

Date : 21/01/2021 3:47:25 PM

From : "BROWN Ruth"

To : 78B(2) sch4p4(6) P @arrowenergy.com.au

Subject : RE: C-CPLRC-100047221 Rehabilitation of Plainview 003 well

Attachment : image001.png;image002.png;image004.png;

Hi 78B(2)

The department will grant an extension of 2 weeks (until COB 15 February 2021) to respond to this community report.

Regards Ruth



Ruth Brown
Principal Environmental Officer
Energy, Extractive and South West Queensland Compliance | Toowoomba
Environmental Services & Regulation
Department of Environment and Science

Phone: 07 4529 8306
Email: ruth.brown@des.qld.gov.au
Level 1, 146 Herries St, TOOWOOMBA, QLD 4350
PO Box 731, TOOWOOMBA, QLD 4350

From: 78B(2) sch4p4(6) P @arrowenergy.com.au>

Sent: Thursday, 21 January 2021 1:40 PM

To: BROWN Ruth

Cc: 78B(2)

Subject: RE: C-CPLRC-100047221 Rehabilitation of Plainview 003 well

Dear Ruth,

I would respectfully like to request an extension of 2 weeks in which to respond to this community report.

sch4p4(6) Personal information

sch4p4(6) Personal information

will therefore have to try and find all of the relevant information pertaining to the history of this matter.

Kind regards,

78B(2)

Environment Manager

Arrow Energy Pty Ltd

Level 39, 111 Eagle St, Brisbane QLD 4000
GPO Box 5262, Brisbane QLD 4001, Australia
T: 07 3012 4098 (Direct)
M: sch4p4(6) P
Safety First - 安全第一

From: BROWN Ruth <Ruth.Brown@des.qld.gov.au>

Sent: Monday, 18 January 2021 1:32 PM

To: 78B(2) sch4p4(6) P @arrowenergy.com.au>

Subject: C-CPLRC-100047221 Rehabilitation of Plainview 003 well

[External Email]

This email was sent from outside the organisation – be cautious, particularly with links and attachments.

Hi 78B(2)

The Department of Environment and Science (the department) has received a community report of alleged non-compliance with the rehabilitation conditions of a Conduct and Compensation Agreement (CCA) linked to land previously described as Lot 36 DY361, but now known as Lot 2 SP231642. The CCA was signed on 2 April 2008 between the landowner 78B(2) and Arrow Energy. The current landowner, 78B(2) as been engaging with Arrow since 2012 regarding the rehabilitation of Plainview 003 well which was drilled and then plugged and abandoned in May 2008. This well was on ATP683 and authorised under environmental authority (EA) 150 254.

This community report has been allocated a reference number of C-CPLRC-100047221. Please refer to this reference number in any correspondence regarding this matter.

78B(2) representative 78B(2) has advised the department that;

- Subsidence has occurred in the DA (disturbed area). No effort has been made to rectify this subsidence.

- There is remaining gravel on the DA left behind after completion of activities. No effort has been made to remove the gravel, and restore the land to its former condition. The gravel continues to interfere with our client's ability to successfully farm the land causing loss. Additionally 78B(2) states that the gravel has and may cause damage to their equipment in future if it is not removed.
- Clause 3(d) of the CCA obliges Arrow remove all rubbish, waste or construction debris created by the activities.
- The activities undertaken whilst drilling may have caused the contamination of soils in the DA which reduces our client's ability to farm the land. Despite 78B(2) best endeavours, the DA is unviable cropping land. 78B(2) advises that an agronomist confirmed the area as a potential site of disposal from the drill site. This area requires testing and potentially rectification by Arrow.

In order to investigate the alleged environmental nuisance, can you please provide details of any activities (such as those listed below, but not limited to) undertaken by Arrow that have occurred within the area of interest, namely;

- Photos and report of site visit conducted by Arrow on 2 March 2020.
- Remediation plan provided by Arrow to landholder on 30 April 2020.
- Copy of, or minutes/report from video meeting held on 25 June 2020 between Arrow and landholder and his representatives, at which issues with the remediation plan and suggested ways forward were discussed.
- Details of the location and configuration of the Plainview 003 well site, in particular details of the location (e.g. a map and/or coordinates) and extent of the well head, drilling mud sump, flare pit and any other infrastructure and activities associated with this well.
- Provide details of how compliance with the conditions of the CCA has been achieved.
- Provide details of how compliance with Schedule F – Land conditions of EA 150 254 (copy attached) particularly conditions (F1) and (F5) have been achieved.
- Provide details of how compliance with relevant legislation (*Environmental Protection Act 1994, Petroleum and Gas (Production and Safety) Act 2004* and subordinate legislation (*Petroleum and Gas (Production and Safety) Regulation 2004*) current as of May 2008, has been achieved regarding the decommissioning and rehabilitation of this well.

Please provide this information by COB 1 February 2021 by emailing me directly and to southwest.es@des.qld.gov.au

Regards Ruth



Ruth Brown
Principal Environmental Officer
Energy, Extractive and South West Queensland Compliance | Toowoomba
Environmental Services & Regulation
Department of Environment and Science

Phone: 07 4529 8306
Email: ruth.brown@des.qld.gov.au
Level 1, 146 Herries St, TOOWOOMBA, QLD 4350
PO Box 731, TOOWOOMBA, QLD 4350

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Date : 15/02/2021 4:26:29 PM

From : 78B(2) sch4p4(6) Pe@arrowenergy.com.au

To : "BROWN Ruth" Ruth.Brown@des.qld.gov.au

Cc : "Government Correspondence HSE" govcorro@arrowenergy.com.au, "ESR - Toowoomba" Southwest.ES@des.qld.gov.au, "HORTON Sarah" Sarah.Horton@des.qld.gov.au, 78B(2) @arrowenergy.com.au

Subject : RE: C-CPLRC-100047221 Rehabilitation of Plainview 003 well

Attachment : DES Response - 78B(2) Plainview 003 (15-02-2021).pdf;image001.png;image003.png;

Hi Ruth,

Please find attached Arrow's response to your request for information in the email below, noting that an extension until COB 15 February 2021 was granted 21 January 2021.

Kind regards,

78B(2)

Environment Manager

Arrow Energy Pty Ltd

Level 39, 111 Eagle St, Brisbane QLD 4000
GPO Box 5262, Brisbane QLD 4001, Australia
T: 07 3012 4098 (Direct)
M: sch4p4(6) Persi
Safety First - 安全第一

From: BROWN Ruth <Ruth.Brown@des.qld.gov.au>

Sent: Monday, 18 January 2021 1:32 PM

To: 78B(2) sch4p4(6) Pe@arrowenergy.com.au

Subject: C-CPLRC-100047221 Rehabilitation of Plainview 003 well

[External Email]

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Hi 78B(2)

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This community report has been allocated a reference number of C-CPLRC-100047221. Please refer to this reference number in any correspondence regarding this matter.

78B(2) representative 78B(2) as advised the department that;

- Subsidence has occurred in the DA (disturbed area). No effort has been made to rectify this subsidence.
- There is remaining gravel on the DA left behind after completion of activities. No effort has been made to remove the gravel, and restore the land to its former condition. The gravel continues to interfere with our client's ability to successfully farm the land causing loss. Additionally 78B(2) states that the gravel has and may cause damage to their equipment in future if it is not removed.
- Clause 3(d) of the CCA obliges Arrow remove all rubbish, waste or construction debris created by the activities.
- The activities undertaken whilst drilling may have caused the contamination of soils in the DA which reduces our client's ability to farm the land. Despite 78B(2) best endeavours, the DA is unviable cropping land 78B(2) dvises that an agronomist confirmed the area as a potential site of disposal from the drill site. This area requires testing and potentially rectification by Arrow.

In order to investigate the alleged environmental nuisance, can you please provide details of any activities (such as those listed below, but not limited to) undertaken by Arrow that have occurred within the area of interest, namely;

- Photos and report of site visit conducted by Arrow on 2 March 2020.
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- Copy of, or minutes/report from video meeting held on 25 June 2020 between Arrow and landholder and his representatives, at which issues with the remediation plan and suggested ways forward were discussed.
- Details of the location and configuration of the Plainview 003 well site, in particular details of the location (e.g. a map and/or coordinates) and extent of the well head, drilling mud sump, flare pit and any other infrastructure and activities associated with this well.
- Provide details of how compliance with the conditions of the CCA has been achieved.
- Provide details of how compliance with Schedule F – Land conditions of EA 150 254 (copy attached) particularly conditions (F1) and (F5) have been achieved.
- Provide details of how compliance with relevant legislation (*Environmental Protection Act 1994*, *Petroleum and Gas (Production and Safety) Act 2004* and subordinate legislation (*Petroleum and Gas (Production and Safety) Regulation 2004*) current as of May 2008, has

been achieved regarding the decommissioning and rehabilitation of this well.

Please provide this information by COB 1 February 2021 by emailing me directly and to southwest.es@des.qld.gov.au

Regards Ruth



Ruth Brown
Principal Environmental Officer
Energy, Extractive and South West Queensland Compliance | Toowoomba
Environmental Services & Regulation
Department of Environment and Science

Phone: 07 4529 8306
Email: ruth.brown@des.qld.gov.au
Level 1, 146 Herries St, TOOWOOMBA, QLD 4350
PO Box 731, TOOWOOMBA, QLD 4350

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RTI Act 2009

Date : 9/04/2021 12:27:50 PM

From : "ESR - Toowoomba"

To : 78B(2) sch4p4(6) P @arrowenergy.com.au, "Government Correspondence HSE" govcorro@arrowenergy.com.au

Subject : Plainview 003 Well Rehabilitation

Attachment : 20210409 letter to Arrow.pdf;image001.png;image002.png;

Good Afternoon 78B(2)

Please find attached a letter advising Arrow Energy of the findings of investigations by the Department of Environment and Science into a community report concerning rehabilitation of the Plainview 003 well.

If you have any questions regarding this letter please contact Ruth Brown in the first instance on (07) 45298306 or email southwest.es@des.qld.gov.au

Regards, Rob



Rob Spalding

Team Leader/Principal Environmental Officer

South West Compliance - Toowoomba

Environmental Services and Regulation

Department of Environment and Science

Published on DESI Disclosure Log
RTI Act 2009

Enquiries: Ruth Brown
Telephone: (07) 4529 8306
Your reference: Plainview 003 well
Our reference: C-CPLRC-100047221; 101/0006105-001(E)

9 April 2021

Arrow Energy Pty Ltd
GPO Box 5262
BRISBANE QLD 4001

Attention: 78B(2)
sch4p4(6) Pers@arrowenergy.com.au

Dear Directors,

Community report regarding rehabilitation requirements at Plainview 003 well

The Department of Environment and Science (the department) received a community report on 26 November 2020, concerning the condition of land at Plainview 003 well on a property described as Lot 2 SP231642 (previously known as Lot 36 DY361). The department's reference for the community report is C-CPLRC-100047221 (refer to Table 1 for details).

Based on information provided to the department by Arrow on 15 February 2021 and other information gathered by the department, I am satisfied that no grounds for taking enforcement action under the *Environmental Protection Act 1994* have been identified at this time. After considering the information provided, no further action is currently proposed to be taken by the department in response to this community report.

However, it is recommended that Arrow obtain legal advice to determine how the current conduct and compensation agreement (CCA), dated 13 January 2017, as listed on the title for Lot 2 SP23164, will allow Arrow to access 78B(2) property to rehabilitate the site. The Department of Resources has advised that the conditions of the 2008 CCA with the previous landholder continue with the current landholder. The introduction of the Land Access Code 2010 included all previous agreements made under the petroleum legislation.

If you require any further information, please contact Ruth Brown on (07) 4529 8306 or email southwest.es@des.qld.gov.au.

Yours sincerely

sch4p4(6) Personal informat

Rob Spalding

Team Leader

**South West QLD Compliance – Toowoomba
Department of Environment and Science**

Table 1. Notification C-CPLRC-100047221 - Summary and Obligations

Date of notification:	26 November 2020
Place of notification:	Plainview 003 well located on land previously described as Lot 36 DY361 but now known as Lot 2 SP231642. Well was drilled under previous tenure ATP683 but is now located within PL238
Investigated by:	Ruth Brown (Authorised officer of the Department of Environment and Science)
Detail of notification:	A community report alleges that Arrow has failed to maintain rehabilitation measures following plugging and abandonment of the well. The landholder advises that subsidence has occurred in the disturbed area, gravel has been left behind after completion of activities and that activities undertaken whilst drilling may have caused contamination of soils in the disturbed area.
Obligations:	<p>Anyone who carries out an activity that causes or is likely to cause environmental harm is responsible to take all reasonable and practicable measures to prevent or minimise the harm (in accordance with section 319 of the <i>Environmental Protection Act 1994</i>, which sets out the general environmental duty).</p> <p>If you would like to read a copy of the enforcement guidelines, please visit www.des.qld.gov.au</p>

**CORRECTION OF ENVIRONMENTAL AUTHORITY (PETROLEUM) UNDER SECTION
145D - ENVIRONMENTAL PROTECTION ACT 1994**

CLIENT: Arrow Energy Ltd

REGISTERED OFFICE ADDRESS: Level 13
10 Eagle Street
BRISBANE QLD 4000

TENEMENT: ATP 683P

TYPE OF APPROVAL: Non-Code Compliant Environmental Authority
(Petroleum Activities)

ENV AUTHORITY NO.: PEN200238408 (formerly 150 254)

FILE NO.: STH 6527

DECISION DUE DATE: N/A

TIME SPENT:

1.0 SUMMARY

Arrow Energy NL were issued with EA number 150 254 on 4 January 2007 to conduct ERA 21D on ATP683.

The Department of Mines and Energy contacted the EPA on 5 September 2008 to advise that the entity listed as the tenement holder's name on the environmental authority, Arrow Energy NL, is no longer current, as in July 2008, Arrow Energy NL changed the company name to Arrow Energy Ltd. The company still holds the same ABN number.

Therefore, the EA holder is incorrectly represented as a holder of the petroleum tenement. Under Section 145D of the *Environmental Protection Act 1994* (EP Act), the EPA can amend the EA to reflect the name change.

The number system of environmental authorities has also changed since EA 150 254 was issued in 2007. As part of this administrative amendment the EA number can also be changed to reflect the new numbering system.

Whilst conducting this administrative amendment, it was found that the EA for ATP683 incorrectly possessed ERA21D – a Level 1 activity. When the licence was amended on 4 January 2007, ERA75 was removed from the permit (and transferred to the EA for PL198); however, the Level 1 ERA was not altered to reflect the change in activities. After consultation with Chris Roberts of Arrow Energy, the ERA was changed to ERA21E.

2.0 STATUTORY REQUIREMENTS

SECTION 145D – CORRECTION

Under Section 145D, the administering authority may amend an environmental authority (petroleum activities) to correct a clerical or formal error if –

- (a) the amendment does not adversely affect the interests of the environmental authority holder or anyone else; and
- (b) the holder has been given written notice of the amendment

Amend the EA holder

Under Section 145D, the grounds for this amendment is that Arrow Energy Ltd is the correct name of the holder of the environmental authority and not Arrow Energy NL.

