

Permit

Environmental Protection Act 1994

Environmental authority EPPG00466513

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

Environmental authority number: EPPG00466513

Environmental authority takes effect on 31 May 2019

Environmental authority holder(s)

Name(s)	Registered address
CNOOC Coal Seam Gas Company Pty Ltd	Level 34 123 Eagle Street BRISBANE CITY QLD 4000 Australia
BNG (SURAT) PTY. LTD.	Level 30 275 George Street BRISBANE CITY QLD 4000 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Non-Scheduled, Petroleum Activity, Authority to Prospect - ATP	ATP684

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).

Environmental authority

Contaminated land

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

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

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

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

Take effect

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

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

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the 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.

Tristan Roberts
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

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Date issued: 04 June 2019

Environmental authority

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)

Conditions of environmental authority

Location: ATP684

Relevant activity: Petroleum – other than site specific

The environmentally relevant activity conducted at the location as described above must be conducted in accordance with the following site-specific conditions of approval.

Schedule of conditions

Condition 1 – Significant disturbance

The holder of the environmental authority must ensure that petroleum activities do not cause more than **4 ha** of any land to be significantly disturbed at a petroleum works site at any one time.

Condition 2 – Work program and development plans

The applicant for or holder of the environmental authority must submit to the administering authority a copy of the original or any amended work program or development plan for the relevant application for or granted petroleum authority **8 business days** before commencing activities or additional or varied activities covered by the program or plan.

Condition 3 – Financial assurance

The holder of the environmental authority must:

- (a) calculate a financial assurance in accordance with the Schedule of Rehabilitation Costs (in Appendix C of this Authority) and Schedule of Disturbance;
- (b) attach the Schedule of Disturbance to the original or any amended Work Program or Development Plan;
- (c) provide to the administering authority the financial assurance in the amount and form required by the administering authority at the time of submission of the original or any amended work program or development plan; and
- (d) maintain the financial assurance until the administering authority is satisfied that no claim is likely to be made on the assurance.

Condition 4 – Environmentally sensitive areas

The holder of the environmental authority must ensure that:

- (a) petroleum activities are not conducted within a category A or B environmentally sensitive area;
- (b) petroleum activities do not cause a significant disturbance within **1km** of a category A environmentally sensitive area or within **500m** of a category B environmentally sensitive area;
- (c) petroleum activities are not conducted in a category C environmentally sensitive area unless there is a written agreement to enter the area for those activities from the relevant administering authority;

- (d) if the relevant administering authority gives written permission to conduct petroleum activities in a category C environmentally sensitive area with conditions that are in conflict with the standard environmental conditions of this authority – the holder must as a minimum comply with the standard environmental conditions (except for condition 4(c)); and
- (e) staff, contractors or agents carrying out petroleum activities on a petroleum authority are aware of the location of any relevant category A, B or C environmentally sensitive areas within the authority.

Condition 5 – Declared Wild River Areas

If the petroleum authority is in or partly within a declared Wild Rivers Area or a moratorium is in place under the *Wild Rivers Act 2005*, the holder of the environmental authority must ensure that petroleum activities within the (proposed) Wild Rivers Area are conducted in accordance with the conditions in the wild river declaration for the area that state they are for petroleum activities.

Condition 6 – Land management

The holder of the environmental authority must:

- (a) minimise disturbance to land in order to prevent land degradation; and
- (b) ensure that for land that is to be significantly disturbed by petroleum activities, the top layer of the soil profile is removed; and
 - i. stockpiled in a manner that will preserve its biological and chemical properties; and
 - ii. used for rehabilitation purposes (refer condition 19).

Condition 7 – Vegetation management

The holder of the environment authority must:

- (a) prevent or minimise disturbance to vegetation by petroleum activities;
- (b) manage the effects of clearing to prevent the loss of biodiversity, reduction of ecological processes and land degradation.
- (c) consider whether it is feasible to avoid clearing, and where viable alternatives exist, must not clear vegetation:
 - i. in, or within **50 metres** of, the high bank of a watercourse;
 - ii. in, or within **50 metres** of the static high water mark of, wetlands, lakes or springs;
 - iii. in a way that isolates clumps or dissects corridors of vegetation;
 - iv. on slopes greater than **5%**;
 - v. on dispersible soils; and
 - vi. in existing or potential discharge areas.; and
- (d) when clearing in areas with a high probability of acid sulfate soils, comply with an acid sulfate soil environmental management plan prepared in accordance with the State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils and the relevant Guideline.

Condition 8 – Protection of riverine areas

The holder of the environmental authority must:

- (a) ensure that there is no significant disturbance in riverine areas containing permanent water, except where necessary for the construction and/or maintenance of roads, tracks and pipelines that are essential for carrying out the authorised petroleum activities and no reasonable alternative location is feasible; and
- (b) minimise disturbance of all other riverine areas.

