

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: EPPG00304213

Environmental authority takes effect on 7 July 2016.

The anniversary date of this environmental authority is 23 January.

An annual return and payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

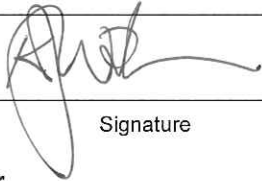
Name	Registered address
AGL Upstream Gas (Mos) Pty Limited	Level 6 144 Edward Street BRISBANE CITY QLD 4000
AGL Gas Storage Pty Ltd	Level 6 144 Edward Street BRISBANE CITY QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
Petroleum – PL Formerly a petroleum activity not otherwise prescribed under Schedule 1 of the <i>Environmental Protection Regulation 1998</i> as a Level 1 environmentally relevant activity.	Petroleum Lease (PL) 213

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





Signature

Kylie Breaker

Delegate of the administering authority
Environmental Protection Act 1994

7 July 2016

Date

Enquiries:

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Protection
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Additional Information for Applicants

Environmentally relevant activities

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

An environmental authority authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the environmental 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 EP Act that if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being, contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.

Responsibilities under the *Environmental Protection Act 1994*

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

General environmental duty

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

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

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

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

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

Duty to notify

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

The duty to notify arises where:

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

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

Some Relevant Offences under the *Environmental Protection Act 1994*

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

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

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

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

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

Material environmental harm is environmental harm that is not trivial or negligible in nature. It may be great in extent or context or it may cause actual or potential loss or damage to property. The difference between material and serious harm relates to the costs of damages or the costs required to either prevent or minimise the harm or to rehabilitate the environment. Serious environmental harm may have irreversible or widespread effects or it may be caused in an area of high conservation significance. Serious or material environmental harm excludes environmental nuisance.

Causing environmental nuisance (section 440)

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

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

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

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

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

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

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

Littering (section 103)

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

Illegal dumping of waste (section 104)

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

Responsibilities under Other Legislation

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

- *Aboriginal Cultural Heritage Act 2003*
- contaminated land provisions of the *Environmental Protection Act 1994*
- *Fisheries Act 1994*
- *Forestry Act 1959*
- *Nature Conservation Act 1992*
- *Petroleum and Gas (Production and Safety) Act 2004 / Petroleum Act 1923*
- *Queensland Heritage Act 1992*
- *Sustainable Planning Act 2009*
- *Water Supply (Safety and Reliability) Act 2008*
- *Water Act 2000*

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

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

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ENVIRONMENTAL AUTHORITY CONDITIONS

Standard Environmental Conditions	Advisory Notes
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.	
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) and Schedule of Disturbance (in Appendix D) of this environmental authority; (b) attach the Schedule of Disturbance to the original or any amended work program or development plan; and (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.	

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Standard Environmental Conditions	Advisory Notes
Condition 4 – Environmentally sensitive areas The holder of the environmental authority must ensure that petroleum activities: (a) are not conducted within a category A or B environmentally sensitive area; and (b) 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) are not conducted in a category C environmentally sensitive area unless there is a written agreement to enter the area from the relevant administering authority. (d) Notwithstanding, condition 4(a) and 4(b), the proposed well within graticular block CHAR2727F and petroleum activities carried out within the 500m buffer zone to any Endangered Regional Ecosystem (ERE), but not within 50m of any ERE, must be in accordance with the scale and intensity of activities outlined below: • the drill site must not disturb an area greater than 10,000m²; • the flare pit size must not be greater than 10m²; • the mud pit size must not be greater than 600m²; • topsoil stripping must be limited to the sump and flare pit area; • clearing of mature trees must be prevented or minimised during drill site construction; • existing access and fence line tracks must be used where possible and any new tracks must be constructed by linking natural clearings where possible; and • track construction involving blade clearing of established ground cover vegetation and/or clearing of mature trees must be prevented or minimised.	Note 4.0 Appendix A of this environmental authority contains a list of environmentally sensitive areas, the administering legislation and list of relevant administering authorities. Note 4.1 Maps of environmentally sensitive areas are available through the Ecoaccess link at www.epa.qld.gov.au. Note 4.2 All petroleum activities are excluded from category A environmentally sensitive areas. If the holder of the environmental authority intends to carry out petroleum activities in a category B environmentally sensitive area, then they will need to apply to administering authority to amend their existing environmental authority. If the administering authority decides to grant the application, the holder will be issued with a level 2 non-code compliant authority with site specific conditions. Note 4.3 Prior to carrying out petroleum activities on a petroleum authority ensure all staff, contractors and agents are aware of the location of any relevant category A, B or C environmentally sensitive areas. Note 4.4 Prior to carrying out any petroleum activities in a category C environmentally sensitive area the holder of the environmental authority must obtain the written agreement from the relevant administering authority. This agreement may require the holder to comply with conditions that may become additional conditions for the environmental authority. Note 4.5 If activities are likely to trigger a matter of national environmental significance under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>, the environmental authority holder is advised to refer the proposed activities to Environment Australia.
Condition 5 – Land management	Note 5.0