Amend the EA number

EA 150 254 has been re-numbered as PEN200238408

Amend the ERA

ERA21D was changed to ERA21E.

CONSULTATIONS:

78B(2) of Arrow Energy was consulted to ascertain what activities were being conducted on ATP683, to ensure that ERA21D was not necessary. It was determined that an evaporation pond that previously sat within ATP683 is now part of PL198, and therefore the conditions relating to this pond were removed from the EA, however, the ERA21D was not downgraded to ERA21E. On 16 October 2008, the EPA received written consent from Chris Roberts endorsing the change and stating that no Level 1 activities are being conducted the ATP. A copy of the ASIC name change certificate was also supplied.

3.0 RECOMMENDATION

It is recommended that

- the administering authority amend the environmental authority under Section 145D of the *Environmental Protection Act 1994*; and
- the written notice of the amendment and the amended EA be issued to the client and a copy to the DME Tenures Unit; and
- a copy of the amended EA be stored in the electronic register and on file.

Elizabeth Dunlop
Environmental Officer
Petroleum and Gas Unit
Ph – 3225 1056

Reviewed & Endorsed By

Delegate

Mark McNamara
Team Leader
Petroleum and Gas Unit
Ph – 3224 7099

Signed -
Date -



Environmental Authority (petroleum activities) No. 150 254

Sections 124 Environmental Protection Act 1994

This environmental authority is granted under the Environmental Protection Act 1994 and includes conditions to minimise environmental harm caused, or likely to be caused, by the authorised petroleum activities. An environmental authority (petroleum activities) may be for petroleum activities authorised (under the Petroleum and Gas (Production and Safety) Act 2004, Petroleum Act 1923 or Petroleum (Submerged Lands) Act 1982) to occur under one or more of the following petroleum authorities: authority to prospect; petroleum lease, data acquisition authority, water monitoring authority, petroleum facility licence, survey licence, pipeline licence, licence, permit, primary licence, secondary licence or special prospecting authority. In general, a petroleum activity means an activity that is authorised under the relevant petroleum legislation. Rehabilitation and remediation activities that facilitate and support petroleum activities and any action taken to prevent environmental harm are included in the definition of petroleum activity.

Under the provisions of the *Environmental Protection Act 1994* this environmental authority is issued to:

Arrow Energy NL
Level 13, 10 Eagle Street
BRISBANE QLD 4000

in respect of carrying out the following level 1 and level 2 environmentally relevant activities of Schedule 1 of the *Environmental Protection Regulation 1998*:

ERA	Description
21D	A petroleum activity otherwise prescribed under this schedule as a level 1 environmentally relevant activity.

on or in relation to the relevant petroleum authorities identified below:

Type of petroleum authority	Authorised petroleum authority number	Project / Location description
Authority to Prospect	ATP 683P	Toowoomba, Dalby and Cambooya Shires

This environmental authority is subject to the conditions set out in the attached schedules.

This environmental authority takes effect from **date of grant of petroleum authority**.

Signed

Date

Rod Kent
Manager
Delegate of Administering Authority
Environmental Protection Act 1994

Note: This environmental authority document is not proof of the current status of the environmental authority. The current status of the environmental authority may be ascertained by contacting the administering authority.

Schedule of conditions

This environmental authority incorporates the following schedules of conditions relevant to various issues:

- Schedule A - General
- Schedule B - Air
- Schedule C - Water
- Schedule D - Noise
- Schedule E - Waste
- Schedule F - Land
- Schedule G - Nature conservation
- Schedule H - Declared Wild River Areas
- Schedule I - Community
- Schedule J - Definitions
- Schedule K - Maps

Schedule A - General

Financial assurance

- (A1) The holder of the environmental authority must provide a 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.

NOTE: The calculation of financial assurance for condition (A1) must be in accordance with the guideline "Financial assurance for petroleum activities". The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas at any one time, which may vary on an annual basis due to progressive rehabilitation. This includes any disturbance that occurred under a prerequisite or replaced petroleum authority. The amount required for the financial assurance must be the highest total rehabilitation cost calculated for any year of the environmental management plan.

- (A2) The financial assurance is to remain in force until the administering authority is satisfied that no claim is likely to be made on the assurance.

NOTE: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.

Maintenance of measures, plant and equipment

- (A3) The holder of the environmental authority must ensure:
- (a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; and
 - (b) that such measures, plant and equipment are maintained in a proper condition; and
 - (c) that such measures, plant and equipment are operated in a proper manner.

Monitoring

- (A4) Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority. Monitoring results relating to rehabilitation should be kept until the environmental authority is surrendered.
- (A5) Where monitoring is a requirement of this environmental authority, ensure that a suitably qualified and experienced person(s) conducts all monitoring.

Storage and handling of flammable and combustible liquids

- (A6) The holder of the environmental authority must ensure that any spillage of all flammable and combustible liquids will be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and that the system is maintained in accordance with Section 5.9 of AS 1940 - Storage and Handling of Flammable and Combustible Liquids.

Work program or development plan

- (A7) 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.

Definitions

- (A8) Words and phrases used in this environmental authority are defined in Schedule J - Definitions. Where a definition for a term used in this environmental authority is sought and the term is not defined within this authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

END OF CONDITIONS FOR SCHEDULE A

Schedule B - Air

Dust nuisance

- (B1) The holder of the environmental authority 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.

- (B2) Despite Condition (B1), dust and particulate matter must not exceed the following levels at any sensitive or commercial place:
- (a) Dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with AS 3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulates - Deposited matter - Gravimetric method of 1991; and
 - (b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM10) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time when monitored in accordance with:
 - i. Particulate matter - Determination of suspended particulate PM10 high-volume sampler with size-selective inlet - Gravimetric method, when monitored in accordance with AS 3580.9.6 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM (sub) 10 high volume sampler with size-selective inlet - Gravimetric method of 1990;
- or
- ii. Any alternative method of sampling PM10, which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority.
- Note: You must propose which monitoring method is appropriate in accordance with condition (B2) (a) or (b) or both.
- (B3) When requested by the administering authority, 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.
- (B4) If monitoring in accordance with B3 indicates exceedence of the relevant limits in Condition (B3), then the holder of the environmental authority must:
- (a) address the complaint including the use of appropriate dispute resolution if required; or
 - (b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

END OF CONDITIONS FOR SCHEDULE B

Schedule C - Water

- (C1) Evaporation ponds located in areas frequented by livestock must be securely fenced.
- (C2) All determinations of the quality of water emissions or receiving environment must be made by a person or body registered by the National Association of Testing Authorities (NATA) for the required determinations, with the exception of the determination of dissolved oxygen content.

Erosion and sedimentation

- (C3) The holder of the environmental authority must:
- (a) design, install and maintain adequate contour banks and diversion drains to minimise the potential for stormwater runoff to enter disturbed areas by petroleum activities; and
 - (b) design, install and maintain adequate erosion and sediment control structures where necessary to prevent or minimise erosion of disturbed areas and the sedimentation of any waters.

END OF CONDITIONS FOR SCHEDULE C

Schedule D - Noise

- (D1) The holder of the environmental authority must ensure that petroleum activities do not cause environmental nuisance at any sensitive or commercial place.
- (D2) Notwithstanding condition (D1) the holder of the environmental authority must ensure that noise emitted from any aspect of petroleum activities does not exceed the noise levels specified in the tables below at any sensitive place or commercial place.

Time period	Noise level at a <i>sensitive place</i> measured as the Adjusted Maximum Sound Pressure Level $L_{A \text{ max, adj, T}}$
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 $L_{A \text{ max, adj, T}}$
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)

Note: In no case is the background noise level, $L_{A90, 15 \text{ mins}}$ 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.

- (D3) The method of measurement and reporting of noise levels must be in accordance with the most recent edition of the Environmental Protection Agency's Noise Measurement Manual.
- (D4) 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 or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

- (D5) If monitoring in accordance with D4, indicates Condition (D2) is not being met, then the holder of the environmental authority must:
- (a) address the complaint including the use of appropriate dispute resolution if required; or
 - (b) immediately implement noise abatement measures so that noise emissions from the activity do not result in further environmental nuisance.

END OF CONDITIONS FOR SCHEDULE D

Schedule E - Waste

Waste management

- (E1) The holder of the environmental authority must 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 this environmental authority.
- (E2) The only regulated waste permitted to be disposed of on-site is the saline effluent and residues associated with the evaporation dam.
- (E3) The holder of the environmental authority must remove and dispose of all regulated waste not permitted to be disposed of by condition (E2) to a licensed waste disposal facility or recycling facility.
- (E4) 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 *Environmental Protection Act* and sent to a facility licensed to accept such waste.
- (E5) When regulated waste is removed from within the boundary of the petroleum authority and transported by the holder of this environmental authority, a record must be kept of the following:
- (a) date of waste transport;
 - (b) quantity of waste removed and transported;
 - (c) type of waste removed and transported;
 - (d) route selected for transport of waste;
 - (e) quantity of waste delivered; and
 - (f) any incidents (e.g. spillage) that may have occurred on route.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – Land

Land management

- (F1) 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 in accordance with condition (F5).

Vegetation management

- (F2) The holder of the environmental authority must:
- (a) prevent or minimise disturbance to vegetation by petroleum activities; and
 - (b) manage the effects of clearing to prevent the loss of biodiversity, reduction of ecological processes and land degradation.
- (F3) The holder of the environmental authority must consider whether it is feasible to avoid clearing and, where viable alternatives exist, must not clear vegetation:
- (a) in, or within 50 metres of, the high bank of a watercourse;
 - (b) in, or within 50 metres of, the static high water mark of wetlands, lakes or springs;
 - (c) in a way that isolates clumps or dissects corridors of vegetation;
 - (d) on slopes greater than 5%;
 - (e) on dispersible soils; and
 - (f) in existing or potential discharge areas.

Protection of riverine areas

- (F4) 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.

Rehabilitation landform criteria

- (F5) As soon as practicable and within 6 months (or longer period agreed in writing with 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 in accordance with *Environmental Protection Act* requirements;
 - (b) reshape all significantly disturbed land to a stable landform similar to that of surrounding undisturbed areas;
 - (c) ensure that significantly disturbed land is reinstated to the pre-disturbed land suitability class;
 - (d) 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;
 - (e) ensure that the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by petroleum activities;
 - (f) ensure that the water quality of any residual water bodies constructed by petroleum activities meets criteria for subsequent uses and does not have potential to cause environmental harm;
 - (g) decommission an inactive buried pipeline by in-situ decommissioning (i.e. abandonment in place) consistent with the requirements of AS 2885.

- (F6) 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;
 - (b) not located within 100 m of any natural drainage feature (i.e. watercourse, waterway, wetland or lake); and
 - (c) located to avoid capturing overland flow.
- (F7) For high hazard dams containing hazardous waste, the holder of the environmental authority must design, construct, repair, maintain, operate and decommission each dam only in accordance with an acknowledged design plan that must comply with the standard environmental conditions in the “Code of Environmental Compliance for Environmental Authorities for High Hazard Dams Containing Hazardous Waste”.
- (F8) Dams and evaporation ponds containing hazardous waste must not be abandoned. They must be decommissioned to a situation where water can no longer be stored and the dams/evaporation ponds and their contained waste(s) are removed or made stable, whereafter the dams/evaporation ponds are no longer dams/evaporation ponds and they become landforms on the operational land and must comply with the rehabilitation requirements of this Environmental Authority.

Infrastructure

- (F9) All infrastructure constructed by or for the holder of the environmental authority must be removed by the holder from the site and the site rehabilitated according to condition (F5) prior to surrender of the environmental authority.
- (F10) Where infrastructure is to remain after the surrender of the environmental authority, the holder must obtain the written agreement of the administering authority and the current land owner/holder.

END OF CONDITIONS FOR SCHEDULE F

Schedule G – Nature conservation

Environmentally sensitive areas

- (G1) The holder of the environmental authority must ensure that petroleum activities:
- (a) are not conducted within a category A or B environmentally sensitive area;
 - (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; and
 - (c) 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.

- (G2) The holder of the environmental authority must ensure that 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.

END OF CONDITIONS FOR SCHEDULE G

Schedule H – Declared wild river areas

- (H1) If the petroleum authority is in or partly within a declared wild river 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 river area are conducted in accordance with the conditions in the wild river declaration for the area that state they are for petroleum activities.

END OF CONDITIONS FOR SCHEDULE H

Schedule I - Community

Monitoring and complaints

- (I1) The holder of the environmental authority must:
- (a) develop and implement a monitoring program that will demonstrate compliance with the conditions in this environmental 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.

Notification

- (I2) The holder of the environmental authority must:
- (a) record and initially notify the administering authority as soon as practicable of any emergency or incident that causes non-compliance with the environmental conditions; and
 - (b) notify the administering authority in writing within 14 days of the initial notification.

END OF CONDITIONS FOR SCHEDULE I

Schedule J - Definitions

Some of the words and phrases used in this licence are defined below:

Where a definition for a term used in this authority is sought and the term is not defined within this authority the definitions provided in the *Environmental Protection Act 1994*, its regulations, and Environmental Protection Policies shall be used.

Word Definitions

Administering authority means -

- (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the *Environmental Protection Act 1994* – the local government; or
- (b) for all other matters – the Chief Executive of the Environmental Protection Agency; or
- (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.

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. It may be classified as a hazardous waste.

Background noise level $L_{A90,15min}$ means the A-weighted sound pressure level of the residual noise exceeded for 90% of a representative time period of not less than 15 minutes, using time weighting, 'F'.

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

Contaminant - The *Environmental Protection Act 1994* defines, under Section 11, a contaminant as:

- (a) a gas, liquid or solid; or
- (b) an odour; or
- (c) an organism (whether alive or dead), including a virus; or
- (d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
- (e) a combination of contaminants.

Development plan - Under the P & G Act, 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.

Discharge area is:

- (a) that part of the land surface where groundwater discharge produces a net movement of water out of the groundwater; and
- (b) identified by an assessment process consistent with the document: Salinity Management Handbook, Queensland Department of Natural Resources, 1997; or
- (c) identified by an approved salinity hazard map held by the Department of Natural Resources, Mines and Water.

Dispersible soils are soils in which clay material disintegrates into particles less than 2 microns across. This can be observed within 24 hours when soil crumbs are submerged in distilled water.

Dissects corridors of vegetation means clearing vegetation that results in a break more than 50 metres wide across a corridor.

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.

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.

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.

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.

Groundwater means subsurface water, generally saturating the soil or rock in which it occurs.

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.

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*.

$L_{A \text{ max, adj, } T}$ is the adjusted average maximum A-weighted sound pressure level measured over a time period T. The maxima must be measured on a sound level meter with a frequency-weighting that corresponds to perceived loudness ("A" weighting) and the meter must be set to the "fast" response time-weighting. The measured values are to be adjusted upwards by 2 dB(A) to 5 dB(A) if the noise source has tonal characteristics. The measuring period must be in excess of five minutes. The arithmetic average of the adjusted maxima, after eliminating any extraneous noise peaks, is the measure used to characterise the noise environment. (This measure will generally be similar to a percent exceedance of 10% or less. Refer to Australian Standard AS1055.)