Condition 9 – Erosion and sedimentation control

The holder of the environmental authority must prevent or minimise:

- (a) erosion of areas disturbed by petroleum activities; and
- (b) sedimentation of any waters as a result of petroleum activities.

Condition 10 – Dust Management

The holder of the environmental authority (petroleum activities) must ensure that dust or particulate matter or both resulting from a petroleum activity does not cause an environmental nuisance at any sensitive place or commercial place.

Condition 11 – Noise management

- (a) Noise emitted from any aspect of petroleum activities must not exceed the noise levels, specified in the table 1, at any *sensitive place* or *commercial place*.

Table 1 – Limits to Noise at any sensitive or commercial place

Time period	Noise level at a <i>sensitive place</i> measured as the Adjusted Maximum Sound Pressure Level $L_{A\ max, adj, T}$
7am– 6 pm	Background noise level plus 5 dB(A)
6pm–10pm	Background noise level plus 5 dB(A)
10pm–7am	Background noise level plus 3 dB(A)
Time period	Noise level at a <i>commercial place</i> measured as the Adjusted Maximum Sound Pressure Level $L_{A\ max, adj, T}$
7am –6 pm	Background noise level plus 10 dB(A)
6pm–10pm	Background noise level plus 10 dB(A)
10pm–7am	Background noise level plus 8 dB(A)

General note: In no case is the background noise level, $L_{A90, 15\ mins}$ to be less than 25 dB(A). In the event that measured background noise level is less than 25 dB(A), then 25 dB(A) is to be used.

- (b) The method of measurement and reporting of noise levels must be in accordance with most recent edition of the EPA's Noise Measurement Manual.

Condition 12 – Waste Management

The holder of the environmental authority must:

- (a) ensure that petroleum activities do not result in the release or likely release of a contaminant to land or waters that results in material or serious environmental harm, unless the release is explicitly authorised under the EP Act; and
- (b) as soon as practicable, remove and dispose of all regulated waste to a licensed waste disposal facility or recycling facility.

Condition 13 – Sewage Treatment and Disposal for Temporary Camps

The holder of this environmental authority must ensure that:

- (a) plant and equipment used for sewage treatment or disposal is installed, maintained and operated in a proper and efficient manner;
- (b) untreated sewage effluent is not released to waters;
- (c) the disposal of sewage effluent does not cause the contamination of any water used for drinking or domestic purposes or manufacturing purposes or for consumption by animals;
- (d) where sewage sludge is buried on land the sludge is covered with at least **250mm** of soil and where practicable located above known flood levels;
- (e) irrigation of sewage effluent on land must be in accordance with National Water Quality Guidelines – Use of Reclaimed Water;
- (f) surface ponding of effluent on land disposal area(s) shall be minimised and managed in a way that does not cause nuisance; and
- (g) public access to any sewage effluent land disposal area must be denied during the release of contaminants to the land and until the irrigation/disposal area has dried.

Condition 14 – Storage of hazardous substances, fuel and oil

The holder of the environmental authority must ensure that storage facilities for all hazardous, flammable and combustible liquids:

- (a) are within an on-site containment system;
- (b) are controlled in a manner that prevents material or serious environmental harm;
- (c) are maintained in accordance with Section 2.3 for minor storages and Section 5.8 for storages above 10 000 L of AS 1940 (2004) *Storage and Handling of Flammable and Combustible Liquids*; and
- (d) are equipped with measures, appropriate to the risks to the surrounding environment, to minimise the risk of spills and ensure early detection of spills.

Condition 15 – Spills and clean up action

Notwithstanding the other conditions of this authority, if a hazardous contaminant is released to waters or land, the holder of the environmental authority must:

- (a) take immediate action to stop any further release;
- (b) take immediate action to contain the hazardous contaminant to the affected area, taking particular care to protect environmentally sensitive areas;
- (c) restore or rehabilitate the environment to its condition before the release occurred; and
- (d) take necessary action to prevent a recurrence of the release.

Condition 16 – Associated Water

- (a) The holder of the environmental authority must ensure that associated water is not released to land or waters, other than to an appropriate containment facility except as provided for:
 - i. under section 186 of the *Petroleum and Gas (Production and Safety) Act 2004*; and
 - ii. Condition 16 (c).
- (b) Despite Condition 16 (a)i, the holder of the environmental authority must ensure that associated water to be used for domestic or stock purposes meets the accepted ANZECC 2000 Water Quality Guidelines for stock and domestic purposes.
- (c) Despite Condition 16 (a) the holder of the environmental authority may apply to the administering authority to allow associated water that meets a nominated set of water quality standards to:
 - i. be released to land or waters; or
 - ii. be used for a specified purpose, provided the potential user has given written advice about the proposed use and environmental safeguards that will be implemented to prevent material or serious environmental harm.