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The holder of the environmental authority must: (a) take all reasonable and practicable measures to 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 18).	Complying with this condition will provide rehabilitation processes with a greater chance of success. For example, if the top layer of soil profile is not stockpiled and maintained there is little chance that the environmental authority holder will be able to comply with the condition to respread the top layer of soil profile upon completion of the activities (refer Condition 18). Note 5.1 Identify the top layer of soil prior to causing significant disturbance at a petroleum works site. Note 5.2 Stockpile the top layer of soil in a manner that will preserve its biological and chemical integrity by: • installing bunding around the stockpile to minimise water erosion; • establishing and maintain a temporary cover crop on the stockpile to minimise wind erosion; and • limiting the height of the stockpile to 2 m.
Condition 6 – Vegetation management The holder of the environment authority must: (a) take all reasonable and practicable measures to prevent or minimise disturbance to vegetation by petroleum activities and manage the effects of clearing to prevent the loss of biodiversity, maintain ecological processes and prevent land degradation. (b) The holder of the environmental authority must not clear: 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; vi. in existing or potential discharge areas; and	Note 6.0 Minimise disturbance of vegetation means: 1. Plan the location of seismic lines, access roads, evaporation ponds and drill sites to avoid disturbing large and/or mature trees, or species that have limited ability to regenerate. 2. In the event that an area naturally devoid of vegetation cannot be located, only remove vegetation where necessary and give preference to the clearance of shorter lived (annuals) rather than longer lived plants (perennials). 3. Select specific trees to be cleared and avoid causing damage to surrounding vegetation. 4. Where possible use Global Positioning Systems or other techniques to reduce the need for line of sight clearing. 5. At all times ensure that the petroleum activities do not result in any unnecessary removal of surface seed, rootstock and topsoil. Note 6.1 The removal of deep-rooted native vegetation increases the risk of the development of salinity. Salinity hazard maps have been prepared for a number of regions in Queensland. These are available from NR&M offices or can be

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vii. in areas subject to waterlogging or at risk of waterlogging as a result of clearing; except for necessary construction and maintenance of roads, tracks and pipelines where there is no suitable alternative site for the road, track or pipeline. (c) The holder of the environmental authority must not clear in areas with a high probability of acid sulfate soils unless the clearing is conducted in accordance 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 Guideline.	downloaded from the NR&M web site www.nrm.qld.gov.au/salinity. These maps identify parts of the landscape that are most vulnerable to salinity. Environmental authority holders who plan to carry out activities in hazard areas should consult with NR&M and/or the landholder regarding ways to help control and prevent salinity. Note 6.2 Areas with a high probability of acid sulfate soils are depicted on approved NR&M Sulfate Soil Risk maps. The State planning policy can be accessed via: http://www.nrm.qld.gov.au/land/ass/pdfs/spp_guideline_2_02.pdf Note 6.3 In assessing applications for non-code compliant activities for level 2 petroleum activities that involve disturbing areas of endangered regional ecosystems, the EPA would consider whether vegetation offsets are required on a case-by-case basis to achieve consistency with NR&M policy.
Condition 7 – 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 for the necessary construction and/or maintenance of roads, tracks and pipelines; and (b) minimise disturbance of all other riverine areas.	Note 7.0 Plan activities to avoid disturbing riverine areas (see Figure 1). Note 7.1 Minimise disturbance of riverine areas means: • Plan seismic lines and access tracks to cross riverine areas where minimal earthworks are required. • Use directional drilling techniques for the establishment of pipelines across riverine areas that support sensitive ecosystems. • Avoid impeding the flow of water in watercourses by establishing bed level crossings or piped culverts. Note 7.2 Unless permitted under the <i>Water Regulation 2002</i>, the holder of a petroleum authority will require a riverine protection permit under the <i>Water Act 2000</i> before destroying native vegetation in a watercourse, excavating in a watercourse or placing fill in a watercourse.
Condition 8 – Erosion and sedimentation control	Note 8.0