Lake - A natural or artificial body of water, either permanent or intermittent.

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.

Noise means a sound or vibration of any frequency, whether transmitted through air or any other physical medium.

Petroleum activities means activities authorised to take place on land subject to a petroleum authority, including rehabilitation and decommissioning activities.

Petroleum authority is–

- a) a 1923 Act petroleum tenure granted under the *Petroleum Act 1923*; or
- b) an authority to prospect, petroleum lease, data acquisition authority, water monitoring authority, petroleum facility licence, survey licence or pipeline licence granted under the *Petroleum and Gas (Production and Safety) Act 2004*; or
- c) a licence, permit, pipeline licence, primary licence, secondary licence or special prospecting authority granted under the *Petroleum (Submerged Lands) Act 1982*.

Petroleum works site is a separate location on the area subject to a petroleum authority where petroleum activities are undertaken (e.g. a well site, seismic survey line, camp site, compressor site, evaporation pond etc).

Potential discharge area - Low lying parts of the landscape (relative to adjacent terrain) where groundwater movements are within 2-5m of the land surface and the landscape may be subject to upward movement of groundwater in the future.

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

Sedimentation pond is a bunded or excavated structure used to contain and settle waterborne sediment running off disturbed areas.

Sensitive place means any of the following places –

- a) a dwelling;
- b) a library, childcare centre, kindergarten, school, college, university or other educational institution;
- c) a hospital, surgery or other medical institution;
- d) a protected area or an area identified under a conservation plan as a critical habitat or an area of major interest, under the *Nature Conservation Act 1992*;
- e) a marine park under the *Marine Parks Act 1982*; and
- 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 organised 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, 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 - The surface layer of a soil profile, which is usually more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from natural surface.

Watercourse means a river, creek or stream in which water flows permanently or intermittently in a visibly defined channel (natural, artificial or artificially improved) with:

- (a) continuous bed and banks;
- (b) an extended period of flow for some months after rain ceases, and
- (c) an adequacy of flow that sustains basic ecological processes and maintains biodiversity.

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

Waterway - A naturally occurring feature where surface water runoff normally collects, such as a clearly defined swale or gully, but only flows in response to a local rainfall event.

Wetland - An area of permanent or periodic/intermittent inundation, whether natural or artificial, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6m. Wetlands typically include areas such as lakes, swamps, marshes, estuaries or mudflats.

Wild river areas may include the following-

- (a) high preservation areas;
- (b) preservation areas;
- (c) floodplain management areas;
- (d) subartesian management areas.

Work program - Under the P & G Act, 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.

END OF CONDITIONS FOR SCHEDULE J

APPENDIX B

Criteria for dams and evaporation ponds

The holder of a Petroleum Authority may require containment structures to be constructed within the authority 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.

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

- (1) High hazard dams
- (2) Medium hazard dams containing hazardous waste; or
- (3) Low hazard dams.

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	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	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	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	16µg/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 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.

Determining other risk factors

If a proposed dam exceeds any of the size and location criteria listed in Table 2, then the dam will be a high hazard dam.

Table 2 – Determination of other risk factors

	Threshold for high hazard activity
Criterion 1 Location with respect to habitation or water infrastructure	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 <ul style="list-style-type: none"> - 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 dam is located within a: <ul style="list-style-type: none"> - declared catchment or sub-artesian area; or - watercourse and the dam's surface area of water exceeds 1ha.
Criterion 3 Size	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.

Determining the hazard category of dam containing hazardous waste

Table 3 summarises the process for determining the hazard category of dams on a site.

If any proposed dam 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 medium hazard 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 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	Dam location and size do not trigger criterion 1 listed in table 2	The dam is a low hazard dam
Dam contents exceed limits in Table 1	Dam location and size are below the criteria listed in table 2	The dam is a medium hazard dam containing hazardous waste.
Dam contents exceed limits in Table 1	Dam location and size are above the criteria listed in table 2	The dam is a high hazard 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 for the design, construction, operation, maintenance and decommissioning of dams containing hazardous waste

Design:

- (a) Dams with a capacity up to 3 mega litres 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 dispersible 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 towards and on the outer faces of embankment dams to minimise erosion and breaching potential.
- (m) Dispersible 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 12.2 and 12.3 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.

END OF ENVIRONMENTAL AUTHORITY

Date : 13/06/2023 10:54:53 PM
To : sch4p4(6) P@arrowenergy.com.au"
Subject : C-CPLRC-100047221 Rehabilitation of Plainview 003 well
Attachment : EA 150 254 ATP683 January 2007.doc;image001.png;image002.png;

Hi sch4p4

The Department of Environment and Science (the department) has received a community report of alleged non-compliance with the rehabilitation conditions of a Conduct and Compensation Agreement (CCA) linked to land previously described as Lot 36 DY361, but now known as Lot 2 SP231642. The CCA was signed on 2 April 2008 between the landowner 78B(2) and Arrow Energy. The current landowner, 78B(2) has been engaging with Arrow since 2012 regarding the rehabilitation of Plainview 003 well which was drilled and then plugged and abandoned in May 2008. This well was on ATP683 and authorised under environmental authority (EA) 150 254.

This community report has been allocated a reference number of C-CPLRC-100047221. Please refer to this reference number in any correspondence regarding this matter.

78B(2) s representative 78B(2) as advised the department that;

- Subsidence has occurred in the DA (disturbed area). No effort has been made to rectify this subsidence.
- There is remaining gravel on the DA left behind after completion of activities. No effort has been made to remove the gravel, and restore the land to its former condition. The gravel continues to interfere with our client's ability to successfully farm the land causing loss. Additionally 78B(2) states that the gravel has and may cause damage to their equipment in future if it is not removed.
- Clause 3(d) of the CCA obliges Arrow remove all rubbish, waste or construction debris created by the activities.
- The activities undertaken whilst drilling may have caused the contamination of soils in the DA which reduces our client's ability to farm the land. Despite 78B(2) best endeavours, the DA is unviable cropping land. 78B(2) advises that an agronomist confirmed the area as a potential site of disposal from the drill site. This area requires testing and potentially rectification by Arrow.

In order to investigate the alleged environmental nuisance, can you please provide details of any activities (such as those listed below, but not limited to) undertaken by Arrow that have occurred within the area of interest, namely;

- Photos and report of site visit conducted by Arrow on 2 March 2020,
- Remediation plan provided by Arrow to landholder on 30 April 2020,
- Copy of, or minutes/report from video meeting held on 25 June 2020 between Arrow and landholder and his representatives, at which issues with the remediation plan and suggested ways forward were discussed,
- Provide details of how compliance with the conditions of the CCA has been achieved,
- Provide details of how compliance with Schedule F – Land conditions of EA 150 254 (copy attached) particularly conditions (F1) and (F5) have been achieved,
- Provide details of how compliance with relevant legislation (*Environmental Protection Act 1994, Petroleum and Gas (Production and Safety) Act 2004* and subordinate legislation (*Petroleum and Gas (Production and Safety) Regulation 2004*) current as of May 2008, has been achieved regarding the decommissioning and rehabilitation of this well.

Please provide this information by COB 1 February 2021 by emailing me directly and to southwest.es@des.qld.gov.au

Regards Ruth



Ruth Brown
Principal Environmental Officer
Energy, Extractive and South West Queensland Compliance | Toowoomba
Environmental Services & Regulation
Department of Environment and Science

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Environmental Authority (petroleum activities) No. 150 254

Sections 124 Environmental Protection Act 1994

This environmental authority is granted under the Environmental Protection Act 1994 and includes conditions to minimise environmental harm caused, or likely to be caused, by the authorised petroleum activities. An environmental authority (petroleum activities) may be for petroleum activities authorised (under the Petroleum and Gas (Production and Safety) Act 2004, Petroleum Act 1923 or Petroleum (Submerged Lands) Act 1982) to occur under one or more of the following petroleum authorities: authority to prospect; petroleum lease, data acquisition authority, water monitoring authority, petroleum facility licence, survey licence, pipeline licence, licence, permit, primary licence, secondary licence or special prospecting authority. In general, a petroleum activity means an activity that is authorised under the relevant petroleum legislation. Rehabilitation and remediation activities that facilitate and support petroleum activities and any action taken to prevent environmental harm are included in the definition of petroleum activity.

Under the provisions of the *Environmental Protection Act 1994* this environmental authority is issued to:

Arrow Energy NL
Level 13, 10 Eagle Street
BRISBANE QLD 4000

in respect of carrying out the following level 1 and level 2 environmentally relevant activities of Schedule 1 of the *Environmental Protection Regulation 1998*:

ERA 21D	Description A petroleum activity otherwise prescribed under this schedule as a level 1 environmentally relevant activity.
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on or in relation to the relevant petroleum authorities identified below:

Type of petroleum authority	Authorised petroleum authority number	Project / Location description
Authority to Prospect	ATP 683P	Toowoomba, Dalby and Cambooya Shires

This environmental authority is subject to the conditions set out in the attached schedules.

This environmental authority takes effect from **date of grant of petroleum authority**.

.....
Signed

.....
Date

Rod Kent
Manager
Delegate of Administering Authority
Environmental Protection Act 1994

Note: This environmental authority document is not proof of the current status of the environmental authority. The current status of the environmental authority may be ascertained by contacting the administering authority.

Schedule of conditions

This environmental authority incorporates the following schedules of conditions relevant to various issues:

Schedule A	- General
Schedule B	- Air
Schedule C	- Water
Schedule D	- Noise
Schedule E	- Waste
Schedule F	- Land
Schedule G	- Nature conservation
Schedule H	- Declared Wild River Areas
Schedule I	- Community
Schedule J	- Definitions
Schedule K	- Maps

Schedule A - General

Financial assurance

- (A1) The holder of the environmental authority must provide a 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.

NOTE: The calculation of financial assurance for condition (A1) must be in accordance with the guideline "Financial assurance for petroleum activities". The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas at any one time, which may vary on an annual basis due to progressive rehabilitation. This includes any disturbance that occurred under a prerequisite or replaced petroleum authority. The amount required for the financial assurance must be the highest total rehabilitation cost calculated for any year of the environmental management plan.

- (A2) The financial assurance is to remain in force until the administering authority is satisfied that no claim is likely to be made on the assurance.

NOTE: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.

Maintenance of measures, plant and equipment

- (A3) The holder of the environmental authority must ensure:
- (a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; and
 - (b) that such measures, plant and equipment are maintained in a proper condition; and
 - (c) that such measures, plant and equipment are operated in a proper manner.

Monitoring

- (A4) Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority. Monitoring results relating to rehabilitation should be kept until the environmental authority is surrendered.
- (A5) Where monitoring is a requirement of this environmental authority, ensure that a suitably qualified and experienced person(s) conducts all monitoring.

Storage and handling of flammable and combustible liquids

- (A6) The holder of the environmental authority must ensure that any spillage of all flammable and combustible liquids will be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and that the system is maintained in accordance with Section 5.9 of AS 1940 - Storage and Handling of Flammable and Combustible Liquids.

Work program or development plan

- (A7) 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.

Definitions

- (A8) Words and phrases used in this environmental authority are defined in Schedule J - Definitions. Where a definition for a term used in this environmental authority is sought and the term is not defined within this authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

END OF CONDITIONS FOR SCHEDULE A

Schedule B - Air

Dust nuisance

- (B1) The holder of the environmental authority 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.

- (B2) Despite Condition (B1), dust and particulate matter must not exceed the following levels at any sensitive or commercial place:
- (a) Dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with AS 3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulates - Deposited matter - Gravimetric method of 1991; and
 - (b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM10) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time when monitored in accordance with:
 - i. Particulate matter - Determination of suspended particulate PM10 high-volume sampler with size-selective inlet - Gravimetric method, when monitored in accordance with AS 3580.9.6 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM (sub) 10 high volume sampler with size-selective inlet - Gravimetric method of 1990;
- or
- ii. Any alternative method of sampling PM10, which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority.
- Note: You must propose which monitoring method is appropriate in accordance with condition (B2) (a) or (b) or both.
- (B3) When requested by the administering authority, 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.
- (B4) If monitoring in accordance with B3 indicates exceedence of the relevant limits in Condition (B3), then the holder of the environmental authority must:
- (a) address the complaint including the use of appropriate dispute resolution if required; or
 - (b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

END OF CONDITIONS FOR SCHEDULE B

Schedule C - Water

- (C1) Evaporation ponds located in areas frequented by livestock must be securely fenced.
- (C2) All determinations of the quality of water emissions or receiving environment must be made by a person or body registered by the National Association of Testing Authorities (NATA) for the required determinations, with the exception of the determination of dissolved oxygen content.

Erosion and sedimentation

- (C3) The holder of the environmental authority must:
- (a) design, install and maintain adequate contour banks and diversion drains to minimise the potential for stormwater runoff to enter disturbed areas by petroleum activities; and
 - (b) design, install and maintain adequate erosion and sediment control structures where necessary to prevent or minimise erosion of disturbed areas and the sedimentation of any waters.

END OF CONDITIONS FOR SCHEDULE C

Schedule D - Noise

- (D1) The holder of the environmental authority must ensure that petroleum activities do not cause environmental nuisance at any sensitive or commercial place.
- (D2) Notwithstanding condition (D1) the holder of the environmental authority must ensure that noise emitted from any aspect of petroleum activities does not exceed the noise levels specified in the tables below at any sensitive place 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)

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.

- (D3) The method of measurement and reporting of noise levels must be in accordance with the most recent edition of the Environmental Protection Agency's Noise Measurement Manual.
- (D4) 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 or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

- (D5) If monitoring in accordance with D4, indicates Condition (D2) is not being met, then the holder of the environmental authority must:
- (a) address the complaint including the use of appropriate dispute resolution if required; or
 - (b) immediately implement noise abatement measures so that noise emissions from the activity do not result in further environmental nuisance.

END OF CONDITIONS FOR SCHEDULE D

Schedule E - Waste

Waste management

- (E1) The holder of the environmental authority must 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 this environmental authority.
- (E2) The only regulated waste permitted to be disposed of on-site is the saline effluent and residues associated with the evaporation dam.
- (E3) The holder of the environmental authority must remove and dispose of all regulated waste not permitted to be disposed of by condition (E2) to a licensed waste disposal facility or recycling facility.
- (E4) 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 *Environmental Protection Act* and sent to a facility licensed to accept such waste.
- (E5) When regulated waste is removed from within the boundary of the petroleum authority and transported by the holder of this environmental authority, a record must be kept of the following:
- (a) date of waste transport;
 - (b) quantity of waste removed and transported;
 - (c) type of waste removed and transported;
 - (d) route selected for transport of waste;
 - (e) quantity of waste delivered; and
 - (f) any incidents (e.g. spillage) that may have occurred on route.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – Land

Land management

- (F1) 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 in accordance with condition (F5).

