlled burning, flood or natural vegetation die-back.	
associated water	means underground water taken or interfered with, if the taking or interference happens during the course of, or results from, the carrying out of another authorised activity under a petroleum authority, such as a petroleum well, and includes waters also known as produced formation water. The term includes all contaminants suspended or dissolved within the water.	
associated works	in relation to a dam, means: (a) operations of any kind and all things constructed, erected or installed for that dam; and (b) any land used for those operations.	
Australian Standard 3580	means any of the following publications: - AS3580.10.1 Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter—Gravimetric method. - AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 high volume sampler with size-selective inlet—Gravimetric method - AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 low volume sampler—Gravimetric sampler.	
authorised resource activities	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% of the measurement time period T of not less than 15 minutes (or $L_{A,90,adj, 15 mins}$), using Fast response.	
bankfull	means the channel flow rate that exists when the water is at the elevation of the channel bank above which water begins to spill out onto the floodplain. The term describes the condition of the channel relative to its banks (e.g. overbank, in-bank, bankfull, low banks,	

	high bank).
bed	of any waters, has the meaning in Schedule 12 of the <i>Environmental Protection Regulation 2008</i> and— (a) includes an area covered, permanently or intermittently, by tidal or non-tidal waters; but (b) does not include land adjoining or adjacent to the bed that is from time to time covered by floodwater.
being or intended to be utilised by the landholder or overlapping tenure holder	for significantly disturbed land, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use of the land such that rehabilitation standards for revegetation by the holder of the environmental authority are not required. For dams, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use for the dam such that rehabilitation standards for revegetation by the holder of the environmental authority are not required.
biodiversity values	for the purposes of this environmental authority, means Environmentally Sensitive Areas, prescribed environmental matters and wetlands.
BTEX	means benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene and total xylene.
Category A Environmentally Sensitive Area	means any area listed in Schedule 12, section 1 of the <i>Environmental Protection Regulation 2008</i> .
Category B Environmentally Sensitive Area	means any area listed in Schedule 12, section 2 of the <i>Environmental Protection Regulation 2008</i> .
Category C Environmentally Sensitive Area	means any of the following areas: • nature refuges as defined in the conservation agreement for that refuge under the <i>Nature Conservation Act 1992</i> • koala habitat areas as defined under the Nature Conservation (Koala) Conservation Plan 2006 • state forests or timber reserves as defined under the <i>Forestry Act 1959</i> • regional parks (previously known as resource reserves) under the <i>Nature Conservation Act 1992</i> • an area validated as 'essential habitat' or 'essential regrowth habitat' from ground-truthing surveys in accordance with the <i>Vegetation Management Act 1999</i> for a species of wildlife listed as endangered or vulnerable under the <i>Nature Conservation Act 1992</i> • 'of concern regional ecosystems' that are remnant vegetation and identified in the database called 'RE description database' containing regional ecosystem numbers and descriptions.

Date Granted – 16 February 2016

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certified or certification	in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding dams means, a Statutory Declaration by a suitably qualified person or suitably qualified third party accompanying the written document stating: - the person's qualifications and experience relevant to the function - that the person has not knowingly included false, misleading or incomplete information in the document - that the person has not knowingly failed to reveal any relevant information or document to the administering authority - that the document addresses the relevant matters for the function and is factually correct; and - that the opinions expressed in the document are honestly and reasonably held.
clearing	has the meaning in the dictionary of the <i>Vegetation Management Act 2000</i> and for vegetation— (a) means remove, cut down, ringbark, push over, poison or destroy in any way including by burning, flooding or draining; but (b) does not include destroying standing vegetation by stock, or lopping a tree.
closed-loop systems	means using waste on site in a way that does not release waste or contaminants in the waste to the environment.
control measure	has the meaning in section 47 of the <i>Environmental Protection Regulation 2008</i> and means a device, equipment, structure, or management strategy used to prevent or control the release of a contaminant or waste to the environment.
daily peak design capacity	for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the <i>Environmental Protection Regulation 2008</i> as the higher equivalent person (EP) for the works calculated using each of the formulae found in the definition for EP.
dam(s)	means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works.
design storage allowance or DSA	means an available volume, estimated in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635), published by the administering authority, as amended from time to time, that must be provided in a dam to an annual exceedance probability specified in that Manual.
development wells	means a petroleum well which produces or stores petroleum. For clarity, a development well does not include an appraisal well.
document	has the meaning in the <i>Acts Interpretation Act 1954</i> and means: - any paper or other material on which there is writing; and - any paper or other material on which there are marks; and - figures, symbols or perforations having a meaning for a person qualified to interpret them; and - any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of