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The holder of the environmental authority must take all reasonable and practicable measures to prevent or minimise: (a) erosion of areas disturbed by petroleum activities; and (b) sedimentation of any waters as a result of petroleum activities.	To prevent or minimise erosion or sediment releases: • plan activities to avoid unnecessary disturbance of erosion prone soils (e.g. sand dunes and gibber plain areas); • where disturbance of erosion prone soils is necessary use rubber tyred machinery in preference to track-mounted machinery to minimise the disturbance; • in sand dune areas mound sand along dune crests and flanks; • keep road gradients as low as possible to reduce road surface erosion; • avoid steep cuts and fills because these may cause landslides, erosion and slump problems; • back fill erosion gullies and install rock battered drainage channels where erosion cannot be stabilised; • provide surface drainage as part of road construction to control runoff from the road surface; • carry out slope stabilisation, cross ditching, soil replacement and reseedling to reduce erosion on significantly disturbed areas until a self-sustaining vegetation cover is established; • suspend activities that cause ground disturbance during adverse weather conditions; • locate and design infrastructure to avoid unstable or steep slopes adjacent to waters; • install a sediment pond and/or install sediment traps around topsoil stockpiles and areas prone to erosion; • install erosion control structures where necessary along access tracks and gathering line Right of Ways.
Condition 9 – Dust Management The holder of the environmental authority must ensure that: (a) Dust or particulate matter or both resulting from a petroleum activity must not cause an environmental nuisance at any sensitive place or commercial place. (b) When requested by the administering authority,	Note 9.0 • Plan activities to prevent or minimise the generation of dust. For example, schedule activities when it is not windy or the wind is blowing away from any sensitive place or commercial place. • When working near a sensitive place or commercial place, spray or irrigate water on roads and tracks to wet the area and prevent dust escaping and travelling to the sensitive place or commercial place. • Revegetate areas significantly disturbed by

Standard Environmental Conditions	Advisory Notes																
dust and particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive place or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring, analysis and interpretation of results.	the petroleum activities as soon as practicable.																
Condition 10 - Noise management (a) Noise emitted from any aspect of petroleum activities must not exceed the noise levels, specified in the table below, at any sensitive place or commercial place. <table border="1" data-bbox="164 983 796 1408"> <tr> <th>Time period</th><th>Noise level at a sensitive place measured as the Adjusted Maximum Sound Pressure Level $L_{A, max, adjT}$</th></tr> <tr> <td>7am – 6pm</td><td>Background noise level plus 5 dB(A)</td></tr> <tr> <td>6pm – 10pm</td><td>Background noise level plus 5 dB(A)</td></tr> <tr> <td>10pm – 7am</td><td>Background noise level plus 3 dB(A)</td></tr> <tr> <th>Time period</th><th>Noise level at a commercial place measured as the Adjusted Maximum Sound Pressure Level $L_{A, max, adjT}$</th></tr> <tr> <td>7am – 6pm</td><td>Background noise level plus 10 dB(A)</td></tr> <tr> <td>6pm – 10pm</td><td>Background noise level plus 10 dB(A)</td></tr> <tr> <td>10pm – 7am</td><td>Background noise level plus 8 dB(A)</td></tr> </table> 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) When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive place or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring, analysis and interpretation of results.	Time period	Noise level at a sensitive place measured as the Adjusted Maximum Sound Pressure Level $L_{A, max, adjT}$	7am – 6pm	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 commercial place measured as the Adjusted Maximum Sound Pressure Level $L_{A, max, adjT}$	7am – 6pm	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)	Note 10.0 Locate potentially noisy infrastructure so it will not cause a noise problem at a sensitive place or commercial place, and where necessary: • construct and maintain noise barriers and enclosures around noisy equipment or along the noise transmission path. • install rubber mats on drill floors and position noise buffers (e.g. hay bails) around drill rigs and at property boundaries. • repair or replace defective mufflers on vehicles and plant equipment. • provide and maintain low noise equipment. • conduct potentially noisy activities at times least intrusive to any nearby neighbours that may be affected by noise from the activity. • inform any nearby neighbours of any potentially noisy activities that may be carried out.
Time period	Noise level at a sensitive place measured as the Adjusted Maximum Sound Pressure Level $L_{A, max, adjT}$																
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Standard Environmental Conditions	Advisory Notes
(c) The method of measurement and reporting of noise levels must be in accordance with most recent edition of the Environmental Protection Agency (EPA) Noise Measurement Manual.	
Condition 11 – Waste Management The holder of the environmental authority must: (a) ensure that petroleum activities do not result in the release or likely release of contaminants to land or waters that results in unlawful environmental harm; and (b) as soon as practicable, remove and dispose of all regulated waste to a licensed waste disposal facility or recycling facility.	Note 11.0 Where practicable take all general waste to a licensed waste disposal facility. Note 11.1 Limited regulated waste may be disposed of to a licensed general waste disposal facility provided the annual volume of limited regulated waste (e.g. tyres) does not exceed 10% of the annual volume of general waste. Note 11.2 The owner or occupier of a petroleum authority must notify the administering authority within 30 days, if they become aware that a notifiable activity listed in schedule 2 of the <i>Environmental Protection Act 1994</i>, is being carried out on the land. Note 11.3 It is an offence to dispose of a hazardous contaminant other than waste from petroleum activities within the petroleum authority. If land is contaminated through the disposal of a hazardous contaminant the land may be recorded on the environmental management register or the contaminated land register. The environmental authority holder is liable for the remediation costs and attainment of a suitability statement for the land. Refer to section 384 of the <i>Environmental Protection Act 1994</i>. Note 11.4 All regulated waste removed from the site must be removed by a person who holds a current authority to transport such waste under the provisions of the <i>Environmental Protection Act 1994</i>. Note 11.5 To ensure that there are no losses of hazardous wastes from petroleum activities to groundwater or unsaturated perched systems develop and implement a groundwater monitoring program.