Condition 17 – Containment Facilities

- (a) The holder of the environmental authority must ensure all environmentally relevant containment facilities are:
 - i. designed, constructed, operated, maintained and decommissioned in accordance with the criteria outlined in Appendix B;
 - ii. not located within **100m** of any natural drainage feature (i.e. watercourse, waterway, wetland or lake).
- (b) The holder of the environmental authority must ensure all drill sumps are installed and maintained to prevent any discharge through the bed or banks of the sump from causing environmental harm or environmental nuisance in any waters.

Condition 18 – Containment Facilities and Other Excavations

For all environmentally relevant containment facilities and other excavations which are constructed as part of the petroleum activities, the holder of the environmental authority must where relevant either:

- (a) provide safe access for livestock and wildlife where contained water has appropriate quality; or
- (b) construct and maintain bunds and/or fences sufficient to exclude livestock.

Condition 19 – Rehabilitation

As soon as practicable and **within 6 months** (or longer period agreed in writing by the administering authority) of the end of petroleum activities causing significant disturbance to land, the holder of the environmental authority must:

- (a) remediate contaminated land (e.g. evaporation ponds containing hazardous waste) in accordance with EP Act requirements;
- (b) reshape all significantly disturbed land to a stable landform similar to that of surrounding undisturbed areas; and
- (c) on all significantly disturbed land, take all reasonable and practicable measures to:
 - i. re-establish surface drainage lines;
 - ii. reinstate the top layer of the soil profile; and
 - iii. promote establishment of vegetation of the same species and density of cover to that of the surrounding undisturbed areas.

Condition 20 – Infrastructure

All Infrastructure, constructed by or for the holder of the environmental authority, including water storage structures, must be removed by the holder from the site and the site rehabilitated according to Condition 19, prior to surrender of the petroleum authority, except where it is to remain with the written agreement of the administering authority and post petroleum authority landowner/holder.

Condition 21 – Monitoring and Complaints

The holder of the environmental authority must:

- (a) develop and implement a monitoring program that will demonstrate compliance with this authority;
- (b) document the monitoring and inspections carried out under the program and any actions taken;
- (c) when the administering authority advises the holder of a complaint alleging nuisance (e.g. caused by dust or noise), investigate the complaint and advise the administering authority of the action proposed or undertaken in relation to the complaint;
- (d) if the administering authority is not satisfied with the proposed or completed action, undertake monitoring or other action requested by the administering authority;
- (e) maintain a record of complaints and incidents causing environmental harm, and actions taken in response to the complaint or incident; and
- (f) retain the record of complaints required by this condition for **5 years**.

Condition 22 – Notification

The holder of the environmental authority must record and initially notify the administering authority as soon as practicable of any emergency or incident that causes non-compliance with the standard environmental conditions.

Definitions

APPEA Code means the current APPEA, Code of Environmental Practice.

AS 2885 Australian Standard Pipelines – Gas and Liquid Petroleum

Associated water is underground water taken from or interfered with from a petroleum well during the course of or resulting from carrying out petroleum activities. Associated water may be potable or suitable for stock purposes, or saline, high in fluoride, contain hydrocarbons, and/or is otherwise contaminated by a hazardous contaminant and become a **hazardous waste**.

Commercial place means a place used as an office or for business or commercial purposes.

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 *activities such as rehabilitation*. In other words, it does not refer to: the “completion” of the particular activity, the time at which the petroleum authority ends or the time that the land in question ceases to be part of an authority. Under the *APPEA Code* “completion” refers to the point at which the particular survey, program or operation has been rehabilitated and abandoned.

Environmental nuisance is unreasonable interference or likely interference with an environmental value caused by:

- (a) noise, dust, odour, light; or
- (b) an unhealthy, offensive or unsightly condition because of contamination; or
- (c) another way prescribed by regulation.

Evaporation pond means a dam or interceptor pond constructed outside a watercourse, wetland or waterway by excavating a pit and constructing a wall around the pit with the excavated material. Natural surface flow is excluded from the pond.

Environmentally sensitive area (as determined from the EPA GIS data base) means a location, however large or small, that has environmental values that contribute to maintaining biological diversity and integrity, have intrinsic or attributed scientific, historical or cultural heritage value, or are important in providing amenity, harmony or sense of community.

Financial assurance means a security deposit, either cash or a bank guarantee, held by the administering authority to cover the potential costs of rehabilitating areas significantly disturbed by the petroleum activities.

Hazardous contaminant means a contaminant that, if improperly treated, stored, disposed of or otherwise managed, is likely to cause serious or material environmental harm because of—

- (a) its quantity, concentration, acute or chronic toxic effects, carcinogenicity, teratogenicity, mutagenicity, corrosiveness, explosiveness, radioactivity or flammability; or
- (b) its physical, chemical or infectious characteristics.

Land degradation includes the following:

- (a) soil erosion;
- (b) rising water tables;
- (c) the expression of salinity;
- (d) mass movement by gravity of soil or rock;
- (e) stream bank instability; and
- (f) a process that results in declining water quality.