Vegetation management

- (F2) The holder of the environmental authority must:
- (a) prevent or minimise disturbance to vegetation by petroleum activities; and
 - (b) manage the effects of clearing to prevent the loss of biodiversity, reduction of ecological processes and land degradation.
- (F3) The holder of the environmental authority must consider whether it is feasible to avoid clearing and, where viable alternatives exist, must not clear vegetation:
- (a) in, or within 50 metres of, the high bank of a watercourse;
 - (b) in, or within 50 metres of, the static high water mark of wetlands, lakes or springs;
 - (c) in a way that isolates clumps or dissects corridors of vegetation;
 - (d) on slopes greater than 5%;
 - (e) on dispersible soils; and
 - (f) in existing or potential discharge areas.

Protection of riverine areas

- (F4) 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.

Rehabilitation landform criteria

- (F5) As soon as practicable and within 6 months (or longer period agreed in writing with 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 in accordance with *Environmental Protection Act* requirements;
 - (b) reshape all significantly disturbed land to a stable landform similar to that of surrounding undisturbed areas;
 - (c) ensure that significantly disturbed land is reinstated to the pre-disturbed land suitability class;
 - (d) 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;
 - (e) ensure that the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by petroleum activities;
 - (f) ensure that the water quality of any residual water bodies constructed by petroleum activities meets criteria for subsequent uses and does not have potential to cause environmental harm;
 - (g) decommission an inactive buried pipeline by in-situ decommissioning (i.e. abandonment in place) consistent with the requirements of AS 2885.

- (F6) 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;
 - (b) not located within 100 m of any natural drainage feature (i.e. watercourse, waterway, wetland or lake); and
 - (c) located to avoid capturing overland flow.
- (F7) For high hazard dams containing hazardous waste, the holder of the environmental authority must design, construct, repair, maintain, operate and decommission each dam only in accordance with an acknowledged design plan that must comply with the standard environmental conditions in the "Code of Environmental Compliance for Environmental Authorities for High Hazard Dams Containing Hazardous Waste".
- (F8) Dams and evaporation ponds containing hazardous waste must not be abandoned. They must be decommissioned to a situation where water can no longer be stored and the dams/evaporation ponds and their contained waste(s) are removed or made stable, whereafter the dams/evaporation ponds are no longer dams/evaporation ponds and they become landforms on the operational land and must comply with the rehabilitation requirements of this Environmental Authority.

Infrastructure

- (F9) All infrastructure constructed by or for the holder of the environmental authority must be removed by the holder from the site and the site rehabilitated according to condition (F5) prior to surrender of the environmental authority.
- (F10) Where infrastructure is to remain after the surrender of the environmental authority, the holder must obtain the written agreement of the administering authority and the current land owner/holder.

END OF CONDITIONS FOR SCHEDULE F

Schedule G – Nature conservation

Environmentally sensitive areas

- (G1) The holder of the environmental authority must ensure that petroleum activities:
- (a) are not conducted within a category A or B environmentally sensitive area;
 - (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; and
 - (c) 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.

- (G2) The holder of the environmental authority must ensure that 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.

END OF CONDITIONS FOR SCHEDULE G

Schedule H – Declared wild river areas

- (H1) If the petroleum authority is in or partly within a declared wild river 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 river area are conducted in accordance with the conditions in the wild river declaration for the area that state they are for petroleum activities.

END OF CONDITIONS FOR SCHEDULE H

Schedule I - Community

Monitoring and complaints

- (I1) The holder of the environmental authority must:
- (a) develop and implement a monitoring program that will demonstrate compliance with the conditions in this environmental 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.

Notification

- (I2) The holder of the environmental authority must:
- (a) record and initially notify the administering authority as soon as practicable of any emergency or incident that causes non-compliance with the environmental conditions; and
 - (b) notify the administering authority in writing within 14 days of the initial notification.

END OF CONDITIONS FOR SCHEDULE I

Schedule J - Definitions

Some of the words and phrases used in this licence are defined below:

Where a definition for a term used in this authority is sought and the term is not defined within this authority the definitions provided in the *Environmental Protection Act 1994*, its regulations, and Environmental Protection Policies shall be used.

Word Definitions

Administering authority means -

- (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the *Environmental Protection Act 1994* – the local government; or
- (b) for all other matters – the Chief Executive of the Environmental Protection Agency; or
- (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.

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. It may be classified as a hazardous waste.

Background noise level $L_{A90,15min}$ means the A-weighted sound pressure level of the residual noise exceeded for 90% of a representative time period of not less than 15 minutes, using time weighting, 'F'.

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

Contaminant - The *Environmental Protection Act 1994* defines, under Section 11, a contaminant as:

- (a) a gas, liquid or solid; or
- (b) an odour; or
- (c) an organism (whether alive or dead), including a virus; or
- (d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
- (e) a combination of contaminants.

Development plan - Under the P & G Act, 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.

Discharge area is:

- (a) that part of the land surface where groundwater discharge produces a net movement of water out of the groundwater; and
- (b) identified by an assessment process consistent with the document: Salinity Management Handbook, Queensland Department of Natural Resources, 1997; or
- (c) identified by an approved salinity hazard map held by the Department of Natural Resources, Mines and Water.

Dispersible soils are soils in which clay material disintegrates into particles less than 2 microns across. This can be observed within 24 hours when soil crumbs are submerged in distilled water.

Dissects corridors of vegetation means clearing vegetation that results in a break more than 50 metres wide across a corridor.

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.

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.

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.

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.

Groundwater means subsurface water, generally saturating the soil or rock in which it occurs.

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.

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*.

$L_{A \text{ max, adj, } T}$ is the adjusted average maximum A-weighted sound pressure level measured over a time period T. The maxima must be measured on a sound level meter with a frequency-weighting that corresponds to perceived loudness ("A" weighting) and the meter must be set to the "fast" response time-weighting. The measured values are to be adjusted upwards by 2 dB(A) to 5 dB(A) if the noise source has tonal characteristics. The measuring period must be in excess of five minutes. The arithmetic average of the adjusted maxima, after eliminating any extraneous noise peaks, is the measure used to characterise the noise environment. (This measure will generally be similar to a percent exceedance of 10% or less. Refer to Australian Standard AS1055.)

Lake - A natural or artificial body of water, either permanent or intermittent.

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.

Noise means a sound or vibration of any frequency, whether transmitted through air or any other physical medium.

Petroleum activities means activities authorised to take place on land subject to a petroleum authority, including rehabilitation and decommissioning activities.

Petroleum authority is–

- a) a 1923 Act petroleum tenure granted under the *Petroleum Act 1923*; or
- b) an authority to prospect, petroleum lease, data acquisition authority, water monitoring authority, petroleum facility licence, survey licence or pipeline licence granted under the *Petroleum and Gas (Production and Safety) Act 2004*; or
- c) a licence, permit, pipeline licence, primary licence, secondary licence or special prospecting authority granted under the *Petroleum (Submerged Lands) Act 1982*.

Petroleum works site is a separate location on the area subject to a petroleum authority where petroleum activities are undertaken (e.g. a well site, seismic survey line, camp site, compressor site, evaporation pond etc).

Potential discharge area - Low lying parts of the landscape (relative to adjacent terrain) where groundwater movements are within 2-5m of the land surface and the landscape may be subject to upward movement of groundwater in the future.

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

Sedimentation pond is a bunded or excavated structure used to contain and settle waterborne sediment running off disturbed areas.

Sensitive place means any of the following places –

- a) a dwelling;
- b) a library, childcare centre, kindergarten, school, college, university or other educational institution;
- c) a hospital, surgery or other medical institution;
- d) a protected area or an area identified under a conservation plan as a critical habitat or an area of major interest, under the *Nature Conservation Act 1992*;
- e) a marine park under the *Marine Parks Act 1982*; and
- 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 organised 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, 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 - The surface layer of a soil profile, which is usually more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from natural surface.

Watercourse means a river, creek or stream in which water flows permanently or intermittently in a visibly defined channel (natural, artificial or artificially improved) with:

- (a) continuous bed and banks;
- (b) an extended period of flow for some months after rain ceases, and
- (c) an adequacy of flow that sustains basic ecological processes and maintains biodiversity.

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

Waterway - A naturally occurring feature where surface water runoff normally collects, such as a clearly defined swale or gully, but only flows in response to a local rainfall event.

Wetland – An area of permanent or periodic/intermittent inundation, whether natural or artificial, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6m. Wetlands typically include areas such as lakes, swamps, marshes, estuaries or mudflats.

Wild river areas may include the following–

- (a) high preservation areas;
- (b) preservation areas;
- (c) floodplain management areas;
- (d) subartesian management areas.

Work program - Under the P & G Act, 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.

END OF CONDITIONS FOR SCHEDULE J

APPENDIX B

Criteria for dams and evaporation ponds

The holder of a Petroleum Authority may require containment structures to be constructed within the authority 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.

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

- (1) High hazard dams
- (2) Medium hazard dams containing hazardous waste; or
- (3) Low hazard dams.

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	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	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	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	16µg/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 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.

Determining other risk factors

If a proposed dam exceeds any of the size and location criteria listed in Table 2, then the dam will be a high hazard dam.

Table 2 – Determination of other risk factors

	Threshold for high hazard activity
Criterion 1 Location with respect to habitation or water infrastructure	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 <ul style="list-style-type: none"> - 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 dam is located within a: <ul style="list-style-type: none"> - declared catchment or sub-artesian area; or - watercourse and the dam's surface area of water exceeds 1ha.
Criterion 3 Size	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.

Determining the hazard category of dam containing hazardous waste

Table 3 summarises the process for determining the hazard category of dams on a site.

If any proposed dam 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 medium hazard 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 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	Dam location and size do not trigger criterion 1 listed in table 2	The dam is a low hazard dam
Dam contents exceed limits in Table 1	Dam location and size are below the criteria listed in table 2	The dam is a medium hazard dam containing hazardous waste.
Dam contents exceed limits in Table 1	Dam location and size are above the criteria listed in table 2	The dam is a high hazard 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 for the design, construction, operation, maintenance and decommissioning of dams containing hazardous waste

Design:

- (a) Dams with a capacity up to 3 mega litres 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 dispersible 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 towards and on the outer faces of embankment dams to minimise erosion and breaching potential.
- (m) Dispersible 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 12.2 and 12.3 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.

END OF ENVIRONMENTAL AUTHORITY

Date : 18/01/2021 1:31:41 PM

From : "BROWN Ruth"

To : [redacted] sch4p4(6) Pe arrowenergy.com.au"

Subject : C-CPLRC-100047221 Rehabilitation of Plainview 003 well

Attachment : EA 150 254 ATP683 January 2007.doc;image001.png;image002.png;

Hi Scott,

The Department of Environment and Science (the department) has received a community report of alleged non-compliance with the rehabilitation conditions of a Conduct and Compensation Agreement (CCA) linked to land previously described as Lot 36 DY361, but now known as Lot 2 SP231642. The CCA was signed on 2 April 2008 between the landowner [redacted] 78B(2) and Arrow Energy. The current landowner, [redacted] 78B(2) as been engaging with Arrow since 2012 regarding the rehabilitation of Plainview 003 well which was drilled and then plugged and abandoned in May 2008. This well was on ATP683 and authorised under environmental authority (EA) 150 254.

This community report has been allocated a reference number of C-CPLRC-100047221. Please refer to this reference number in any correspondence regarding this matter.

[redacted] 78B(2) representative [redacted] 78B(2) has advised the department that;

- *Subsidence has occurred in the DA (disturbed area). No effort has been made to rectify this subsidence.*
- *There is remaining gravel on the DA left behind after completion of activities. No effort has been made to remove the gravel, and restore the land to its former condition. The gravel continues to interfere with our client's ability to successfully farm the land causing loss. Additionally [redacted] 78B(2) states that the gravel has and may cause damage to their equipment in future if it is not removed.*
- *Clause 3(d) of the CCA obliges Arrow remove all rubbish, waste or construction debris created by the activities.*
- *The activities undertaken whilst drilling may have caused the contamination of soils in the DA which reduces our client's ability to farm the land. Despite [redacted] 78B(2) best endeavours, the DA is unviable cropping land [redacted] 78B(2) advises that an agronomist confirmed the area as a potential site of disposal from the drill site. This area requires testing and potentially rectification by Arrow.*

In order to investigate the alleged environmental nuisance, can you please provide details of any activities (such as those listed below, but not limited to) undertaken by Arrow that have occurred within the area of interest, namely;

- Photos and report of site visit conducted by Arrow on 2 March 2020.
- Remediation plan provided by Arrow to landholder on 30 April 2020.
- Copy of, or minutes/report from video meeting held on 25 June 2020 between Arrow and landholder and his representatives, at which issues with the remediation plan and suggested ways forward were discussed.
- Details of the location and configuration of the Plainview 003 well site, in particular details of the location (e.g. a map and/or coordinates) and extent of the well head, drilling mud sump, flare pit and any other infrastructure and activities associated with this well.
- Provide details of how compliance with the conditions of the CCA has been achieved.
- Provide details of how compliance with Schedule F – Land conditions of EA 150 254 (copy attached) particularly conditions (F1) and (F5) have been achieved.
- Provide details of how compliance with relevant legislation (*Environmental Protection Act 1994, Petroleum and Gas (Production and Safety) Act 2004* and subordinate legislation (*Petroleum and Gas (Production and Safety) Regulation 2004*) current as of May 2008, has been achieved regarding the decommissioning and rehabilitation of this well.

Please provide this information by COB 1 February 2021 by emailing me directly and to southwest.es@des.qld.gov.au

Regards Ruth



Ruth Brown
Principal Environmental Officer
Energy, Extractive and South West Queensland Compliance | Toowoomba
Environmental Services & Regulation
Department of Environment and Science

Phone: 07 4529 8306
Email: ruth.brown@des.qld.gov.au
Level 1, 146 Herries St, TOOWOOMBA, QLD 4350
PO Box 731, TOOWOOMBA, QLD 4350

Environmental Authority (petroleum activities) No. 150 254

Sections 124 Environmental Protection Act 1994

This environmental authority is granted under the Environmental Protection Act 1994 and includes conditions to minimise environmental harm caused, or likely to be caused, by the authorised petroleum activities. An environmental authority (petroleum activities) may be for petroleum activities authorised (under the Petroleum and Gas (Production and Safety) Act 2004, Petroleum Act 1923 or Petroleum (Submerged Lands) Act 1982) to occur under one or more of the following petroleum authorities: authority to prospect; petroleum lease, data acquisition authority, water monitoring authority, petroleum facility licence, survey licence, pipeline licence, licence, permit, primary licence, secondary licence or special prospecting authority. In general, a petroleum activity means an activity that is authorised under the relevant petroleum legislation. Rehabilitation and remediation activities that facilitate and support petroleum activities and any action taken to prevent environmental harm are included in the definition of petroleum activity.

Under the provisions of the *Environmental Protection Act 1994* this environmental authority is issued to:

Arrow Energy NL
Level 13, 10 Eagle Street
BRISBANE QLD 4000

in respect of carrying out the following level 1 and level 2 environmentally relevant activities of Schedule 1 of the *Environmental Protection Regulation 1998*:

ERA	Description
21D	A petroleum activity otherwise prescribed under this schedule as a level 1 environmentally relevant activity.

on or in relation to the relevant petroleum authorities identified below:

Type of petroleum authority	Authorised petroleum authority number	Project / Location description
Authority to Prospect	ATP 683P	Toowoomba, Dalby and Cambooya Shires

This environmental authority is subject to the conditions set out in the attached schedules.