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Standard Environmental Conditions	Advisory Notes
Condition 12 - Sewage Treatment and Disposal The holder of this environmental authority must ensure that: (a) plant and equipment used in the carrying out of the activity is installed, maintained and operated in a proper and efficient manner; (b) sewage effluent is not released to waters (including groundwater); (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) any area(s) used for disposal of sewage wastes (liquids or solids) is securely fenced to prevent animals entering such area(s); (e) where sewage sludge is buried on land the sludge is covered with at least 250mm of top soil and where practicable located above known flood levels; (f) where sewage effluent is irrigated on land it is carried out in accordance with the National Water Quality Management Strategy Guidelines for Sewerage Systems – Use of Reclaimed Water; (g) there is no surface ponding of effluent on land disposal area(s); (h) any noxious or offensive odours or any other noxious or offensive contaminant resulting from the activity do not cause a nuisance at any odour sensitive place; and (i) 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.	Note 12.0 The holder of the environmental authority in installing, operating and maintaining sewage treatment works and disposal systems should have due regard to the following documents or updates of these documents as they become available: • Department of Local Government and Planning On-site Sewerage Code; • Department of Local Government and Planning On-site Sewerage Facilities-Guidelines for Vertical and Horizontal Separation Distance; • Australian/New Zealand Standard AS/NZS 1547:2000 On-Site Domestic-Wastewater Management; and • National Water Quality Management Strategy Guidelines for Sewerage Systems – Use of Reclaimed Water.
Condition 13 – Storage of hazardous substances, fuel and oil The holder of the environmental authority must ensure that the storage of all flammable and combustible liquids: (a) is contained within an on-site containment system;	Note 13.0 Australian Standard AS 1940–2004 requires that all chemical, fuel and oil storage facilities of more than 10 000 L on a petroleum tenement, must be banded to contain at least one hundred percent of the volume of the largest container, plus twenty-five percent of the storage capacity of the largest

Standard Environmental Conditions	Advisory Notes
and (b) is controlled in a manner that prevents environmental harm (other than trivial harm); and (c) is maintained in accordance with Section 2.4 for minor storages and Section 5.8 for storages above 10,000 L of Australian Standard AS 1940–2004 The Storage and Handling of Flammable and Combustible Liquids.	container up to a maximum of 10,000 L, together with ten percent of the storage capacity beyond 10,000 L. Note 13.1 All fuel, oil and chemical containers should be stored securely (e.g. store 200 L drums on bunded pallets).
Condition 14 – Spills and clean up action Notwithstanding the other conditions of this environmental 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) prevent a recurrence of the release.	Note 14.0 Have an emergency response plan in place to address contaminant release incidents. Refer to the APPEA Code for guidance on developing an emergency response plan. Note 14.1 Measures to contain the hazardous contaminant to the affected area include constructing a bund or retention basin to contain the contaminant and prevent its further escape. Note 14.2 To prevent a repeat of the incident, investigate the cause of all releases and take action to prevent a recurrence. Such actions will depend on the particular situation, but could include • ensuring adequate shut-down facilities are provided; • replacing or repairing any defective plant and equipment; • adoption of Australian Standard AS 2885.3-2001 Pipelines – Gas and Liquid Petroleum – Operation and Maintenance threat mitigation measures for flow and gathering pipelines; • ensuring all necessary corrosion prevention precautions are taken (e.g. cathodic protection and dosing for SRBs) for flow and gathering pipelines; • installing additional pollution control devices including warning systems and bunds.

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Condition 15 – Associated Water The holder of the environmental authority must ensure that associated water that is a hazardous waste, as determined from Table 1 of Appendix B of this environmental authority is not: (a) released to land or waters, other than to an evaporation pond or to a landowner/holder containment for domestic purposes or stock purposes provided the owner/holder has: I. given their written permission; and II. has written agreement from the administering authority that it will be stored and used in a way that will not result in the associated water being released to waters or land causing or having the potential to cause environmental harm. Note: Associated water that is not a hazardous waste cannot be discharged to land or waters without an amendment to the environmental authority.	Note 15.0 To ensure that there are no releases of associated water that is a hazardous waste to waters or land: (a) develop and implement a water quality, monitoring program for testing and analysing the quality of associated water; and (b) plan, design and manage petroleum activities so that the risk of a release of associated water that is a hazardous waste is minimised. For example: • design evaporation ponds in accordance with Appendix B of this environmental authority; • when drilling sumps are constructed in permeable soil, use synthetic liners or tanks to contain the drilling fluids. Note 15.1 The holder of a petroleum authority must obtain a licence under the <i>Water Act 2000</i> to on supply associated water to a third party for secondary use. Note 15.2 Associated water that is not a hazardous waste may be suitable for: • livestock drinking; • dust suppression; and • release to land or waters, or for agricultural purposes providing the release does not cause environmental harm. Note 15.3 The holder of the environmental authority can apply to the Environmental Protection Agency to discharge associated water that is not hazardous waste. The application must include details about the proposed use of the water. If the water is to be used for irrigation, by the applicant or any other party, any approval of the application will only apply while the irrigation is carried out under an approved Land and Water Management Plan (LWMP). If at any time irrigation ceases to be carried out under an approved LWMP, the tenure holder would need to dispose of the water in accordance with this code. If the Environmental Protection Agency decides to grant the application it would then issue a level 2 non-code compliant authority. If the authority