Licensed waste disposal facility is a facility approved under a development approval and operated by a holder of a registration certificate for environmentally relevant activity item number 75 under Schedule 1 of the *Environmental Protection Regulation 1998*.

Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads, pipelines etc), which is to be left by *agreement* with the landowner.

Petroleum activity is defined in the EP Act as an activity:

- (a) authorised on a petroleum tenure granted under the *Petroleum Act 1923*; or
- (b) authorised on a petroleum authority granted under the P&G Act; or
- (c) exploring for or mining minerals under a licence, permit, pipeline licence, primary licence, secondary licence or special prospecting authority granted under the *Petroleum (Submerged Lands) Act 1982*; or
- (d) rehabilitating or remediating environmental harm because of an activity mentioned in paragraphs (a) to (c); or
- (e) action taken to prevent environmental harm because of an activity mentioned in paragraphs (a) to (d); or
- (f) required under a condition of an environmental authority (petroleum activities); or
- (g) required under a condition of an environmental authority (petroleum activities) that has ended or ceased to have effect, if the condition:
 - i. continues to apply after the authority has ended or ceased to have effect; and
 - ii. has not been complied with.

Petroleum Authority includes Authority to Prospect, Petroleum Lease, Data Acquisition Authority Water Monitoring Authority, Petroleum Facility Licence, Survey Licence and Pipeline Licence issued or granted under the *Petroleum Act 1923* or *Petroleum and Gas (Production and Safety) Act 2004*.

Petroleum works site is a separate location on the area subject to a petroleum authority where certain petroleum activities are undertaken; including a well site, production facilities, evaporation pond, compressor site and campsite. The following petroleum activities are excluded from the definition of *petroleum works site*: roads and tracks, seismic survey lines, and non-licensed gathering systems.

Release of a contaminant into the environment, includes –

- (a) to deposit, discharge, emit or disturb the contaminant; and
- (b) to cause or allow the contaminant to be deposited, discharged, emitted or disturbed; and
- (c) to fail to prevent the contaminant from being deposited, discharged, emitted or disturbed; and
- (d) to allow the contaminant to escape; and
- (e) to fail to prevent the contaminant from escaping.

Riverine area refers to the land confined to the flood flow channel of a watercourse.

Sediment pond means a bunded or excavated structure used to contain and settle waterborne sediment running off significantly disturbed areas.

Sediment trap means a device used to filter waterborne sediment running off significantly disturbed areas. This may include silt fences, hay bales or grassed strips.

Sensitive place means

- (a) a dwelling, mobile home or caravan park, residential marina or other residential place;
- (b) a motel, hotel or hostel;
- (c) a kindergarten, school, university or other educational institution;
- (d) a medical centre or hospital;
- (e) a protected area;
- (f) a park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organized entertainment.

Significantly disturbed land and **significant disturbance** means land if:

- (a) it is contaminated land; or
- (b) it has been disturbed and human intervention is needed to rehabilitate it:
 - i. to a state required under the relevant environmental authority; or

- ii. if the environmental authority does not require the land to be rehabilitated to a particular state – to its state immediately before the disturbance.

Examples of a disturbance to land:

- (a) areas where soil has been compacted, removed, covered, exposed or stockpiled;
- (b) areas where vegetation has been removed or destroyed to an extent where the land has been made susceptible to erosion;
- (c) areas where land use suitability or capability has been diminished;
- (d) areas within a watercourse, waterway, wetland or lake where petroleum activities occur and human intervention is necessary to restore or stabilise the disturbed area;
- (e) areas submerged by hazardous waste storage and dam walls in all cases;
- (f) areas under temporary infrastructure. Temporary infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after petroleum activities have ceased; or
- (g) areas where land has become contaminated land and a suitability statement has not been issued.

However, for the purpose of this Authority the following areas **are not** significantly disturbed:

- (a) areas off the petroleum authority (e.g. roads or tracks which provide access to the petroleum authority).
- (b) areas previously significantly disturbed which have been rehabilitated to the administering authority's satisfaction.
- (c) areas under permanent infrastructure.
- (d) areas that were significantly disturbed prior to the grant of the environmental authority, unless those areas are re-disturbed by the holder of the environmental authority during the term of the authority.
- (e) minor disturbances such as drill sumps and minor respreading of soil on GPS located seismic lines.

Stable means geo-technical stability of the rehabilitated landform where instability related to the excessive settlement and subsidence caused by consolidation / settlement of the wastes deposited, and sliding / slumping instability has ceased.

Top layer of soil means soil, alluvium, weathered rock or other suitable plant growth medium. Top layer material should be non-crusting and low in salinity.

Turkey's nest dam - A dam constructed outside a watercourse, wetland or waterway by excavating a pit and constructing a wall around the pit with the excavated material. Natural surface flow is excluded from the dam.