This environmental authority takes effect from **date of grant of petroleum authority**.

.....
Signed

.....
Date

Rod Kent
Manager
Delegate of Administering Authority
Environmental Protection Act 1994

Note: This environmental authority document is not proof of the current status of the environmental authority. The current status of the environmental authority may be ascertained by contacting the administering authority.

Schedule of conditions

This environmental authority incorporates the following schedules of conditions relevant to various issues:

Schedule A	- General
Schedule B	- Air
Schedule C	- Water
Schedule D	- Noise
Schedule E	- Waste
Schedule F	- Land
Schedule G	- Nature conservation
Schedule H	- Declared Wild River Areas
Schedule I	- Community
Schedule J	- Definitions
Schedule K	- Maps

Schedule A - General

Financial assurance

- (A1) The holder of the environmental authority must provide a 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.

NOTE: The calculation of financial assurance for condition (A1) must be in accordance with the guideline "Financial assurance for petroleum activities". The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas at any one time, which may vary on an annual basis due to progressive rehabilitation. This includes any disturbance that occurred under a prerequisite or replaced petroleum authority. The amount required for the financial assurance must be the highest total rehabilitation cost calculated for any year of the environmental management plan.

- (A2) The financial assurance is to remain in force until the administering authority is satisfied that no claim is likely to be made on the assurance.

NOTE: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.

Maintenance of measures, plant and equipment

- (A3) The holder of the environmental authority must ensure:
- (a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; and
 - (b) that such measures, plant and equipment are maintained in a proper condition; and
 - (c) that such measures, plant and equipment are operated in a proper manner.

Monitoring

- (A4) Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority. Monitoring results relating to rehabilitation should be kept until the environmental authority is surrendered.
- (A5) Where monitoring is a requirement of this environmental authority, ensure that a suitably qualified and experienced person(s) conducts all monitoring.

Storage and handling of flammable and combustible liquids

- (A6) The holder of the environmental authority must ensure that any spillage of all flammable and combustible liquids will be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and that the system is maintained in accordance with Section 5.9 of AS 1940 - Storage and Handling of Flammable and Combustible Liquids.

Work program or development plan

- (A7) 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.

Definitions

- (A8) Words and phrases used in this environmental authority are defined in Schedule J - Definitions. Where a definition for a term used in this environmental authority is sought and the term is not defined within this authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

END OF CONDITIONS FOR SCHEDULE A

Schedule B - Air

Dust nuisance

- (B1) The holder of the environmental authority 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.

- (B2) Despite Condition (B1), dust and particulate matter must not exceed the following levels at any sensitive or commercial place:
- (a) Dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with AS 3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulates - Deposited matter - Gravimetric method of 1991; and
 - (b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM10) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time when monitored in accordance with:
 - i. Particulate matter - Determination of suspended particulate PM10 high-volume sampler with size-selective inlet - Gravimetric method, when monitored in accordance with AS 3580.9.6 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM (sub) 10 high volume sampler with size-selective inlet - Gravimetric method of 1990;
- or
- ii. Any alternative method of sampling PM10, which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority.
- Note: You must propose which monitoring method is appropriate in accordance with condition (B2) (a) or (b) or both.
- (B3) When requested by the administering authority, 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.
- (B4) If monitoring in accordance with B3 indicates exceedence of the relevant limits in Condition (B3), then the holder of the environmental authority must:
- (a) address the complaint including the use of appropriate dispute resolution if required; or
 - (b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

END OF CONDITIONS FOR SCHEDULE B

Schedule C - Water

- (C1) Evaporation ponds located in areas frequented by livestock must be securely fenced.
- (C2) All determinations of the quality of water emissions or receiving environment must be made by a person or body registered by the National Association of Testing Authorities (NATA) for the required determinations, with the exception of the determination of dissolved oxygen content.

Erosion and sedimentation

- (C3) The holder of the environmental authority must:
- (a) design, install and maintain adequate contour banks and diversion drains to minimise the potential for stormwater runoff to enter disturbed areas by petroleum activities; and
 - (b) design, install and maintain adequate erosion and sediment control structures where necessary to prevent or minimise erosion of disturbed areas and the sedimentation of any waters.

END OF CONDITIONS FOR SCHEDULE C

Schedule D - Noise

- (D1) The holder of the environmental authority must ensure that petroleum activities do not cause environmental nuisance at any sensitive or commercial place.
- (D2) Notwithstanding condition (D1) the holder of the environmental authority must ensure that noise emitted from any aspect of petroleum activities does not exceed the noise levels specified in the tables below at any sensitive place 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)

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.

- (D3) The method of measurement and reporting of noise levels must be in accordance with the most recent edition of the Environmental Protection Agency's Noise Measurement Manual.
- (D4) 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 or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

- (D5) If monitoring in accordance with D4, indicates Condition (D2) is not being met, then the holder of the environmental authority must:
- (a) address the complaint including the use of appropriate dispute resolution if required; or
 - (b) immediately implement noise abatement measures so that noise emissions from the activity do not result in further environmental nuisance.

END OF CONDITIONS FOR SCHEDULE D

Schedule E - Waste

Waste management

- (E1) The holder of the environmental authority must 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 this environmental authority.
- (E2) The only regulated waste permitted to be disposed of on-site is the saline effluent and residues associated with the evaporation dam.
- (E3) The holder of the environmental authority must remove and dispose of all regulated waste not permitted to be disposed of by condition (E2) to a licensed waste disposal facility or recycling facility.
- (E4) 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 *Environmental Protection Act* and sent to a facility licensed to accept such waste.
- (E5) When regulated waste is removed from within the boundary of the petroleum authority and transported by the holder of this environmental authority, a record must be kept of the following:
- (a) date of waste transport;
 - (b) quantity of waste removed and transported;
 - (c) type of waste removed and transported;
 - (d) route selected for transport of waste;
 - (e) quantity of waste delivered; and
 - (f) any incidents (e.g. spillage) that may have occurred on route.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – Land

Land management

- (F1) 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 in accordance with condition (F5).

Vegetation management

- (F2) The holder of the environmental authority must:
- (a) prevent or minimise disturbance to vegetation by petroleum activities; and
 - (b) manage the effects of clearing to prevent the loss of biodiversity, reduction of ecological processes and land degradation.
- (F3) The holder of the environmental authority must consider whether it is feasible to avoid clearing and, where viable alternatives exist, must not clear vegetation:
- (a) in, or within 50 metres of, the high bank of a watercourse;
 - (b) in, or within 50 metres of, the static high water mark of wetlands, lakes or springs;
 - (c) in a way that isolates clumps or dissects corridors of vegetation;
 - (d) on slopes greater than 5%;
 - (e) on dispersible soils; and
 - (f) in existing or potential discharge areas.

Protection of riverine areas

- (F4) 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.

Rehabilitation landform criteria

- (F5) As soon as practicable and within 6 months (or longer period agreed in writing with 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 in accordance with *Environmental Protection Act* requirements;
 - (b) reshape all significantly disturbed land to a stable landform similar to that of surrounding undisturbed areas;
 - (c) ensure that significantly disturbed land is reinstated to the pre-disturbed land suitability class;
 - (d) 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;
 - (e) ensure that the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by petroleum activities;
 - (f) ensure that the water quality of any residual water bodies constructed by petroleum activities meets criteria for subsequent uses and does not have potential to cause environmental harm;
 - (g) decommission an inactive buried pipeline by in-situ decommissioning (i.e. abandonment in place) consistent with the requirements of AS 2885.

- (F6) 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;
 - (b) not located within 100 m of any natural drainage feature (i.e. watercourse, waterway, wetland or lake); and
 - (c) located to avoid capturing overland flow.
- (F7) For high hazard dams containing hazardous waste, the holder of the environmental authority must design, construct, repair, maintain, operate and decommission each dam only in accordance with an acknowledged design plan that must comply with the standard environmental conditions in the "Code of Environmental Compliance for Environmental Authorities for High Hazard Dams Containing Hazardous Waste".
- (F8) Dams and evaporation ponds containing hazardous waste must not be abandoned. They must be decommissioned to a situation where water can no longer be stored and the dams/evaporation ponds and their contained waste(s) are removed or made stable, whereafter the dams/evaporation ponds are no longer dams/evaporation ponds and they become landforms on the operational land and must comply with the rehabilitation requirements of this Environmental Authority.

Infrastructure

- (F9) All infrastructure constructed by or for the holder of the environmental authority must be removed by the holder from the site and the site rehabilitated according to condition (F5) prior to surrender of the environmental authority.
- (F10) Where infrastructure is to remain after the surrender of the environmental authority, the holder must obtain the written agreement of the administering authority and the current land owner/holder.

END OF CONDITIONS FOR SCHEDULE F

Schedule G – Nature conservation

Environmentally sensitive areas

- (G1) The holder of the environmental authority must ensure that petroleum activities:
- (a) are not conducted within a category A or B environmentally sensitive area;
 - (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; and
 - (c) 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.

- (G2) The holder of the environmental authority must ensure that 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.

END OF CONDITIONS FOR SCHEDULE G

Schedule H – Declared wild river areas

- (H1) If the petroleum authority is in or partly within a declared wild river 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 river area are conducted in accordance with the conditions in the wild river declaration for the area that state they are for petroleum activities.

END OF CONDITIONS FOR SCHEDULE H

Schedule I - Community

Monitoring and complaints

- (I1) The holder of the environmental authority must:
- (a) develop and implement a monitoring program that will demonstrate compliance with the conditions in this environmental 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.

Notification

- (I2) The holder of the environmental authority must:
- (a) record and initially notify the administering authority as soon as practicable of any emergency or incident that causes non-compliance with the environmental conditions; and
 - (b) notify the administering authority in writing within 14 days of the initial notification.

END OF CONDITIONS FOR SCHEDULE I

Schedule J - Definitions

Some of the words and phrases used in this licence are defined below:

Where a definition for a term used in this authority is sought and the term is not defined within this authority the definitions provided in the *Environmental Protection Act 1994*, its regulations, and Environmental Protection Policies shall be used.

Word Definitions

Administering authority means -

- (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the *Environmental Protection Act 1994* – the local government; or
- (b) for all other matters – the Chief Executive of the Environmental Protection Agency; or
- (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.

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. It may be classified as a hazardous waste.

Background noise level $L_{A90,15min}$ means the A-weighted sound pressure level of the residual noise exceeded for 90% of a representative time period of not less than 15 minutes, using time weighting, 'F'.

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

Contaminant - The *Environmental Protection Act 1994* defines, under Section 11, a contaminant as:

- (a) a gas, liquid or solid; or
- (b) an odour; or
- (c) an organism (whether alive or dead), including a virus; or
- (d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
- (e) a combination of contaminants.

Development plan - Under the P & G Act, 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.

Discharge area is:

- (a) that part of the land surface where groundwater discharge produces a net movement of water out of the groundwater; and
- (b) identified by an assessment process consistent with the document: Salinity Management Handbook, Queensland Department of Natural Resources, 1997; or
- (c) identified by an approved salinity hazard map held by the Department of Natural Resources, Mines and Water.

Dispersible soils are soils in which clay material disintegrates into particles less than 2 microns across. This can be observed within 24 hours when soil crumbs are submerged in distilled water.

Dissects corridors of vegetation means clearing vegetation that results in a break more than 50 metres wide across a corridor.

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.

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.

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.

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.

Groundwater means subsurface water, generally saturating the soil or rock in which it occurs.

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.

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*.

$L_{A \text{ max, adj, } T}$ is the adjusted average maximum A-weighted sound pressure level measured over a time period T. The maxima must be measured on a sound level meter with a frequency-weighting that corresponds to perceived loudness ("A" weighting) and the meter must be set to the "fast" response time-weighting. The measured values are to be adjusted upwards by 2 dB(A) to 5 dB(A) if the noise source has tonal characteristics. The measuring period must be in excess of five minutes. The arithmetic average of the adjusted maxima, after eliminating any extraneous noise peaks, is the measure used to characterise the noise environment. (This measure will generally be similar to a percent exceedance of 10% or less. Refer to Australian Standard AS1055.)

Lake - A natural or artificial body of water, either permanent or intermittent.

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.

Noise means a sound or vibration of any frequency, whether transmitted through air or any other physical medium.

Petroleum activities means activities authorised to take place on land subject to a petroleum authority, including rehabilitation and decommissioning activities.

Petroleum authority is–

- a) a 1923 Act petroleum tenure granted under the *Petroleum Act 1923*; or
- b) an authority to prospect, petroleum lease, data acquisition authority, water monitoring authority, petroleum facility licence, survey licence or pipeline licence granted under the *Petroleum and Gas (Production and Safety) Act 2004*; or
- c) a licence, permit, pipeline licence, primary licence, secondary licence or special prospecting authority granted under the *Petroleum (Submerged Lands) Act 1982*.

Petroleum works site is a separate location on the area subject to a petroleum authority where petroleum activities are undertaken (e.g. a well site, seismic survey line, camp site, compressor site, evaporation pond etc).

Potential discharge area - Low lying parts of the landscape (relative to adjacent terrain) where groundwater movements are within 2-5m of the land surface and the landscape may be subject to upward movement of groundwater in the future.

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

Sedimentation pond is a bunded or excavated structure used to contain and settle waterborne sediment running off disturbed areas.

Sensitive place means any of the following places –

- a) a dwelling;
- b) a library, childcare centre, kindergarten, school, college, university or other educational institution;
- c) a hospital, surgery or other medical institution;
- d) a protected area or an area identified under a conservation plan as a critical habitat or an area of major interest, under the *Nature Conservation Act 1992*;
- e) a marine park under the *Marine Parks Act 1982*; and
- 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 organised 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, 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 - The surface layer of a soil profile, which is usually more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from natural surface.

Watercourse means a river, creek or stream in which water flows permanently or intermittently in a visibly defined channel (natural, artificial or artificially improved) with:

- (a) continuous bed and banks;
- (b) an extended period of flow for some months after rain ceases, and
- (c) an adequacy of flow that sustains basic ecological processes and maintains biodiversity.

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

Waterway - A naturally occurring feature where surface water runoff normally collects, such as a clearly defined swale or gully, but only flows in response to a local rainfall event.

Wetland – An area of permanent or periodic/intermittent inundation, whether natural or artificial, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6m. Wetlands typically include areas such as lakes, swamps, marshes, estuaries or mudflats.

Wild river areas may include the following–

- (a) high preservation areas;
- (b) preservation areas;
- (c) floodplain management areas;
- (d) subartesian management areas.

Work program - Under the P & G Act, 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.

END OF CONDITIONS FOR SCHEDULE J

APPENDIX B

Criteria for dams and evaporation ponds

The holder of a Petroleum Authority may require containment structures to be constructed within the authority 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.

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

- (1) High hazard dams
- (2) Medium hazard dams containing hazardous waste; or
- (3) Low hazard dams.

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	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	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	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	16µg/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 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.

Determining other risk factors

If a proposed dam exceeds any of the size and location criteria listed in Table 2, then the dam will be a high hazard dam.