Standard Environmental Conditions	Advisory Notes
	provides for the discharge of water for irrigation it will include a condition requiring that discharge cease if notified by the Environmental Protection Agency that the irrigation is not being carried out under an approved LWMP.
Condition 16 – Dams and Evaporation Ponds The holder of the environmental authority must ensure all dams and evaporation ponds are: (a) designed, constructed, operated, maintained and decommissioned in accordance with the criteria outlined in Appendix B; and (b) not located within 100 m of any natural drainage feature (i.e. watercourse, waterway, wetland or lake).	Note 16.0 Refer to Appendix B - Criteria for dams and evaporation ponds. Note 16.1 Dams or weirs built on a watercourse require licensing by the Department of Natural Resources and Mines. Dams to be built in tidal waters require licensing by the Department of Primary Industries and the Environmental Protection Agency. Note 16.2 If a petroleum authority becomes significantly disturbed because it is contaminated, it ceases to be significantly disturbed if a suitability statement is issued for the land. Refer to section 384 of the <i>Environmental Protection Act 1994</i>. Note 16.3 A site management plan approved under section 413 of the <i>Environmental Protection Act 1994</i>, may be required by the administering authority for sites recorded on the environmental management register or the contaminated land register. Such sites may include evaporation ponds containing hazardous contaminants.
Condition 17 – Dams and Evaporation Ponds For dams, ponds 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 where contained water quality is adequate for live stock; or (b) construct and maintain bunds and/or fences sufficient to exclude livestock.	Note 17.0 Provide safe access to water for livestock and native animals by: • providing hard surfaces around water storage areas; and • fencing off any soft areas around the edge of water storage areas. Note 17.1 Provide, install and maintain adequate warning devices to exclude people, livestock and native animals from, dams and evaporation ponds

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Standard Environmental Conditions	Advisory Notes
	containing hazardous wastes (e.g. signs, fences and bunds).
Condition 18 – Rehabilitation As soon as practicable and within 6 months (or longer period agreed in writing with the administering authority) of the completion 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 <i>Environmental Protection Act 1994</i> 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; and ii. reinstate the top layer of the soil profile. (d) revegetate the areas identified as Endangered Regional Ecosystems with plant species from the same ecosystem type. Consult with the Environmental Protection Agency prior to commencing rehabilitation to determine the most appropriate techniques and seed mixture for the specific area. (e) Rehabilitation of all areas disturbed within the Endangered Regional Ecosystem will be completed as soon as practical but no longer than three months after completion of the disturbance activity. Environmentally Sensitive areas identified within and adjacent to PL213 are listed in the table below.	Note 18.0 Under the <i>Environmental Protection Act 1994</i>, the administering authority may only grant all or part of an application to surrender an environmental authority if, among other things, it is satisfied that the land on which each relevant petroleum activity has been carried out has been satisfactorily rehabilitated. Note 18.1 Rehabilitation processes are usually more successful if they are undertaken progressively and in a timely manner. For example, the earlier that stockpiled top layer of the soil profile is re-used the more likely that disturbed areas can be restored to their natural condition. Where top layer is removed and stockpiled for six months or more, seed viability and microbial activity may be diminished and upon re-spreading it may need supplementary seeding and fertilising. Note 18.2 Reasonable and practicable measures to promote the establishment of vegetation include: • contour ripping compacted and hard stand areas. • benching ridge cuts and removing overhanging material. • ensuring the stockpiled top layer of soil is respread within the same vegetation community from which it was sourced. • sowing seed and/or planting seedlings. Note 18.3 Department of Natural Resources and Mines (NR&M) administers the decommissioning of drill holes or the conversion of drill holes to licensed water bores. Note that if you plan to convert a drill hole to a licensed water bore, provisions apply under the <i>Water Act 2000</i> with respect to the utilisation of ground water from boreholes in Proclaimed Areas (which include all Artesian Basin areas) and the rehabilitation of boreholes.