Waters includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part thereof.

APPENDIX A Environmentally Sensitive Areas

Category A – Environmentally Sensitive Areas		
LAND AREA CLASSIFICATION	ADMINISTERING LEGISLATION	ADMINISTERING AUTHORITY
- National Parks (Scientific) - National Parks - National Parks (Aboriginal Land) - National Parks (Torres Strait Islander Land) - National Parks (Recovery) - Conservation Parks - Forest Reserves	<i>Nature Conservation Act 1992</i>	EPA
Restricted Areas that include Constructed Water Reservoirs	<i>Mineral Resources Act 1989</i>	NRMW
Marine Parks (other than general use zones)	<i>Marine Parks Act 1982</i>	EPA
Wet Tropics Area	<i>Wet Tropics World Heritage Protection and Management Act 1993</i>	WTMA
Great Barrier Reef Marine Park Region	<i>Great Barrier Reef Marine Park Act 1975 (Cth)</i>	GBRMPA

Category B – Environmentally Sensitive Areas		
LAND AREA CLASSIFICATION	ADMINISTERING LEGISLATION	ADMINISTERING AUTHORITY
- Coordinated Conservation Areas; - Wilderness Areas; - World Heritage Management Areas; - International Agreement Areas; - An area of Critical Habitat or Major Interest identified under a Conservation Plan; - Areas subject to an Interim Conservation Order;	<i>Nature Conservation Act 1992</i>	EPA
An area subject to following conventions: - Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 23 June 1979); - Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar, 2 February 1971); - Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 16 November 1972).	<i>International Conventions</i>	EPA
General Use Zones of a Marine Park	<i>Marine Parks Act 1982</i>	EPA
An Area to the Seaward Side of the Highest Astronomical Tide	Nil	EPA
- Registered Places; - Area of Cultural Heritage Significance; - Protected Area;	<i>Queensland Heritage Act 1992</i> <i>Aboriginal Cultural Heritage Act 2003</i> <i>Torres Strait Islander Cultural Heritage Act 2003</i>	EPA NRMW NRMW
Designated Landscape Area (other than the area known as the 'Stanbroke Pastoral Holding')	<i>Aboriginal Cultural Heritage Act 2003</i> <i>Torres Strait Islander Cultural Heritage Act 2003</i>	EPA
- Feature Protection Area; - State Forest Park; - Scientific Area	<i>Forestry Act 1959</i>	EPA
- Fish Habitat Area; - A place in which a Marine Plant is situated	<i>Fisheries Act 1994</i>	DPI
- Endangered Regional Ecosystems (ERE); * - An area of High Nature Conservation Value	Nil	EPA
Essential habitat of Endangered, Vulnerable and Rare Species for the purposes of a Regional Vegetation Management Code	<i>Vegetation Management Act 1999</i>	EPA

Important Note: Regional ecosystem classification is determined according to the Queensland Herbarium **Biodiversity Status** Classification. Information on ERE's is maintained by the EPA on the Regional Ecosystem Description Database.

Category C – Environmentally Sensitive Areas		
LAND AREA CLASSIFICATION	ADMINISTERING LEGISLATION	ADMINISTERING AUTHORITY
Nature Refuges and Resource Reserves	<i>Nature Conservation Act 1992</i>	EPA
- Declared Catchment Areas; - Declared Irrigation and Irrigation Undertaking Areas; - Water Reservoirs and Drainage Areas.	<i>Water Act 2000 and various Water Board Acts</i>	NRMW and/ or Relevant Storage Operator or Board
River Improvement Areas	<i>River Improvement Trust Act 1940</i>	NRMW and the Relevant River Trust
The Designated Landscape Area - Stanbroke Pastoral Holding	<i>Aboriginal Cultural Heritage Act 2003</i> <i>Torres Strait Islander Cultural Heritage Act 2003</i>	EPA
Areas under Part 5 Division 2 of the <i>Aboriginal Cultural Heritage Act 2003</i> and <i>Torres Strait Islander Cultural Heritage Act 2003</i>	<i>Aboriginal Cultural Heritage Act 2003</i> <i>Torres Strait Islander Cultural Heritage Act 2003</i>	NRMW
State Forest or Timber Reserves	<i>Forestry Act 1959</i>	EPA
DPI Research Sites	<i>Nil</i>	DPI
Areas of land occupied by the Bureau of Sugar Experiment Stations.	<i>Sugar Industry Act 1999</i>	DPI
Critical Areas and Public Purpose Reserves	<i>Land Act 1994</i>	NRMW
An area subject to a State Planning Policy that the policy declares is in need of environmental protection.	<i>Integrated Planning Act 1997</i>	EPA
Erosion Prone Areas under Coastal Management Plans and Coastal Management Control Districts	<i>Coastal Protection and Management Act 1995</i>	EPA

APPENDIX B Criteria for environmentally relevant containment facilities

The holder of the environmental authority (petroleum activities) may require environmentally relevant containment facilities to be constructed within the petroleum authority for raw water storage, storage and evaporation of **associated water** or for the containment of contaminated solids formed from such waters. Environmentally relevant containment facilities are defined as “structures that may or could contain flowable substances that, in the event of collapse of the structure, failure to contain or discharge of either liquor, solids or gas, could or would adversely impact on the environment.”