	another article or device).
ecosystem function	means the interactions between and within living and nonliving components of an ecosystem and generally correlates with the size, shape and location of the vegetation community.
environmental harm	has the meaning in section 14 of the <i>Environmental Protection Act 1994</i> and means any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value, and includes environmental nuisance. Environmental harm may be caused by an activity— (a) whether the harm is a direct or indirect result of the activity; or (b) whether the harm results from the activity alone or from the combined effects of the activity and other activities or factors.
environmental nuisance	has the meaning in section 15 of the <i>Environmental Protection Act 1994</i> and means unreasonable interference or likely interference with an environmental value caused by— (a) aerosols, fumes, light, noise, odour, particles or smoke; or (b) an unhealthy, offensive or unsightly condition because of contamination; or (c) another way prescribed by regulation.
Environmentally Sensitive Area	means Category A, B or C Environmentally Sensitive Areas (ESAs)
equivalent person or EP	has the meaning under section 3 of the Planning Guidelines For Water Supply and Sewerage, 2005, published by the Queensland Government. It is calculated in accordance with Schedule 2, section 63(4) of the <i>Environmental Protection Regulation 2008</i> where: • $EP = V/200$ where V is the volume, in litres, of the average dry weather flow of sewage that can be treated at the works in a day; or • $EP = M/2.5$ where M is the mass, in grams, of phosphorus in the influent that the works are designed to treat as the inlet load in a day.
essential petroleum activities	means activities that are essential to bringing the resource to the surface and are only the following: • low impact petroleum activities • geophysical, geotechnical, geological, topographic and cadastral surveys (including seismic, sample /test / geotechnical pits, core holes) • single well sites not exceeding 1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance • well sites with monitoring equipment (including monitoring bores): ○ for single well sites, not exceeding 1.25 hectares disturbance ○ for multi-well sites, not exceeding 1.75 hectares disturbance • well sites with monitoring equipment (including monitoring bores) and tanks (minimum 1 ML) for above ground fluid storage:

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	○ for single well sites, not exceeding 1.5 hectares disturbance ○ for multi-well sites, not exceeding 2.0 hectares disturbance • associated infrastructure located on a well site necessary for the construction and operations of wells: ○ water pumps and generators ○ flare pits ○ chemical / fuel storages ○ sumps for residual drilling material and drilling fluids ○ tanks, or dams which are not significant or high consequence dams to contain wastewater (e.g. stimulation flow back waters, produced water) ○ pipe laydown areas ○ soil and vegetation stockpile areas ○ a temporary camp associated with a drilling rig that may involve sewage treatment works that are no release works ○ temporary administration sites and warehouses ○ dust suppression activities using water that meets the quality and operational standards approved under the environmental authority • communication and power lines that are necessary for the undertaking of petroleum activities and that are located within well sites, well pads and pipeline right of ways without increasing the disturbance area of petroleum activities • supporting access tracks • gathering / flow pipelines from a well head to the initial compression facility • activities necessary to achieve compliance with the conditions of the environmental authority in relation to another essential petroleum activity (e.g. sediment and erosion control measures, rehabilitation).
exploration well	means a petroleum well that is drilled to: • explore for the presence of petroleum or natural underground reservoirs suitable for storing petroleum; or • obtain stratigraphic information for the purpose of exploring for petroleum. For clarity, an exploration well does not include an appraisal or development well.
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.
GDA	means Geocentric Datum of Australia.
Great Artesian Basin (GAB) spring	means an area protected under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> because it is considered to be a Matter of National Environmental Significance and identified as a: • community of native species dependent on natural discharge of groundwater from the Great Artesian Basin; or