Standard Environmental Conditions		Advisory Notes	
Category	Land Classification	General Location	Who to contact
B	Endangered Regional Ecosystem (including but not limited to): 11.3.17	Refer to attached map	EPA District Manager GPO Box 2771 Brisbane QLD 4001 (07) 3225 1051
Condition 19 – 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 sites rehabilitated according to Condition 18, 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.		Note 19.0 Permanent infrastructure such as roads, tracks, water dams or storage facilities, which are to be left for the landholder, requires a written agreement to be submitted with the final rehabilitation report. Note 19.1 Flow and gathering pipelines should be decommissioned according to the requirements of AS 2885. Note 19.2 Where gravel roads and tracks are not to be left for the landholder/owner, remove all material, which is inconsistent with the surrounding soil structure or land use prior to ripping and rehabilitation (e.g. where a gravel road has been constructed through an area which is used for cropping, all gravel fill material must be removed).	
Condition 20 – Monitoring and complaints The holder of the environmental authority must: (a) develop and implement a monitoring program that will demonstrate compliance with this environmental authority; (b) document the monitoring and inspections carried out under the program and any actions taken. (c) maintain a record of complaints and incidents causing environmental harm, and actions taken in response to the complaint or incident; and (d) retain the record of complaints required by this condition for 5 years.		Note 20.0 Under the <i>Environmental Protection Act 1994</i> the records must be made available to an authorised person upon request. Note 20.1 The monitoring and inspection program should particularly focus on areas that have the potential to cause environmental harm (e.g. hazardous waste storages, pipelines, oil wells and significantly disturbed areas that may erode). More frequent inspections should be carried out of areas with a higher potential for environmental harm, with less frequent inspections of other areas. Monitoring and inspections should include a self-check of compliance with the conditions of this environmental authority.	
Condition 21 - Notification The holder of the environmental authority must:		Note 21.0 A notification of any emergency or incident, which demonstrates non-compliance with the standard environmental conditions of this environmental authority, cannot be used in evidence in any	

Standard Environmental Conditions	Advisory Notes
(a) record and initially notify the administering authority as soon as practicable, but within 24 hours, of any emergency or incident that demonstrates non-compliance with the standard environmental conditions of this environmental authority, and (b) notify the administering authority in writing within 14 days of the initial notification.	further action taken by the administering authority as a result of the notification.

Additional Environmental Conditions	Advisory Notes
Condition A1 The holder of the environmental authority must comply with all the standard environmental conditions contained in this environmental authority until the Code of Environmental Compliance for Petroleum Exploration and Production has been approved, then those conditions will apply.	

Definitions

APPEA Code means the current Australian Petroleum Production and Exploration Association Limited (APPEA), Code of Environmental Practice.

AS 2885 means Australian Standard AS 2885 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..

Development plan - Under the *Petroleum and Gas (Production and Safety) Act 2004* holders of petroleum authorities must submit a development plan for a petroleum lease or proposed petroleum lease. The plan gives detailed information about the nature and extent of activities to be carried out under the relevant lease.

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 Environmental Protection Agency 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.

General waste means waste other than regulated waste.

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.

Holder means the holder of an environmental authority or person acting under an environmental authority.

$L_{A,max\ adj T}$ means the average maximum A-weighted sound pressure level, adjusted for tonal or impulsive noise character and measured over any 10 minute period, using Fast response.

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*.

Limited regulated waste means any of the following regulated wastes, asbestos, clinical waste or quarantine waste that has been rendered non-infectious, fish processing waste, food processing waste, poultry processing waste, tyres or treatment tank sludge or residue produced in the carrying out of an environmentally relevant activity (ERA) 15 – Sewage treatment or 16 – Municipal water treatment plant.

Noxious means harmful or injurious to health or physical well being.

Offensive means causing offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive.

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 *Environmental Protection Act 1994* 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 *Petroleum and Gas (Production and Safety) Act 2004*; or
- (c) exploring for or producing petroleum 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.

Protected area means –

- a protected area under the *Nature Conservation Act 1992*; or
- a marine park under the *Marine Parks Act 1992*; or
- a World Heritage Area.

Regulated waste means non-domestic waste mentioned in Schedule 7 of the *Environmental Protection Regulation 1998* (whether or not it has been treated or immobilised), and includes:

- for an element – any chemical compound containing the element; and
- anything that has contained the waste.

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 code 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.

Site means the relevant petroleum tenement(s) to which this environmental authority relates.

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.

Work program - Under the Petroleum and Gas (Production and Safety) Act 2004 holders of petroleum authorities are required to submit a work program for an authority to prospect. The program gives detailed information about the nature and extent of activities to be carried out under the authority.

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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; and - Forest Reserves.	<i>Nature Conservation Act 1992</i>	Environmental Protection Agency (EPA)
Restricted Areas that include Constructed Water Reservoirs	<i>Mineral Resources Act 1989</i>	Department of Natural Resources and Mines (NR&M)
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>	Wet Tropics Management Authority (WTMA)
Great Barrier Reef Marine Park Region	<i>Great Barrier Reef Marine Park Act 1975 (Cth)</i>	Great Barrier Reef Marine Park Authority (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; and - 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); and - 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
- Place of cultural heritage significance; - Protected area; - Registered place; and - Restricted zone	<i>Queensland Heritage Act 1992</i>	EPA
Designated Landscape Area (other than the area known as the 'Stanbroke Pastoral Holding').	<i>Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987</i>	EPA
- Feature Protection Area; - State Forest Park; and - Scientific Area.	<i>Forestry Act 1959</i>	EPA
- Fish Habitat Area; and - A place in which a marine plant is situated.	<i>Fisheries Act 1994</i>	Department of Primary Industries (DPI)
Endangered Regional Ecosystems (ERE) *	Nil	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.