Table 2 – Determination of other risk factors

	Threshold for high hazard activity
Criterion 1 Location with respect to habitation or water infrastructure	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 <ul style="list-style-type: none"> - 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 dam is located within a: <ul style="list-style-type: none"> - declared catchment or sub-artesian area; or - watercourse and the dam's surface area of water exceeds 1ha.
Criterion 3 Size	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.

Determining the hazard category of dam containing hazardous waste

Table 3 summarises the process for determining the hazard category of dams on a site.

If any proposed dam 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 medium hazard 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 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	Dam location and size do not trigger criterion 1 listed in table 2	The dam is a low hazard dam
Dam contents exceed limits in Table 1	Dam location and size are below the criteria listed in table 2	The dam is a medium hazard dam containing hazardous waste.
Dam contents exceed limits in Table 1	Dam location and size are above the criteria listed in table 2	The dam is a high hazard 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 for the design, construction, operation, maintenance and decommissioning of dams containing hazardous waste

Design:

- (a) Dams with a capacity up to 3 mega litres 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 dispersible 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 towards and on the outer faces of embankment dams to minimise erosion and breaching potential.
- (m) Dispersible 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 12.2 and 12.3 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.

END OF ENVIRONMENTAL AUTHORITY

Compliance Report

This document is intended for internal use to assist officers to document their decision-making process when considering compliance or enforcement action(s) and requesting a Formal Investigation

C-CPLRC-100047221 Community report regarding rehabilitation of Plainview 003 well

QA CHECKLIST

Tick once complete	Checklist	Comments (if applicable)
☐	Arrange meeting to discuss proposed PIN with relevant delegate	
☒	Followed the department's Enforcement Guidelines in determining an appropriate recommendation	
☐	Attach recent free ASIC search for company(s)*	
☐	Attach permit in force at time of the offence (if applicable)	
☐	Attach imagery of the site, with sampling and release points (if applicable)	
☐	Attach sample results and discuss relevant results (if applicable)	
☐	Attach relevant photos and discuss relevant photos (if applicable)	
☐	Include and consider relevant correspondence (pre-enforcement/post inspection letter and reply from operator)	
☒	Compliance Report reviewed by TL and/or CDM	
☐	Enforcement recommendation created for each proposed compliance response in Compliance Hub	
☐	Send Compliance Report and attachments to Managers (Compliance) inbox , including KPI box	
☐	Send draft PIN cover letter to delegate (to be requested by delegate)	
☐	Review/draft ESR alert for PIN (to be requested by delegate)	

*Note:

- Managers (Compliance) will request a full (i.e. paid) ASIC search if the enforcement recommendation is endorsed to ensure the current registered business address is used to serve the notice / PIN.
 - Compliance centres may need to carry out full ASIC searches as part of initial investigation and pre-enforcement activities in order to ensure that pre-enforcement is sent to correct registered business address. This will be a local business decision. If a full ASIC search has been obtained, please attach it.
- Managers (Compliance) also expect that sufficient effort is carried out to confirm the correct legal entity(s) for the alleged offence prior to submitting this report.

PERMIT DETAILS

Licence/Permit Type:	Environmental Authority (EA)
Permit / EA Number:	Environmental Authority (petroleum activities) No. EA 150 254
Name Of Holder On Permit:	Arrow Energy NL (Arrow)
Date Permit in Effect:	1/01/2007 until November 2008
CR / CA ref.	C-CPLRC-100047221
eDOCs File Reference	101/0006105-001(E)

BACKGROUND DETAILS

Compliance Report

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On 26 November 2020, [78B(2)] lodged a complaint on behalf of [78B(2)] to the Pollution Hotline (edocs # 12855861). [78B(2)] has authorisation from [78B(2)] to advocate on his behalf in this matter.

On 27 November 2020, the Pollution Hotline allocated it to the Toowoomba Compliance Team and assigned it case number C-CPLRC-100047221.

The details of [78B(2)] complaint are;

- He has concerns regarding unsatisfactory compliance with the conditions of a Conduct and Compensation Agreement (CCA) for land described as lot 36 on DY361, in relation to Arrow's gas well Plainview 003 (PV003) that was plugged and abandoned (P&A) in 2008. The CCA dated 2 April 2008 was with a previous landholder [78B(2)] and Arrow Energy Limited.
- That Arrow has failed to comply with the terms of the CCA's rehabilitation conditions. Clause 1(b) of the CCA states Arrow are obliged to rehabilitate the affected land in accordance with the *Petroleum and Gas (Production and Safety) Act 2004* and any environmental requirements.
- To determine the environmental requirements, the complaint lists alleged non-compliance with the rehabilitation conditions in Schedule H of the current EA EPPG00972513, particularly condition Rehabilitation 2. It is noted this EA authorises and conditions activities on a number of tenures including petroleum lease (PL) 238 but not authority to prospect (ATP) 683. The relevance of this is explained below.
- He advises that subsidence has occurred in the disturbed area and no effort has been made to rectify this subsidence.
- There is gravel remaining on the disturbed area, which was left behind after completion of activities. No effort has been made to remove the gravel and restore the disturbed area to its former condition. The gravel continues to interfere with [78B(2)] ability to successfully farm the land causing financial loss and damage to equipment.

Background

May 2008 - Plainview 003 well was drilled and then plugged and abandoned. These petroleum activities were authorised under ATP683.

9 June 2011 – Property sold to [78B(2)] After the property purchase had been finalised, he discovered there was a P&A well on the property.

March to September 2012 – [78B(2)] and Arrow conversing re issue. Arrow conducted an inspection of the site in September.

2012 to 2014 – Communications from Arrow inferred that there would be no rehabilitation of the well site unless [78B(2)] granted access to his water bores. [78B(2)] concluded that Arrow were *trying to leverage access under the Water Act 200 in exchange for rectifying non-compliance under the EA.*

2014 to 2019 – No further follow up from Arrow.

20 December 2019 – [78B(2)] contacted Arrow through his lawyer regarding remediation.

2 March 2020 – Arrow conducted site visit at disturbed area.

1 April 2020 – Arrow emailed [78B(2)] a remediation program.

25 June 2020 – Video meeting held between parties where they discussed issues with remediation plan and suggested ways to move forward.

12 August 2020 – Email from Arrow advising that Arrow *typically doesn't undertake the testing requested prior to rehabilitation proposed so we are engaging with the business regarding the request.*

14 September 2020 – Email from [78B(2)] to Arrow stating *Some time has now elapsed since the video meeting re Rehabilitation of PV003 on the [78B(2)] property. Yet another growing season has commenced without any resolution to the Rehabilitation and testing issues that [78B(2)] has raised with you. This delay in action is resulting in further losses for [78B(2)] operations. The Video meeting resulted in outlining a simple way forward, and you expressed Arrow's keen interest in resolving this outstanding issue. However, this has stalled on a matter of testing (re your last communication). Mr [78B(2)] respectfully reinforces that he feels, as per the previous communications, current obligations under the CCA and EA are not being fulfilled and the extended delay to the proposed solution is a cause of ongoing loss, frustration and anxiety for [78B(2)] Please respond urgently with confirmation of the next*

Compliance Report

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steps to resolve the outstanding Rehabilitation issues as per the video meeting and progressing this situation.

16 November 2020 – Meeting with Land Access Ombudsman who advised (on 25 November 2020) that the matter should be referred to DES/DNRME.

Investigations

- The well site and disturbed area are on petroleum lease (PL) 238 authorised by the current permit EPPG00972513. However, the current EA only came into effect in 2013 and therefore the conditions of this EA cannot be applied retrospectively to 2008.
- Advice from the Department of Resources (DOR) Engagement Team (edocs # 12855913) stated;
 - CCAs are listed on the title and are attached to the land, not the owner. Therefore, 78B(2) is a party to the CCA that was in place with the former landowner and Arrow.
 - In addition, it is not a legal or legislative requirement for the person selling the land to advise the new owner of the existence of a CCA as the CCA is listed on the title for the property.
 - A new CCA does not need to be implemented with the new landowner, as the old CCA should just continue. However, a CCA can be reviewed if either party believe there has been a change in the circumstances.
 - A CCA may have a condition within the agreement that provides a completion timeframe for the requirements that have been agreed to. But it is not a requirement to have a completion date within the CCA.
 - It depends on the conditions within the agreement as to whether CCAs are signed off by both parties when completed. Some CCAs include ongoing monitoring as a condition beyond the completion of works. As such, it depends on the conditions of this specific CCA as to whether 78B(2) can require Arrow to fulfil the conditions of the CCA.
- After conferring with DES' Energy & Extractive Assessment team (edocs # 13035252) and DOR's Resources Safety and Health Queensland (edocs # 13035351), it was discovered that PL238 was granted on 29 October 2009, and that the well was drilled under tenure ATP (Authority to Prospect) 683. The petroleum lease was not carved out of the ATP and granted until 2009.
- An explanation of the location of tenures is given in Image 1 below. The well location (lot 2 on SP231642 denoted by the smaller polygon within the larger polygon) is on PL238 (shown as the larger polygon south of Dalby) which is currently authorised by EPPG00972513. However Plainview 003 well was drilled under ATP683 and authorised under EA 150 254. The historic location for ATP683 was much bigger as shown by the yellow area below. The current location of ATP683 is now further south than the site. ATP683 is currently authorised under EPPG00895813.
- EA 150 254 does not include a condition declaring that the rehabilitation conditions remain in effect after the EA is cancelled (s 207(3)). EA 150 254 is no longer in effect.

Compliance Report

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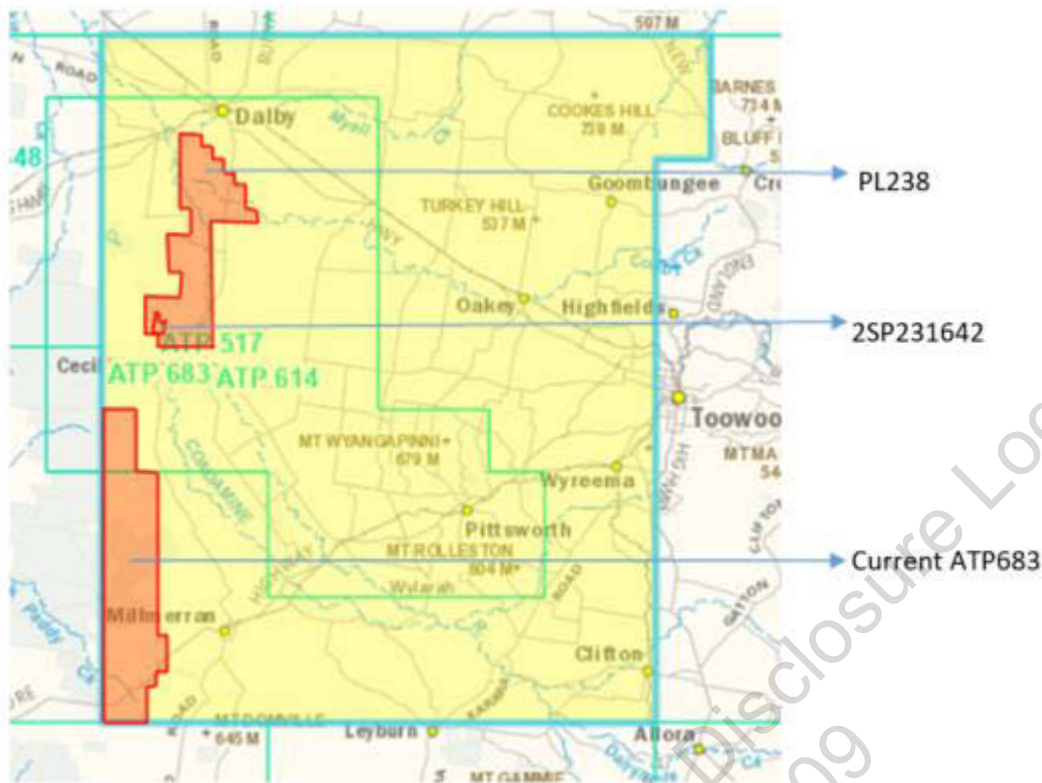


Image 1: Location of tenures and 78B(2) property

- If someone was searching for the location of Plainview 003 well on mapping systems, it would show as being on PL238. The current location of ATP683 is much further south than its previous location when the well was drilled on this tenure. Consequently, all files for this issue will be filed on G drive under the relevant EA for PL238 which is EPPG00972513 and on edocs file 101/0006105.
- It was also determined that with regard to the *Code of Practice for constructing and abandoning coal seam gas wells and associated bores in Queensland*, the first edition was not published until 2011. Prior to this, all requirements sat in the *Petroleum and Gas (Production and Safety) Act 2004* and *Petroleum and Gas (Production and Safety) Regulation 2004*. The requirements were significantly less prescriptive prior to the code being implemented.
- A search of DES' electronic permit records showed the relevant EA for ATP683 for May 2008 was EA 150 254 which did have an unsigned word version from January 2007 attached to the electronic records. Therefore, this EA should be used as a reference to determine the environmental requirements, not the current EA (edocs # 13035499).
- Schedule F – Land of EA 150 254 states the land management requirements in condition (F1) and the rehabilitation landform criteria in condition (F5) as:

(F1) 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 in accordance with condition (F5).

Compliance Report

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- (F5) As soon as practicable and within 6 months (or longer period agreed in writing with the administering authority) of the end of petroleum activities causing significant disturbance to land, the holder of the environmental authority must:
- i. remediate contaminated land in accordance with *Environmental Protection Act* requirements;
 - ii. reshape all significantly disturbed land to a stable landform similar to that of surrounding undisturbed areas;
 - iii. ensure that significantly disturbed land is reinstated to the pre-disturbed land suitability class;
 - iv. 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;
 - v. ensure that the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by petroleum activities;
 - vi. ensure that the water quality of any residual water bodies constructed by petroleum activities meets criteria for subsequent uses and does not have potential to cause environmental harm;
 - vii. decommission an inactive buried pipeline by in-situ decommissioning (i.e. abandonment in place) consistent with the requirements of AS 2885.

The definitions section of the EA provides a definition for land degradation as;

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.
- A review of the *Petroleum and Gas (Production and Safety) Act 2004* and the Petroleum and Gas (Production and Safety) Regulation 2004 did not detail requirements for rehabilitation after a well has been P&A.
 - 18 January 20021 DES Toowoomba Compliance sought permission, which was granted by 78B(2) (edocs # 13035624), to use some of the information provided in her summary when investigating the issue with Arrow and consequently requesting further information from Arrow regarding the specifics of the complaint.
 - 18 January 2021 a request for further information regarding the issue was sent to 78B(2) at Arrow Energy (edocs # 13035685). A response was due 1 February 2021.
 - 21 January 2021 78B(2) requested an extension of 2 weeks to respond to the information request, due to staff resourcing issues. An extension until COB 15 February 2021 was granted (edocs # 13036068).
 - 15 February 2021 Arrow provided a response to the department's request for further information (edocs # 13036136). It stated that *since the issue was first raised with us in 2011, Arrow has been willing to rectify the subsidence and remove any remaining gravel, and we remain committed to doing so. However, in order for Arrow to enter upon 78B(2) and to conduct further rehabilitation, Arrow requires a new CCA with 78B(2) to access his land.* They had also provided a remediation program to 78B(2) but no progress had been made to resolve the issue.
 - 19 February 2021 contact was made with DOR's Engagement Team to establish the difference between a compensation agreement and a CCA (edocs # 13036222). Investigations by the Engagement Team discovered that the title documents issued on 16 June 2011 when 78B(2) brought the property include a CCA lodged on 13 January 2017 under the *Mineral and Resources*

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(Common Provisions) Act 2014 (edocs # 13036270). It seems that neither Arrow nor 78B(2) are aware of this CCA. We would need to see the relevant parts of the CCA to determine if Arrow has rights to access the land to undertake the rehabilitation required. DOR suggest that perhaps this 2017 CCA was negotiated to replace the previous one, or maybe there is more than one CCA and the 2008 one is not listed on the title because there was no requirement to do this.