	- Great Artesian Basin spring; or - Great Artesian Basin discharge spring wetland. A GAB spring includes a spring vent, spring complex or watercourse spring and includes the land to which water rises naturally from below the ground and the land over which the water then flows. <i>Note: The Australian Government's Protected Matters Search Tool should be used to get an indication of whether the area of interest may contain an MNES spring.</i> <i>Note: The GAB springs dataset can be requested from the Queensland Government Herbarium</i>
green waste	means waste that is grass cuttings, trees, bushes, shrubs, material lopped from trees, untreated timber or other waste that is similar in nature but does not include declared pest species.
greywater	means wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Greywater does not include sewage.
groundwater dependent ecosystem (GDE)	means ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services. For the purposes of the environmental authority, groundwater dependent ecosystems do not include those mapped as "unknown".
growing	means to increase by natural development, as any living organism or part thereof by assimilation of nutriment; increase in size or substance.
hydraulic integrity	refers to the capacity of a dam to contain or safely pass flowable substances based on its design.
impacts to prescribed environmental matters	means to have a negative effect on a prescribed environmental matter. Examples may include, but are not necessarily limited to: - clearing, removal or fragmentation of vegetation - interference or disturbance of fauna habitat.
impulsive (for noise)	means sound characterised by brief excursions of sound pressure (acoustic impulses) that significantly exceed the background sound pressure. The duration of a single impulsive sound is usually less than one second.
$L_{A 90, \text{adj, 15 mins}}$	means the A-weighted sound pressure level, adjusted for tonal character that is equal to or exceeded for 90% of any 15 minutes sample period equal, using Fast response.
$L_{Aeq, \text{adj, 15 mins}}$	means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within any 15 minute period has the same square sound pressure as a sound level that varies with time.
land degradation	has the meaning in the <i>Vegetation Management Act 1999</i> and means the following: - soil erosion - rising water tables

	- the expression of salinity - mass movement by gravity of soil or rock - stream bank instability - a process that results in declining water quality.
landholder's active groundwater bore	means bores that are able to continue to provide a reasonable yield of water in terms of quantity for the bores authorised purpose or use. This term does not include monitoring bores owned by the administering authority of the <i>Water Act 2000</i> .
linear infrastructure	means powerlines, pipelines, flowlines, roads and access tracks.
liquid	means a substance which is flowing and offers no permanent resistance to changes of shape.
long term noise event	means a noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five (5) days, even when there are respite periods when the noise is inaudible within those five (5) days.
low consequence dam	means any dam that is not classified as high or significant as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, published by the administering authority, as amended from time to time.
low impact petroleum activities	means petroleum activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation or result in significant disturbance to land which cannot be rehabilitated immediately using hand tools after the activity is completed. Examples of such activities include but are not necessarily limited to soil surveys (excluding test pits), topographic surveys, cadastral surveys and ecological surveys, may include installation of monitoring equipment provided that it is within the meaning of low impact and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.
Map of referable wetlands	has the meaning in Schedule 12 of the <i>Environmental Protection Regulation 2008</i> and means the 'Map of referable wetlands', a document approved by the chief executive on 4 November 2011 and published by the department, as amended from time to time by the chief executive under section 144D.
Matters of state environmental significance	have the meaning in Schedule 2 of the <i>Environmental Offsets Regulation 2014</i> .
Max $L_{pA, 15 \text{ min}}$	means the absolute maximum instantaneous A-weighted sound pressure level, measured over 15 minutes.
Max $L_{pZ, 15 \text{ min}}$	means the maximum value of the Z-weighted sound pressure level measured over 15 minutes.
medium term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than five (5) days and does not re-occur for a period of at least four (4) weeks. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a difference source or source location.