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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>	NR&M and/ or Relevant Storage Operator or Board
River Improvement Areas	<i>River Improvement Trust Act 1940</i>	NR&M and the Relevant River Trust
The Designated Landscape Area - Stanbrooke 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 Aboriginal Cultural Heritage Act 2003 and Torres Strait Islander Cultural Heritage Act 2003	<i>Aboriginal Cultural Heritage Act 2003</i> <i>Torres Strait Islander Cultural Heritage Act 2003</i>	NR&M
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>	NR&M
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
"Of concern" Regional Ecosystems	<i>Nil</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.

APPENDIX B Criteria for dams and evaporation ponds

Containments built on land subject to a Petroleum Authority as level 2 petroleum activities can be used for raw water storage, storage and evaporation of contaminated waters, containment of **associated water** that is saline or contains hydrocarbons, storage of process waters, or the containment of contaminated solids formed from such waters.

They are classified as:

- Hazardous dams containing hazardous waste; or
- Low hazard dams.

Hazardous dams containing hazardous waste are those, which cannot comply with the assessment criteria presented in Tables 1 and 2. High hazard dams containing hazardous waste, or dams which could impact on life or property on collapse or failure, are not permitted under this code and will require either site-specific conditions or will be conditioned under a level 1 environmental authority.

Determination if dam contains hazardous waste.

The assessment process for the determination if a dam contains a hazardous waste is dependent on whether the dam contents, including liquor and total solids can comply with the hazardous contaminant limits listed in Table 1 below. If the content of the dam cannot comply with the limits in Table 1, then the dam contains a hazardous waste.

Table 1 – Determination if content of dam is hazardous waste

Contaminant ¹	Liquor ²	Total solids ^{3,4}
Arsenic	1.0 mg/l	500 mg/kg
Boron	5.0 mg/l	15,000 mg/kg
Cadmium	10µg/l	100mg/kg
Cobalt	1.0 mg/l	500 mg/kg
Copper	1.0 mg/l	5,000 mg/kg
Lead	0.5 mg/l	1,500 mg/kg
Mercury	2µg/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	9.0 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 9.5	Net acid generation of pH <4
Nitrite	300 mg/l	-
Nitrate	400 mg/l	-
TDS	4000 mg/l	-
Aromatic Hydrocarbons	600 µg/l	-
Polycyclic Aromatic Hydrocarbons Naphthalene	16µg/l	-

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Benzo (a) pyrene	0.2 µg /l	
Phenol	320 µg/l	-
Polychlorinated Biphenyls		-
Aroclor 1242	0.3 µg /l	
Aro 1254	0.1 µg /l	
TPH	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 a dam generally available to the environment (for example, water available to birds and animals)
3. Total solids include suspended and colloidal solids.
4. Applies to the solids in the dam.

NOTE Fluoride levels of up to 9.0 mg/l and a pH upper limit of 9.5 is typical of background levels for ground water used for stock watering in South West Queensland.

Determining the hazard category of dam containing hazardous waste

If any proposed dam containing a hazardous waste 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 dam will be a hazardous dam containing hazardous waste. Similarly if the dam contains hazardous waste and exceeds the criteria in Table 2 then the dam will be a high hazard dam containing hazardous waste.

Table 2 – Determination if dam containing hazardous waste is high hazard

	Hazardous dam activity
Criterion 1	In the event of dam collapse, failure or overflow, flow from the dam would have 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	The dam is located within a: • declared catchment or sub-artesian area; or • watercourse and the dam's surface area of water exceeds 1ha.
Criterion 3	The dam has a surface area of water greater than 4 ha; or the dam has a volume of water greater than 20 mega litres.

Table 3 summarises the process for the determination of what is the hazard category of dams on a site.

Table 3 – Determination of dam hazard category

Dam liquor and total solid hazardous contaminant concentration	Dam location and size	Type of dam
Dam contents do not exceed limits in Table 1	-	The dam is a low hazardous dam if collapse or failure cannot impact on occupied premises.
Dam contents exceed limits in Table 1	Dam location and size are below the criteria listed in table 2	The dam is a hazardous.
Dam contents exceed limits in Table 1	Dam location and size are above the criteria listed in table 2	The dam is a high hazardous dam containing hazardous waste.

Design, construction, operation, maintenance and decommissioning criteria

Dams 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.

In order to comply with the conditions of this Code design, construction, operation, maintenance and decommissioning of dams containing hazardous waste must be in accordance with the following criteria and other requirements, as applicable, of the Queensland Small Dams Guideline 2005.