- 22 February 2021 Ken Goodwin - Senior Field and Compliance Officer, DOR advised that the 2017 CCA replaced the 2011 agreement which replaced the 2008 agreement. The changes however were only administrative and the conditions of the original agreement continue. The introduction of the Land Access Code in 2010 included all previous agreements made under the petroleum legislation. So the 78B(2) agreement is current and the land access conditions apply. The parties are entitled to renegotiate the agreement at any time.

ELEMENTS AND SUPPORTING EVIDENCE

Alleged offence:

Section 430 Contravention of condition of environmental authority

(3) The person must not contravene a condition of the authority.

The EA that was current at the time the well was plugged and abandoned was EA 150 254. Rehabilitation landform criteria are detailed in condition (F5) of the EA. When rehabilitation of the well occurred, it could be alleged that non-compliance with condition (F5)(b),(c) and (d)(ii) may have occurred. Condition (F5) states;

(F5) As soon as practicable and within 6 months (or longer period agreed in writing with 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 in accordance with Environmental Protection Act requirements;*
- (b) reshape all significantly disturbed land to a stable landform similar to that of the surrounding undisturbed areas;*
- (c) ensure that significantly disturbed land is reinstated to the pre-disturbed land suitability class;*
- (d) on significantly disturbed land, take all reasonable and practicable measures to:*
 - i. re-establish surface drainage lines;*
 - ii. reinstate the top layer of soil profile; and*
 - iii. promote establishment of vegetation of the same species and density cover to that of the surrounding undisturbed areas;*
- (e) ensure the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by petroleum activities;*
- (f) ensure that the water quality of any residual water bodies constructed by petroleum activities meets criteria for subsequent uses and does not have potential to cause environmental harm;*
- (g) decommission an inactive buried pipeline by in-situ decommissioning (i.e. abandonment in place) consistent with the requirements of AS 2885.*

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However section 277(1) of the EP Act states an EA is cancelled when a replacement EA is issued. EA 150 254 has been replaced by a number of EAs with the current EA EPPG00972513 authorising PL238 which covers the relevant block of land at the centre of this issue. Section 200(2)(a) of the Act states an EA for a resource activity cannot take effect until the relevant tenure is granted. The EA that currently covers the land on which the P&A well is situated (EPPG00972513), does not authorise the tenure under which the well was drilled and subsequently P&A (ATP683). However conditions of the current EA (EPPG00895813), that authorises petroleum activities within ATP683 cannot be applied as the land on which the well was drilled and P&A is not within that tenure. Therefore no offence can be established.

Without any evidence to establish a continuing non-compliance with an EA condition or unlawful environmental harm there are no grounds on which to issue a statutory notice under Chapter 7 of the EP Act.

Location/Lot & Plan/Other Details: Plainview 003 well located on lot 2 SP231642 (previously known as lot 36 DY361)

Mitigating and aggravating circumstances

Mitigating circumstances - Arrow has agreed to remediate the subsidence, remove the gravel and provide validation testing and reporting to prove the land is suitable for use following any rectification works that may be required. They advise this will occur when 78B(2) gives reasonable access to Arrow to perform the remediation work on his land.

Aggravating circumstances – The issues can be resolved if access to the land is granted. A 2017 CCA is listed on the title for the property. This may provide the access that Arrow requires to undertake the rehabilitation works required. However, neither party seem to be aware of the existence of this CCA.

IMPACT / CULPABILITY

Minor impact and moderate culpability. Refer to Appendix 1 for assessment.

COMPLIANCE STRATEGY and RECOMMENDATION

- As the department does not have a copy of the CCA as it is an agreement between the two parties, compliance with specific rehabilitation conditions of the CCA can only be determined using environmental requirements stated in relevant legislation including the EA current at the time.
- A review of Arrow's environmental authority (EA) 150 254 current at the time the well was plugged and abandoned, shows that some non-compliance with the conditions of the EA has occurred.
- Arrow has stated they are willing to undertake the remediation works required to rehabilitate the site if access to the land is granted.
- Advice from the Department of Resources is that the compensation agreement from 2008 would still be current with 78B(2) as the new landholder. However, the land title shows there is a current CCA attached to the land. This may give Arrow the land access they require.
- It is recommended that;
 - No enforcement action is proposed to be taken against Arrow as there is no evidence to establish that conditions of the current or previous EA can now be applied to this well site
 - Conditions of the CCA are a matter for the DoR to determine under legislation that is administered by them,
 - A letter be sent to the landholder and his representative advising them of the outcome of the investigation and closing the matter. The letter will recommend that they engage with Arrow to allow them access to the land to undertake the rehabilitation required. It will also

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advise that they should seek legal advice regarding the currency of any CCA's associated with the land in question,

4. A letter be sent to Arrow advising that investigations into C-CPLRC-100047221 have been completed and that no compliance action will be taken and the matter is closed. The letter will also advise that they should seek legal advice regarding the currency of any CCA's associated with the land in question.

NATURAL JUSTICE / PROCEDURAL FAIRNESS

Notification	<ul style="list-style-type: none">The concerns of the landholder and his representative were clarified before a response was sought from the energy resource operator (Arrow Energy).Arrow was clearly informed of these concerns when they were asked to provide their response.The recommended actions seek to identify an alternate resolution of the matter in the current circumstances where an enforcement outcome is not available.Information from both Arrow and the landholder has been considered in determining the recommended action.
Response	<ul style="list-style-type: none">

OTHER MATTERS

Matter of Concern

A negotiated resolution of the landholder's concerns will be available if an agreement can be reached between the landholder and Arrow for reasonable access to the site for implementation of the proposed remediation plan.

HUMAN RIGHTS ACT 2019 CONSIDERATIONS

RECOMMENDING AND REVIEWING OFFICERS

Name of recommending officer: Ruth Brown

Signature:

Date recommendation made: 26/02/2021

Name of reviewing officer: Rob Spalding

Signature:

Date review completed: 12/03/2021

sch4p4(6) Personal information

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APPENDIX 1 – IMPACT AND CULPABILITY ASSESSMENT

Impact or Risk of Impact (including potential)				
Serious	Major	Moderate	Minor	Low
☐ Permanent or long term	☐ Medium to long-term	☐ Temporary to medium-term	☐ Transient impact	☒ No impact
☐ Wide scale, or of great intensity	☐ Medium to wide-scale, or of medium to great intensity	☐ Potentially on a localised or medium scale, or of low to medium intensity	☒ Localised scale, or of a low intensity	
☐ Widespread or high level of public concern or impact to public safety	☐ High level of public concern or impact to public safety	☐ Moderate level of public concern or impact to public safety	☐ Low level of public concern or impact to public safety	☒ No public concern or impact to public safety
☐ Administrative nature – severely undermines the legislative scheme or the offender provided false and misleading information	☐ Administrative nature – undermines the legislative scheme; or information is concealed; or avoids liability for fees; or avoids taking necessary actions to prevent offence	☐ Administrative nature – moderate impact on legislative scheme; or information is concealed; or offender carelessly fails to comply with administrative requirement	☒ Administrative nature – no impact on legislative scheme; or is of an inadvertent nature	☐ Administrative nature – could not have been prevented

Culpability		
Serious	Moderate	Low
☐ Intentional or wilful acts ☐ Involved serious misleading conduct	☐ Careless acts	☒ Inadvertent acts
☐ Past non-compliances or convictions involving the same or similar legislative provisions	☐ Isolated prior non-compliances with legislation or similar legislation	☒ No prior non-compliances with legislation or similar legislation
☐ Non-compliances of an ongoing or long duration	☐ Non-compliance of a medium duration	☐ Non-compliance of a short-term duration
☐ No attempt at clean-up or remedial action	☒ Genuine attempt at remediation or remediation partially effective	☐ Remediation effective
☐ Failure to notify the department effectively or notification outside of reasonable timeframes	☐ Attempt at notification to department of incident within reasonable timeframe	☐ Notification to department of incident within reasonable timeframe
☐ Motivated by profit or obtained a material benefit from the non-compliance	☐ May have benefited from the non-compliance	☒ Did not benefit from the non-compliance
☐ Wilful ignorance of clear directions, warning or administrative actions which may have prevented or mitigated the impact	☒ Was aware of the risk of impact or the impact was foreseeable	☐ Risk of impact or the impact was not foreseeable
☐ The impact or risk of impact was obvious and/or preventable by implementing or following accepted industry standards	☒ The impact or risk of impact may have been prevented by following accepted industry standards	☐ The impact or risk of impact was not prevented by high standard of operation (greater than accepted industry standards)

CORRECTION OF ENVIRONMENTAL AUTHORITY (PETROLEUM) UNDER SECTION 145D - ENVIRONMENTAL PROTECTION ACT 1994

CLIENT: Arrow Energy Ltd

REGISTERED OFFICE ADDRESS: Level 13
10 Eagle Street
BRISBANE QLD 4000

TENEMENT: ATP 683P

TYPE OF APPROVAL: Non-Code Compliant Environmental Authority
(Petroleum Activities)

ENV AUTHORITY NO.: PEN200238408 (formerly 150 254)

FILE NO.: STH 6527

DECISION DUE DATE: N/A

TIME SPENT:

1.0 SUMMARY

Arrow Energy NL were issued with EA number 150 254 on 4 January 2007 to conduct ERA 21D on ATP683.

The Department of Mines and Energy contacted the EPA on 5 September 2008 to advise that the entity listed as the tenement holder's name on the environmental authority, Arrow Energy NL, is no longer current, as in July 2008, Arrow Energy NL changed the company name to Arrow Energy Ltd. The company still holds the same ABN number.

Therefore, the EA holder is incorrectly represented as a holder of the petroleum tenement. Under Section 145D of the *Environmental Protection Act 1994* (EP Act), the EPA can amend the EA to reflect the name change.

The number system of environmental authorities has also changed since EA 150 254 was issued in 2007. As part of this administrative amendment the EA number can also be changed to reflect the new numbering system.

Whilst conducting this administrative amendment, it was found that the EA for ATP683 incorrectly possessed ERA21D – a Level 1 activity. When the licence was amended on 4 January 2007, ERA75 was removed from the permit (and transferred to the EA for PL198); however, the Level 1 ERA was not altered to reflect the change in activities. After consultation with 78B(2) of Arrow Energy, the ERA was changed to ERA21E.

2.0 STATUTORY REQUIREMENTS

SECTION 145D – CORRECTION

Under Section 145D, the administering authority may amend an environmental authority (petroleum activities) to correct a clerical or formal error if –

- (a) the amendment does not adversely affect the interests of the environmental authority holder or anyone else; and
- (b) the holder has been given written notice of the amendment

Amend the EA holder

Under Section 145D, the grounds for this amendment is that Arrow Energy Ltd is the correct name of the holder of the environmental authority and not Arrow Energy NL.

Amend the EA number

EA 150 254 has been re-numbered as PEN200238408

Amend the ERA

ERA21D was changed to ERA21E.

CONSULTATIONS:

78B(2) of Arrow Energy was consulted to ascertain what activities were being conducted on ATP683, to ensure that ERA21D was not necessary. It was determined that an evaporation pond that previously sat within ATP683 is now part of PL198, and therefore the conditions relating to this pond were removed from the EA, however, the ERA21D was not downgraded to ERA21E. On 16 October 2008, the EPA received written consent from 78B(2) 78B(2) endorsing the change and stating that no Level 1 activities are being conducted the ATP. A copy of the ASIC name change certificate was also supplied.

3.0 RECOMMENDATION

It is recommended that

- the administering authority amend the environmental authority under Section 145D of the *Environmental Protection Act 1994*; and
- the written notice of the amendment and the amended EA be issued to the client and a copy to the DME Tenures Unit; and
- a copy of the amended EA be stored in the electronic register and on file.

Elizabeth Dunlop
Environmental Officer
Petroleum and Gas Unit
Ph – 3225 1056

Reviewed & Endorsed By

Delegate

Mark McNamara
Team Leader
Petroleum and Gas Unit
Ph – 3224 7099

Signed -
Date -

Environmental Authority (petroleum activities) No. 150 254

Sections 124 Environmental Protection Act 1994

This environmental authority is granted under the Environmental Protection Act 1994 and includes conditions to minimise environmental harm caused, or likely to be caused, by the authorised petroleum activities. An environmental authority (petroleum activities) may be for petroleum activities authorised (under the Petroleum and Gas (Production and Safety) Act 2004, Petroleum Act 1923 or Petroleum (Submerged Lands) Act 1982) to occur under one or more of the following petroleum authorities: authority to prospect; petroleum lease, data acquisition authority, water monitoring authority, petroleum facility licence, survey licence, pipeline licence, licence, permit, primary licence, secondary licence or special prospecting authority. In general, a petroleum activity means an activity that is authorised under the relevant petroleum legislation. Rehabilitation and remediation activities that facilitate and support petroleum activities and any action taken to prevent environmental harm are included in the definition of petroleum activity.

Under the provisions of the *Environmental Protection Act 1994* this environmental authority is issued to:

Arrow Energy NL
Level 13, 10 Eagle Street
BRISBANE QLD 4000

in respect of carrying out the following level 1 and level 2 environmentally relevant activities of Schedule 1 of the *Environmental Protection Regulation 1998*:

ERA	Description
21D	A petroleum activity otherwise prescribed under this schedule as a level 1 environmentally relevant activity.

on or in relation to the relevant petroleum authorities identified below:

Type of petroleum authority	Authorised petroleum authority number	Project / Location description
Authority to Prospect	ATP 683P	Toowoomba, Dalby and Cambooya Shires

This environmental authority is subject to the conditions set out in the attached schedules.

This environmental authority takes effect from **date of grant of petroleum authority**.

.....
Signed

.....
Date

Rod Kent
Manager
Delegate of Administering Authority
Environmental Protection Act 1994

Note: This environmental authority document is not proof of the current status of the environmental authority. The current status of the environmental authority may be ascertained by contacting the administering authority.

Schedule of conditions

This environmental authority incorporates the following schedules of conditions relevant to various issues:

Schedule A	- General
Schedule B	- Air
Schedule C	- Water
Schedule D	- Noise
Schedule E	- Waste
Schedule F	- Land
Schedule G	- Nature conservation
Schedule H	- Declared Wild River Areas
Schedule I	- Community
Schedule J	- Definitions
Schedule K	- Maps

Schedule A - General

Financial assurance

- (A1) The holder of the environmental authority must provide a 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.