methodology	means the science of method, especially dealing with the logical principles underlying the organisation of the various special sciences, and the conduct of scientific inquiry.
mix-bury-cover method	means the stabilisation of residual drilling solids in the bottom of a sump by mixing with subsoil and which occurs in accordance with the following methodology: - the base of the subsoil and residual solid mixture must be separated from the groundwater table by at least one metre of a continuous layer of impermeable subsoil material ($k_w=10-8\text{m/s}$) or subsoil with a clay content of greater than 20%; and - the residual solids is mixed with subsoil in the sump and cover; and - the subsoil and residual solids is mixed at least three parts subsoil to one part waste (v/v); and - a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and - topsoil is replaced.
month	has the meaning in the <i>Acts Interpretation Act 1954</i> and means a calendar month and is a period starting at the beginning of any day of one (1) of the 12 named months and ending— - immediately before the beginning of the corresponding day of the next named month; or - if there is no such corresponding day—at the end of the next named month.
NATA accreditation	means accreditation by the National Association of Testing Authorities Australia.
petroleum activity	means an authorised resource activity listed under the heading "Petroleum activities" in Table 1 – Authorised Petroleum Activities.
pipeline waste water	means hydrostatic testing water, flush water or water from low point drains.
pre-disturbed land use	means the function or use of the land as documented prior to significant disturbance occurring at that location.
predominant species	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means a species that contributes most to the overall above-ground biomass of a particular stratum.
prescribed contaminants	has the meaning in section 440ZD of the <i>Environmental Protection Act 1994</i> and means: (a) earth; or (b) a contaminant prescribed under section 440ZF.
primary protection zone	means an area within 200m from the boundary of any Category A, B or C ESA.
produced water	has the meaning in section 15A of the <i>Petroleum and Gas (Production and Safety) Act 2004</i> and means CSG water or associated water for a petroleum tenure.

protection zone	means the primary protection zone of any Category A, B or C ESA or the secondary protection zone of any Category A or B ESA.
regional ecosystem	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil. Regional ecosystems of Queensland were originally described in Sattler and Williams (1999). The Regional Ecosystem Description Database (Queensland Herbarium 2013) is maintained by Queensland Herbarium and contains the current descriptions of regional ecosystems.
regulated dam	means any dam in the significant or high consequence category as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635), published by the administering authority, as amended from time to time.
rehabilitation or rehabilitated	means the process of reshaping and revegetating land to restore it to a stable landform and in accordance with acceptance criteria and, where relevant, includes remediation of contaminated land. For the purposes of pipeline rehabilitation, rehabilitation includes reinstatement, revegetation and restoration.
reinstate or reinstatement	for pipelines, means the process of bulk earth works and structural replacement of pre-existing conditions of a site (i.e. soil surface topography, watercourses, culverts, fences and gates and other landscape(d) features) and is detailed in the Australian Pipeline Industry Association (APIA) Code of Environmental Practice: Onshore Pipelines (2013).
reporting limit	means the lowest concentration that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes, the reporting limit is selected as the lowest non-zero standard in the calibration curve. Results that fall below the reporting limit will be reported as "less than" the value of the reporting limit. The reporting limit is also referred to as the practical quantitation limit or the limit of quantitation. For polycyclic aromatic hydrocarbons, the reporting limit must be based on super-ultra trace methods and, depending on the specific polycyclic aromatic hydrocarbon, will range between 0.005 ug/L–0.02 ug/L.
residual drilling material	means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.
restoration	means the replacement of structural habitat complexity, ecosystem processes, services and function from a disturbed or degraded site to that of a pre-determined or analogue site. For the purposes of pipelines, restoration applies to final rehabilitation after pipeline decommissioning.
restricted stimulation fluids	has the meaning in section 206 of the <i>Environmental Protection Act 1994</i> and means fluids used for the purpose of stimulation, including fracturing, that contain the following chemicals in more than the maximum amount prescribed under a regulation— (a) petroleum hydrocarbons containing benzene, ethylbenzene, toluene or xylene (b) chemicals that produce, or are likely to produce, benzene, ethylbenzene, toluene or xylene as the chemical breaks down in the environment.
revegetation or revegetating or revegetate	means to actively re-establish vegetation through seeding or planting techniques in accordance with site specific management plans.