Criteria for the design, construction, operation, maintenance and decommissioning of dams containing hazardous waste

Design:

- (a) Dams with a capacity up to 3000m³ are best constructed as ***Turkey's Nest*** dams;
- (b) Dams should be located to have the smallest practical catchment area;
- (c) Dams must have a spillway capable of passing a design flood, defined as the peak discharge from a critical duration storm with an annual exceedence 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 dam or in the minimum height section of the dam;
- (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;

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.

- (g) 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 dam.
- (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 dispersive soils should be placed in the centre of or towards the upstream faces of embankment dams.

- (l) Coarser grained soils and rock materials are to be placed to wards and on the outer faces of embankment dams to minimise erosion and breaching potential.
- (m) Dispersive and easily erodible soils should not be used on the outer faces of embankment dams.
- (n) Provide adequate measures to control seepage through the dam wall and the transmission of contaminants through underlying soil layers or rock stratum.
- (o) Embankment dams should be constructed with stable earth materials that will not decay or generate leachate or hazardous contaminants.

Operation:

- (a) The dam 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 dam or evaporation pond 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 dam.

Maintenance:

- (a) Maintain the erosion resistance of the downstream face of the dam 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 dam should be monitored for leaks, seepages, embankment deformation or other signs of embankment distress.

Decommissioning:

- (a) Removing (where possible) all remaining liquids in the dam (e.g. it is generally acceptable to evaporate the liquid if the dam is not to be left to the land owner / holder).
- (b) Remove (where possible) all contaminated solids from the dam and encapsulate in a purpose built storage facility, or
- (c) Encapsulate any residual contaminated solids in situ by capping with an appropriate capillary break and with one metre of clay or similar impermeable material;

- (d) Design, install and maintain adequate diversion drains or similar structures to protect or minimise the erosion of any exposed surfaces by stormwater runoff;
- (e) Design, install and maintain adequate surface drainage to prevent water ponding and infiltration into any contaminated materials;
- (f) Address contaminated site issues by referring to Notes 16.2 and 16.3 of this code;
- (g) Establish a monitoring program to determine the success of the decommissioning plan.
- (h) If required, remove the wall and rehabilitate the disturbed area in accordance with the rehabilitation conditions of this code.
- (i) Rehabilitate the disturbed areas in accordance with the rehabilitation conditions of this code.

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

GAS ACTIVITIES (Including Coal Seam Gas wells >350m)	
Activity Type	Unit Cost
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	

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.

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APPENDIX D Schedule of disturbance (Worked example only)

This form is required to be lodged with the Initial Work Program or Development Plan. Where there is a change to the initial significant disturbance and rehabilitation liability advice submitted with a program/plan, this form is required to be updated and to accompany a submission of the relevant later Work Program or Development Plan

Project name / ID	
Commencement date:	End date:
Plan / Program	

Activity Category / Disturbance type	Unit Rehabilitation Cost (from Schedule of Rehabilitation Costs) (A)	Existing Significant Disturbance at commencement of this program/plan	For the year of maximum disturbance during the term of the Work Program ¹ or Development Plan ¹	
			Proposed Significant Disturbance ² (B)	Maximum Rehabilitation Cost (\$) i.e. (A) x (B)
First wells	\$10,000	1	1	\$ 10,000
Subsequent wells	\$5,000	5	10	50,000
Borrow pits	\$1,000	2	6	\$6,000
Buried flow line construction	\$20,000		1	\$20,000
Evaporation Pond	\$25,000		1	\$25,000
Infrastructure	\$7,000		1	\$7,000
Site Investigation Report	\$20,000	0	1	\$20,000
Compressor Station	\$5,000		1	\$5,000
Total rehabilitation liability for the year of max disturbance				
\$143,000				
Maintenance and Monitoring Costs (20% of rehab Costs to a maximum amount of \$20,000)				
\$20,000				

CPI (3 % of Total Rehab Costs)	\$4290
GST (10% of above costs if not already included)	\$16,729
Financial Assurance to be submitted	\$184,019

¹Or as advised and attached with a submitted latter Work Program or Development Plan where there is a change to the initial significant disturbance and rehabilitation liability advice submitted with the Initial Work Program/Development Plan.

² Includes any carry over of existing significant disturbance

Certification

I/We (the current Environmental Authority holder) certify that: *(select each to certify)*

- ☐ The determination of this financial assurance is correct. ☐ The information I/we have provided on this form is accurate, complete and not misleading ¹.

HOLDER NAME / COMPANY

Please note:

Where there is more than one holder, this certification may be signed by the holder authorized (in writing by all other holders) to sign on behalf of and to commit in all matters relevant to this environmental authority. Where the holder is a company, this form is to be signed by a person authorized (in writing) to sign for that company.

¹ It is an offence, under the *Environmental Protection Act 1994*, to give the administering authority information that is false, misleading or incomplete in any material particular. The maximum penalty for such action is 165 penalty units for an individual, or 825 penalty units where the applicant is a corporation (section 181B(3) of the *Penalties and Sentences Act 1992*).

The current penalty unit value is \$75.00.

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Cross section through a watercourse

Figure 1
(not to scale)