Associated water may be saline, contain hydrocarbons or other substances at certain concentrations that when released to land or waters may cause material or serious environmental harm. This does not prevent or limit the holder of the environmental authority from treating the associated water to a specified standard for subsequent discharge to land or waters or on sold for the beneficial reuse by a third party, providing it is authorised by the relevant environmental authority.

Appendix B provides for the environmental regulation of such containment facilities. The regulation of such facilities is based on both a hazard and risk assessment, which includes an assessment of the contents of the containment facility.

The assessment criteria presented in Tables 1 and 2 allow these structures to be classified as:

- High hazard containment facility;
- Medium hazard containment facility; or
- Low hazard containment facility.

High hazard containment facilities that could impact on life or property on collapse or failure are not permitted under this environmental authority and will require either site-specific conditions or will be conditioned under a level 1 environmental authority.

Step 1 – Assessing the contents of the relevant containment facility

The first step in the assessment process is to determine whether the facility contains substances that may be classed as hazardous if released to the environment. If the contents of the relevant containment facility, including either liquor and/or total solids, exceed the limits in Table 1, then the containment facility contains hazardous substances.

Table 1 – Criteria for determining the contents of the containment facility

Contaminant ¹	Liquor ²	Total solids ^{3, 4}
Arsenic	0.5 mg/l	250 mg/kg
Boron	5.0 mg/l	15,000 mg/kg
Cadmium	10 µg /	100 mg/kg
Cobalt	1.0 mg/l	500 mg/kg
Copper	1.0 mg/l	5,000 mg/kg
Lead	0.1 mg/l	300 mg/kg

Mercury	2 µg/l	75 mg/kg
Nickel	1.0 mg/l	3,000 mg/kg
Zinc	20 mg/l	35,000 mg/kg
Chloride	2,500 mg/l	-
Fluoride	2.0 mg/l	-
Selenium	0.02 mg/l	
Sulphate	1,000 mg/l	-
Cyanide	10 mg/l	2,500 mg/kg
pH	Between 5.5 and 9.0	Net acid generation of pH <4
Nitrite	30 mg/l	-
Nitrate	400 mg/l	-
Total Dissolved Solids	4000 mg/l	
Aromatic Hydrocarbons	600 µg/l	-
Polycyclic Aromatic Hydrocarbons		
Naphthalene	16 µg/l	
Benzo (a) pyrene	0.2 C	
Phenol	320 µg/l	-
Polychlorinated Biphenyls		
Aroclor 1242	0.3 µg /l	-
Aro 1254	0.1 µg /l	
Total Petroleum Hydrocarbons	10 mg/l (or no visible film)	
Blue green Algae (Microcystis)	11,000 cells/ml	-

1. Metals should be analysed in accordance with recognised test methods by a NATA certified laboratory.
2. Applies to the liquid contents in the containment facility readily available to the environment (e.g. water available to birds and animals).
3. Total solids include suspended and colloidal solids.
4. Applies to the solids in the containment facility.

Step 2 – Determining other risk factors

The second step in the assessment process is to consider other factors that may increase the hazard category of the containment facility including its size, location and environmental setting. If a proposed containment facility exceeds any of the size and location criteria listed in Table 2, then the structure will be a high hazard containment facility.

Table 2 – Determination of other risk factors

	Threshold criteria for a high hazard containment facilities
Criterion 1 Location with respect to habitation or water infrastructure	In the event of collapse, failure or overflow from the containment facility, would result in one or more of the following actions, it would or could: • impact on occupied premises to a depth of more than 300 mm; or • flow to a sensitive or commercial place; or • flow to a riverine area containing permanent water; or • contaminate a water supply for human consumption; or • contaminate a water supply used for livestock.
Criterion 2 Location in catchments	The containment facility is located within a: • declared catchment or sub-artesian area; or • watercourse and the containment facilities surface area of water exceeds 1ha.
Criterion 3 Size	The containment facility has a surface area of water greater than 4 ha; or the containment facility has a volume of water greater than 20 mega litres.

Step 3 – Determining the hazard category

Table 3 summarises the process for determining the hazard category of containment facilities on a petroleum authority.

If any proposed containment facility cannot comply with the acceptance criteria listed in Table 1 but can comply with the size and location criteria listed in Table 2, then the structure will be a medium hazard containment facility. Similarly if the structure contains substances that may be hazardous and exceeds the criteria in Table 2 then the structure will be a high hazard containment facility.