secondary protection zone	in relation to a Category A or Category B ESA means an area within 100 metres from the boundary of the primary protection zone.
secondary treated class A standards	means treated sewage effluent or greywater which meets the following standards: • total phosphorous as P, maximum 20mg/L • total nitrogen as N, maximum 30mg/L • 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L • suspended solids, maximum 30mg/L • pH, range 6.0 to 8.5 • e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 100cfu per 100mL, maximum 1000cfu per 100mL.
secondary treated class B standards	means treated sewage effluent or greywater which meets the following standards: • total phosphorous as P, maximum 20mg/L • total nitrogen as N, maximum 30mg/L • 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L • suspended solids, maximum 30mg/L • pH, range 6.0 to 8.5 • e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 1000cfu per 100mL, maximum 10 000cfu per 100mL.
secondary treated class C standards	means treated sewage effluent or greywater which meets the following standards: • total phosphorous as P, maximum 20mg/L • total nitrogen as N, maximum 30mg/L • 5-day biochemical oxygen demand (inhibited) (e.g. Release pipe from sewage treatment plant), maximum 20mg/L • suspended solids, maximum 30mg/L • pH, range 6.0 to 8.5 • e-Coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 10 000cfu per 100mL, maximum 100 000cfu per 100mL.
sensitive place	means: • a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel) • a library, childcare centre, kindergarten, school, university or other educational institution • a medical centre, surgery or hospital • a protected area • a public park or garden that is open to the public (whether or not on payment of

	money) for use other than for sport or organised entertainment • a work place used as an office or for business or commercial purposes, which is not part of the petroleum activity(ies) and does not include employees accommodation or public roads • for noise, a place defined as a sensitive receptor for the purposes of the <i>Environmental Protection (Noise) Policy 2008</i>.
sensitive receptor	is defined in Schedule 2 of the <i>Environmental Protection (Noise) Policy 2008</i> , and means an area or place where noise is measured.
short term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven (7) days. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.
significantly disturbed or significant disturbance or significant disturbance to land or areas	has the meaning in Schedule 12, section 4 of the <i>Environmental Protection Regulation 2008</i>. Land is significantly disturbed if— (a) it is contaminated land; or (b) it has been disturbed and human intervention is needed to rehabilitate it— (i) to a condition required under the relevant environmental authority; or (ii) if the environmental authority does not require the land to be rehabilitated to a particular condition—to the condition it was in immediately before the disturbance.
Specified relevant activity	means an activity that: (a) but for being carried out as a resource activity, would otherwise be a prescribed ERA; (b) stimulation activities; (c) point source discharge of treated produced water to surface waters; (d) storing waste that is not regulated waste (including coal seam gas water) in a regulated dam; or (e) storing coal seam gas water that is not regulated waste in a low hazard dam; or (f) borrow pits or quarries that extract more than 5000 tonnes of material in the project area.
species richness	means the number of different species in a given area.
stable	has the meaning in Schedule 5 of the <i>Environmental Protection Regulation 2008</i> and, for a site, means the rehabilitation and restoration of the site is enduring or permanent so that the site is unlikely to collapse, erode or subside.
statement of compliance	for a condition in an environmental authority has the meaning in section 208 of the <i>Environmental Protection Act 1994</i> and is a condition that requires the holder to give the administering authority a statement of compliance about a document or work relating to a relevant activity. The condition must also state— (a) the criteria (the compliance criteria) the document or work must comply with; and (b) that the statement of compliance must state whether the document or work complies

	with the compliance criteria; and (c) the information (the supporting information) that must be provided to the administering authority to demonstrate compliance with the compliance criteria; and (d) when the statement of compliance and supporting information must be given to the administering authority.
stimulation	means a technique used to increase the permeability of natural underground reservoir that is undertaken above the formation pressure and involves the addition of chemicals. It includes hydraulic fracturing / hydrofracking, fracture acidizing and the use of proppant treatments. Explanatory note: This definition is restricted from that in the <i>Petroleum and Gas (Production and Safety) Act 2004</i> in order to only capture the types of stimulation activities that pose a risk to environmental values of water quality in aquifers.
stimulation fluid	means the fluid injected underground to increase permeability. For clarity, the term stimulation fluid only applies to fluid injected down well post-perforation.
stimulation impact zone	means a 100m maximum radial distance from the stimulation target location within a producing formation.
structure	means a dam or levee.
subterranean cave GDE	- means an area identified as a subterranean cave in the mapping produced by the Queensland Government and identified in the Queensland Government Information System, as amended from time to time; and - means a cave ecosystem which requires access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain its communities of plants and animals, ecological processes and ecosystem services. Subterranean cave GDEs are caves dependent on the subterranean presence of groundwater. Subterranean cave GDEs have some degree of groundwater connectivity and are indicated by either high moisture levels or the presence of stygofauna, or both, referred to in the Queensland Government WetlandsInfo mapping program, as amended from time to time. <i>Note: the Subterranean GDE (caves) dataset can be displayed through the Queensland Government WetlandInfo mapping program.</i> <i>Note: the Subterranean GDE (caves) dataset can be obtained from the Queensland Government Information System.</i>
suitably qualified person	means a person who has professional qualifications, training or skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis about performance relevant to the subject matters using relevant protocols, standards, methods or literature.
suitably qualified third party	means a person who: (a) has qualifications and experience relevant to performing the function including but not limited to: - a bachelor's degree in science or engineering; and 3 years' experience in undertaking soil contamination assessments; and (b) is a member of at least one organisation prescribed in Schedule 8 of the-

	<i>Environmental Protection Regulation 2008</i>; and (c) not be an employee of, nor have a financial interest or any involvement which would lead to a conflict of interest with the holder(s) of the environmental authority.
sump	means a pit in which waste residual drilling material or drilling fluids are stored only for the duration of drilling activities.
synthetic based drilling mud	means a mud where the base fluid is a synthetic oil, consisting of chemical compounds which are artificially made or synthesised by chemically modifying petroleum components or other raw materials rather than the whole crude oil.
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.
transmissivity	means the rate of flow of water through a vertical strip of aquifer which is one unit wide and which extends the full saturated depth of the aquifer.
valid complaint	means all complaints unless considered by the administering authority to be frivolous, vexatious or based on mistaken belief.
void	means any constructed, open excavation in the ground.
waste and resource management hierarchy	has the meaning provided in section 9 of the <i>Waste Reduction and Recycling Act 2011</i> and is the following precepts, listed in the preferred order in which waste and resource management options should be considered— (a) AVOID unnecessary resource consumption (b) REDUCE waste generation and disposal (c) RE-USE waste resources without further manufacturing (d) RECYCLE waste resources to make the same or different products (e) RECOVER waste resources, including the recovery of energy (f) TREAT waste before disposal, including reducing the hazardous nature of waste (g) DISPOSE of waste only if there is no viable alternative.
waste and resource management principles	has the meaning provided in section 4(2)(b) of the <i>Waste Reduction and Recycling Act 2011</i> and means the: (a) polluter pays principle (b) user pays principle (c) proximity principle (d) product stewardship principle.
waste fluids	has the meaning in section 13 of the <i>Environmental Protection Act 1994</i> in conjunction with the common meaning of "fluid" which is "a substance which is capable of flowing and offers no permanent resistance to changes of shape". Accordingly, to be a waste fluid, the waste must be a substance which is capable of flowing and offers no permanent resistance to changes of shape.

watercourse	has the meaning in Schedule 4 of the <i>Environmental Protection Act 1994</i> and means: 1) a river, creek or stream in which water flows permanently or intermittently— (a) in a natural channel, whether artificially improved or not; or (b) in an artificial channel that has changed the course of the watercourse. 2) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.
waters	includes all or any part of a creek, river, stream, lake, lagoon, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.
well integrity	the ability of a well to contain the substances flowing through it.
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 <i>Environmental Protection Regulation 2008</i>; and • areas defined under the Queensland Wetlands Program as permanent or periodic / intermittent inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six (6) metres, and possess one or more of the following attributes: ○ at least periodically, the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle, or ○ the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers, or ○ the substratum is not soil and is saturated with water, or covered by water at some time. The term wetland includes riverine, lacustrine, estuarine, marine and palustrine wetlands; and it does not include a 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.

END OF ENVIRONMENTAL AUTHORITY