Table 3 – Determination of hazard category

Concentration of liquor and total solids	Location and size	Hazard Category
Contents of the containment facility do not exceed limits in Table 1	Containment facility location and size do not trigger criterion 1 listed in table 2	The structure is a low hazard containment facility
Contents of the containment facility exceed limits in Table 1	Containment facility location and size are below the criteria listed in table 2	The structure is a medium hazard containment facility.
Contents of the containment facility exceed limits in Table 1	Containment facility location and size are above the criteria listed in table 2	The structure is a high hazard containment facility.

Design, construction, operation, maintenance and decommissioning criteria

Containment facilities are engineering structures and must be designed by professional engineer(s) who would normally apply the criteria defined below. A professional engineer should also be consulted in the development of the decommissioning plan.

Criteria for Low Hazard Containment Facilities

Low hazard containment facilities should be designed, constructed, operated and decommissioned in accordance with the "Queensland Small Embankment Dam Guideline".

Criteria for Medium Hazard Containment Facilities

In order to comply with the conditions of this environmental authority, design, construction, operation, maintenance and decommissioning of medium hazard containment facilities, must be in accordance with the following.

Design:

- (a) Containment facilities with a capacity up to 3 mega litres are best constructed as **Turkey's Nest** structures;
- (b) Containment facilities should be located to have the smallest practical catchment area;
- (c) Containment facilities must have a spillway capable of passing a design flood, defined as the peak discharge from a critical duration storm with an annual exceedance probability of 1% (i.e. 1 in 100 yr event) or lower;
- (d) The spillway should be located where practicable in the abutment of the containment facility or in the minimum height section of the containment facility;
- (e) Any spillway discharge should be contained within stable defined channels until it enters any natural watercourse or waterway;
- (f) For embankments built on stable foundations, not subject to draw down and out of uniform soil material, the batters shall be no steeper than those shown in the table below, unless otherwise shown to be stable.
- (g)

Embankment Soil Classification (Universal soil classification)	Upstream Batter	Downstream Batter
GC, SC	2.5:1	2.0:1
CL, ML	3.5:1	2.5:1
CH, MH	3.5:1	2.5:1
GW, GP, GM, SW, SP, SM	Not suitable	Not suitable

Note: The codes for the Universal Soil Classification (e.g. GC) are detailed in the Australian Standard AS 1726 1993 Geotechnical Site Investigation, Appendix A.

- (h) Where foundation material differs from the embankment fill material, the batters shall be chosen conservatively to be consistent with the weaker material classification.

Construction:

- (a) Embankments must be constructed in accordance with an engineering design and specification, which has considered the internal seepage pressures, flow velocities, material strength, stability and durability.
- (b) Fine grained soils used in embankment construction should be mechanically compacted when they are near or at the optimum moisture content (i.e. slightly plastic) to improve soil strength, minimise seepage and reduce the risk of piping failure

- (c) Where geo-membranes are used, ensure that they are placed, anchored and joined in accordance with the manufacturer's specification.
- (d) Where geo-membranes are used ensure that they are suitable to prevent leakage of the hazardous contaminants, which are contained within the containment facility.
- (e) Where geo-membranes are used for liners, filters or drains, ensure that the geo-membrane is in contact only with fine-grained soils to prevent punching or tearing of the membrane.
- (f) Embankments built out of pervious material must be constructed in accordance with an engineering design and specification, which has considered the internal seepage pressures and flow velocities.
- (g) Where foundation material differs from embankment fill material, the embankment should be constructed out of the material, which gives the flatter batter.
- (h) Prior to construction of an embankment, the foundation should be cleared of all:
 - vegetation (grass, shrubs and trees);
 - soils containing organic matter (roots);
 - cracked soils (stiff plastic soils);
 - pervious soils (sand, gravel)
 - pervious material in rock faults, joints or the rock foundation itself.
- (i) Prior to construction of an embankment, all transverse trenches, holes and other irregularities should be plugged or backfilled to create a generally undulating foundation for placement of the embankment.
- (j) Fine-grained soils used in embankment construction should have a consistent texture and be free from foreign matter such as branches, logs, gravels or boulders etc.
- (k) Fine-grained soils including dispersible soils should be placed in the centre of or towards the upstream faces of embankment containment facilities.
- (l) Coarser grained soils and rock materials are to be placed towards and on the outer faces of embankment containment facility to minimise erosion and breaching potential.
- (m) Dispersible and easily erodible soils should not be used on the outer faces of embankment containment facility.
- (n) Provide adequate measures to control seepage through the containment facility wall and the transmission of contaminants through underlying soil layers or rock stratum.
- (o) Embankment containment facility should be constructed with stable earth materials that will not decay or generate leachate or hazardous contaminants.

Operation:

- (a) The containment facility should be operated to maintain a minimum freeboard of 0.5m below the spillway level.
- (b) To ensure that there is no leakage of hazardous wastes from any containment facility associated with the petroleum activity a field based groundwater monitoring program must be established to ensure there is no contamination of any unsaturated perched systems or existing groundwater aquifers in the vicinity of the works. Three or more monitoring bores specifically designed for this purpose should be located in a cluster between the contaminant source and any environmentally sensitive place. The monitoring program should regularly record:
 - i. water levels;
 - ii. water quality;
 - iii. flow rates; and
 - iv. direction of flow.
- (c) As far as practicable minimise seepage and return any contaminated seepage to the containment facility.

Maintenance:

- (a) Maintain the erosion resistance of the downstream face of the containment facility to avoid surface scour, which may lead to failure of the wall;
- (b) Maintain the erosion resistance of the spillway to avoid scouring during the design flood;
- (c) Prevent the establishment of trees or shrubs on water containing embankments (roots initiate seepage paths);
- (d) Control of burrowing insects and animals (initiation of piping paths);
- (e) Repair active erosion and piping processes; and
- (f) During initial filling or commissioning, the containment facility should be monitored for leaks, seepages, embankment deformation or other signs of embankment distress.

Decommissioning:

- (a) Removing (where possible) all remaining liquids in the containment facility (e.g. it is generally acceptable to evaporate the liquid if the containment facility is not to be left to the land owner / holder).
- (b) Remove (where possible) all contaminated solids from the containment facility and encapsulate in a purpose built storage facility, or encapsulate any residual contaminated solids in situ by capping with an appropriate capillary break and with one metre of clay or similar impermeable material;
- (c) Design, install and maintain adequate diversion drains or similar structures to protect or minimise the erosion of any exposed surfaces by stormwater runoff;
- (d) Design, install and maintain adequate surface drainage to prevent water ponding and infiltration into any contaminated materials;
- (e) Address contaminated site issues by referring to Notes 11.2 and 11.3 of this environmental authority;
- (f) Establish a monitoring program to determine the success of the decommissioning plan;
- (g) If required, remove the wall of the containment facility; and
- (h) Rehabilitate the disturbed areas in accordance with the rehabilitation conditions of this environmental authority

APPENDIX C Schedule of Rehabilitation Costs

OIL ACTIVITIES	
<i>Activity Type</i>	<i>Unit Cost</i>
First well	\$10,000
Subsequent wells	\$10,000
Activity in environmentally sensitive area *	Site specific estimation
Roads	\$400 per km
Buried flow line construction	\$20,000 per gathering system project
Buried flow line in operation	\$500 per line
Flow lines – surface	\$500 per line, plus \$200 per km
Borrow pit	\$1,000 each
Evaporation pond	Site-specific estimation
Storage tank	\$5,000 per tank
Contaminated land survey	\$20,000 per facility
Sampling	\$5,000 per facility
Bioremediation land farm	\$5,000 per facility
Infrastructure	Site specific estimation
Seismic lines	\$5,000 per seismic line survey
Management fee	20% (maximum \$20,000)
* Including but not limited to exploration, appraisal, development activities and infrastructure developments	

GAS ACTIVITIES (Including Coal Seam Gas wells >350m)	
<i>Activity Type</i>	<i>Unit Cost</i>
First well	\$10,000
Subsequent wells	\$5,000
Activity in environmentally sensitive area *	Site specific estimation
Roads	\$400 per km
Buried flow line construction	\$20,000 per gathering system project
Buried flow line in operation	\$500 per line
Flow lines – surface	\$200 per km
Borrow pit	\$1,000 each

Containment pond (water)	Site specific estimation
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GAS ACTIVITIES (Including Coal Seam Gas wells >350m)	
Activity Type	Unit Cost
Contaminated land survey	\$20,000 per facility
Processing facility (small)	\$10,000 each
Processing facility (large)	Site specific estimation
Compressor only	\$5,000 each
Seismic lines	\$5,000 per seismic line survey
Management fee	20% (maximum \$20,000)
* Including but not limited to exploration, appraisal, development activities and infrastructure developments	

GAS ACTIVITIES (Coal Seam Gas wells <350m)	
Activity Type	Unit Cost
First well	\$10,000
Subsequent wells	\$1,000
Activity in environmentally sensitive area *	Site specific estimation
Roads	\$400 per km
Flow lines - buried	\$500 per line
Flow lines - surface	\$200 per line
Borrow pit	\$1,000 each
Containment pond (water)	Site specific estimation
Contaminated land survey	\$20,000 per facility
Processing facility (small)	\$10,000 each
Processing facility (large)	Site specific estimation
Compressor only	\$5,000 each
Seismic lines	\$5,000 per seismic line survey
Management fee	20% (maximum \$20,000)
* Including but not limited to exploration, appraisal, development activities and infrastructure developments	

Note: Rehabilitation cost estimates must be based on third party costs for rehabilitation of land that has been “significantly disturbed” and may be reviewed annually by the administering authority.

END OF PERMIT