NOTE: The calculation of financial assurance for condition (A1) must be in accordance with the guideline "Financial assurance for petroleum activities". The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas at any one time, which may vary on an annual basis due to progressive rehabilitation. This includes any disturbance that occurred under a prerequisite or replaced petroleum authority. The amount required for the financial assurance must be the highest total rehabilitation cost calculated for any year of the environmental management plan.

- (A2) The financial assurance is to remain in force until the administering authority is satisfied that no claim is likely to be made on the assurance.

NOTE: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.

Maintenance of measures, plant and equipment

- (A3) The holder of the environmental authority must ensure:
- (a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; and
 - (b) that such measures, plant and equipment are maintained in a proper condition; and
 - (c) that such measures, plant and equipment are operated in a proper manner.

Monitoring

- (A4) Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority. Monitoring results relating to rehabilitation should be kept until the environmental authority is surrendered.
- (A5) Where monitoring is a requirement of this environmental authority, ensure that a suitably qualified and experienced person(s) conducts all monitoring.

Storage and handling of flammable and combustible liquids

- (A6) The holder of the environmental authority must ensure that any spillage of all flammable and combustible liquids will be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and that the system is maintained in accordance with Section 5.9 of AS 1940 - Storage and Handling of Flammable and Combustible Liquids.

Work program or development plan

- (A7) 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.

Definitions

- (A8) Words and phrases used in this environmental authority are defined in Schedule J - Definitions. Where a definition for a term used in this environmental authority is sought and the term is not defined within this authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

END OF CONDITIONS FOR SCHEDULE A

Schedule B - Air

Dust nuisance

- (B1) The holder of the environmental authority 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.

- (B2) Despite Condition (B1), dust and particulate matter must not exceed the following levels at any sensitive or commercial place:
- (a) Dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with AS 3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulates - Deposited matter - Gravimetric method of 1991; and
 - (b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM10) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time when monitored in accordance with:
 - i. Particulate matter - Determination of suspended particulate PM10 high-volume sampler with size-selective inlet - Gravimetric method, when monitored in accordance with AS 3580.9.6 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM (sub) 10 high volume sampler with size-selective inlet - Gravimetric method of 1990;
- or
- ii. Any alternative method of sampling PM10, which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority.
- Note: You must propose which monitoring method is appropriate in accordance with condition (B2) (a) or (b) or both.
- (B3) When requested by the administering authority, 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.
- (B4) If monitoring in accordance with B3 indicates exceedence of the relevant limits in Condition (B3), then the holder of the environmental authority must:
- (a) address the complaint including the use of appropriate dispute resolution if required; or
 - (b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

END OF CONDITIONS FOR SCHEDULE B

Schedule C - Water

- (C1) Evaporation ponds located in areas frequented by livestock must be securely fenced.
- (C2) All determinations of the quality of water emissions or receiving environment must be made by a person or body registered by the National Association of Testing Authorities (NATA) for the required determinations, with the exception of the determination of dissolved oxygen content.

Erosion and sedimentation

- (C3) The holder of the environmental authority must:
- (a) design, install and maintain adequate contour banks and diversion drains to minimise the potential for stormwater runoff to enter disturbed areas by petroleum activities; and
 - (b) design, install and maintain adequate erosion and sediment control structures where necessary to prevent or minimise erosion of disturbed areas and the sedimentation of any waters.

END OF CONDITIONS FOR SCHEDULE C

Schedule D - Noise

- (D1) The holder of the environmental authority must ensure that petroleum activities do not cause environmental nuisance at any sensitive or commercial place.
- (D2) Notwithstanding condition (D1) the holder of the environmental authority must ensure that noise emitted from any aspect of petroleum activities does not exceed the noise levels specified in the tables below at any sensitive place 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)

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.

- (D3) The method of measurement and reporting of noise levels must be in accordance with the most recent edition of the Environmental Protection Agency's Noise Measurement Manual.
- (D4) 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 or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

- (D5) If monitoring in accordance with D4, indicates Condition (D2) is not being met, then the holder of the environmental authority must:
- (a) address the complaint including the use of appropriate dispute resolution if required; or
 - (b) immediately implement noise abatement measures so that noise emissions from the activity do not result in further environmental nuisance.

END OF CONDITIONS FOR SCHEDULE D

Schedule E - Waste

Waste management

- (E1) The holder of the environmental authority must 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 this environmental authority.
- (E2) The only regulated waste permitted to be disposed of on-site is the saline effluent and residues associated with the evaporation dam.
- (E3) The holder of the environmental authority must remove and dispose of all regulated waste not permitted to be disposed of by condition (E2) to a licensed waste disposal facility or recycling facility.
- (E4) 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 *Environmental Protection Act* and sent to a facility licensed to accept such waste.
- (E5) When regulated waste is removed from within the boundary of the petroleum authority and transported by the holder of this environmental authority, a record must be kept of the following:
- (a) date of waste transport;
 - (b) quantity of waste removed and transported;
 - (c) type of waste removed and transported;
 - (d) route selected for transport of waste;
 - (e) quantity of waste delivered; and
 - (f) any incidents (e.g. spillage) that may have occurred on route.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – Land

Land management

- (F1) 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 in accordance with condition (F5).

Vegetation management

- (F2) The holder of the environmental authority must:
- (a) prevent or minimise disturbance to vegetation by petroleum activities; and
 - (b) manage the effects of clearing to prevent the loss of biodiversity, reduction of ecological processes and land degradation.
- (F3) The holder of the environmental authority must consider whether it is feasible to avoid clearing and, where viable alternatives exist, must not clear vegetation:
- (a) in, or within 50 metres of, the high bank of a watercourse;
 - (b) in, or within 50 metres of, the static high water mark of wetlands, lakes or springs;
 - (c) in a way that isolates clumps or dissects corridors of vegetation;
 - (d) on slopes greater than 5%;
 - (e) on dispersible soils; and
 - (f) in existing or potential discharge areas.

Protection of riverine areas

- (F4) 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.

Rehabilitation landform criteria

- (F5) As soon as practicable and within 6 months (or longer period agreed in writing with 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 in accordance with *Environmental Protection Act* requirements;
 - (b) reshape all significantly disturbed land to a stable landform similar to that of surrounding undisturbed areas;
 - (c) ensure that significantly disturbed land is reinstated to the pre-disturbed land suitability class;
 - (d) 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;
 - (e) ensure that the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by petroleum activities;
 - (f) ensure that the water quality of any residual water bodies constructed by petroleum activities meets criteria for subsequent uses and does not have potential to cause environmental harm;
 - (g) decommission an inactive buried pipeline by in-situ decommissioning (i.e. abandonment in place) consistent with the requirements of AS 2885.

- (F6) 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;
 - (b) not located within 100 m of any natural drainage feature (i.e. watercourse, waterway, wetland or lake); and
 - (c) located to avoid capturing overland flow.
- (F7) For high hazard dams containing hazardous waste, the holder of the environmental authority must design, construct, repair, maintain, operate and decommission each dam only in accordance with an acknowledged design plan that must comply with the standard environmental conditions in the "Code of Environmental Compliance for Environmental Authorities for High Hazard Dams Containing Hazardous Waste".
- (F8) Dams and evaporation ponds containing hazardous waste must not be abandoned. They must be decommissioned to a situation where water can no longer be stored and the dams/evaporation ponds and their contained waste(s) are removed or made stable, whereafter the dams/evaporation ponds are no longer dams/evaporation ponds and they become landforms on the operational land and must comply with the rehabilitation requirements of this Environmental Authority.

Infrastructure

- (F9) All infrastructure constructed by or for the holder of the environmental authority must be removed by the holder from the site and the site rehabilitated according to condition (F5) prior to surrender of the environmental authority.
- (F10) Where infrastructure is to remain after the surrender of the environmental authority, the holder must obtain the written agreement of the administering authority and the current land owner/holder.

END OF CONDITIONS FOR SCHEDULE F

Schedule G – Nature conservation

Environmentally sensitive areas

- (G1) The holder of the environmental authority must ensure that petroleum activities:
- (a) are not conducted within a category A or B environmentally sensitive area;
 - (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; and
 - (c) 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.

- (G2) The holder of the environmental authority must ensure that 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.

END OF CONDITIONS FOR SCHEDULE G

Schedule H – Declared wild river areas

- (H1) If the petroleum authority is in or partly within a declared wild river 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 river area are conducted in accordance with the conditions in the wild river declaration for the area that state they are for petroleum activities.

END OF CONDITIONS FOR SCHEDULE H

Schedule I - Community

Monitoring and complaints

- (I1) The holder of the environmental authority must:
- (a) develop and implement a monitoring program that will demonstrate compliance with the conditions in this environmental 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.

Notification

- (I2) The holder of the environmental authority must:
- (a) record and initially notify the administering authority as soon as practicable of any emergency or incident that causes non-compliance with the environmental conditions; and
 - (b) notify the administering authority in writing within 14 days of the initial notification.

END OF CONDITIONS FOR SCHEDULE I

Schedule J - Definitions

Some of the words and phrases used in this licence are defined below:

Where a definition for a term used in this authority is sought and the term is not defined within this authority the definitions provided in the *Environmental Protection Act 1994*, its regulations, and Environmental Protection Policies shall be used.

Word Definitions

Administering authority means -

- (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the *Environmental Protection Act 1994* – the local government; or
- (b) for all other matters – the Chief Executive of the Environmental Protection Agency; or
- (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.

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. It may be classified as a hazardous waste.

Background noise level $L_{A90,15min}$ means the A-weighted sound pressure level of the residual noise exceeded for 90% of a representative time period of not less than 15 minutes, using time weighting, 'F'.

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

Contaminant - The *Environmental Protection Act 1994* defines, under Section 11, a contaminant as:

- (a) a gas, liquid or solid; or
- (b) an odour; or
- (c) an organism (whether alive or dead), including a virus; or
- (d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
- (e) a combination of contaminants.

Development plan - Under the P & G Act, 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.

Discharge area is:

- (a) that part of the land surface where groundwater discharge produces a net movement of water out of the groundwater; and
- (b) identified by an assessment process consistent with the document: Salinity Management Handbook, Queensland Department of Natural Resources, 1997; or
- (c) identified by an approved salinity hazard map held by the Department of Natural Resources, Mines and Water.

Dispersible soils are soils in which clay material disintegrates into particles less than 2 microns across. This can be observed within 24 hours when soil crumbs are submerged in distilled water.

Dissects corridors of vegetation means clearing vegetation that results in a break more than 50 metres wide across a corridor.

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.

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.

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.

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.

Groundwater means subsurface water, generally saturating the soil or rock in which it occurs.

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.

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*.

$L_{A \text{ max, adj, } T}$ is the adjusted average maximum A-weighted sound pressure level measured over a time period T. The maxima must be measured on a sound level meter with a frequency-weighting that corresponds to perceived loudness ("A" weighting) and the meter must be set to the "fast" response time-weighting. The measured values are to be adjusted upwards by 2 dB(A) to 5 dB(A) if the noise source has tonal characteristics. The measuring period must be in excess of five minutes. The arithmetic average of the adjusted maxima, after eliminating any extraneous noise peaks, is the measure used to characterise the noise environment. (This measure will generally be similar to a percent exceedance of 10% or less. Refer to Australian Standard AS1055.)

Lake - A natural or artificial body of water, either permanent or intermittent.

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.

Noise means a sound or vibration of any frequency, whether transmitted through air or any other physical medium.

Petroleum activities means activities authorised to take place on land subject to a petroleum authority, including rehabilitation and decommissioning activities.

Petroleum authority is–

- a) a 1923 Act petroleum tenure granted under the *Petroleum Act 1923*; or
- b) an authority to prospect, petroleum lease, data acquisition authority, water monitoring authority, petroleum facility licence, survey licence or pipeline licence granted under the *Petroleum and Gas (Production and Safety) Act 2004*; or
- c) a licence, permit, pipeline licence, primary licence, secondary licence or special prospecting authority granted under the *Petroleum (Submerged Lands) Act 1982*.

Petroleum works site is a separate location on the area subject to a petroleum authority where petroleum activities are undertaken (e.g. a well site, seismic survey line, camp site, compressor site, evaporation pond etc).

Potential discharge area - Low lying parts of the landscape (relative to adjacent terrain) where groundwater movements are within 2-5m of the land surface and the landscape may be subject to upward movement of groundwater in the future.

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

Sedimentation pond is a bunded or excavated structure used to contain and settle waterborne sediment running off disturbed areas.

Sensitive place means any of the following places –

- a) a dwelling;
- b) a library, childcare centre, kindergarten, school, college, university or other educational institution;
- c) a hospital, surgery or other medical institution;
- d) a protected area or an area identified under a conservation plan as a critical habitat or an area of major interest, under the *Nature Conservation Act 1992*;
- e) a marine park under the *Marine Parks Act 1982*; and
- 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 organised 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, 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 - The surface layer of a soil profile, which is usually more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from natural surface.

Watercourse means a river, creek or stream in which water flows permanently or intermittently in a visibly defined channel (natural, artificial or artificially improved) with:

- (a) continuous bed and banks;
- (b) an extended period of flow for some months after rain ceases, and
- (c) an adequacy of flow that sustains basic ecological processes and maintains biodiversity.

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

Waterway - A naturally occurring feature where surface water runoff normally collects, such as a clearly defined swale or gully, but only flows in response to a local rainfall event.

Wetland – An area of permanent or periodic/intermittent inundation, whether natural or artificial, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6m. Wetlands typically include areas such as lakes, swamps, marshes, estuaries or mudflats.

Wild river areas may include the following–

- (a) high preservation areas;
- (b) preservation areas;
- (c) floodplain management areas;
- (d) subartesian management areas.

Work program - Under the P & G Act, 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.

END OF CONDITIONS FOR SCHEDULE J

APPENDIX B

Criteria for dams and evaporation ponds

The holder of a Petroleum Authority may require containment structures to be constructed within the authority 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.

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

- (1) High hazard dams
- (2) Medium hazard dams containing hazardous waste; or
- (3) Low hazard dams.

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	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	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	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	16µg/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 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.

Determining other risk factors

If a proposed dam exceeds any of the size and location criteria listed in Table 2, then the dam will be a high hazard dam.

Table 2 – Determination of other risk factors

	Threshold for high hazard activity
Criterion 1 Location with respect to habitation or water infrastructure	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 <ul style="list-style-type: none"> - 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 dam is located within a: <ul style="list-style-type: none"> - declared catchment or sub-artesian area; or - watercourse and the dam's surface area of water exceeds 1ha.
Criterion 3 Size	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.

Determining the hazard category of dam containing hazardous waste

Table 3 summarises the process for determining the hazard category of dams on a site.

If any proposed dam 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 medium hazard 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 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	Dam location and size do not trigger criterion 1 listed in table 2	The dam is a low hazard dam
Dam contents exceed limits in Table 1	Dam location and size are below the criteria listed in table 2	The dam is a medium hazard dam containing hazardous waste.
Dam contents exceed limits in Table 1	Dam location and size are above the criteria listed in table 2	The dam is a high hazard 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 for the design, construction, operation, maintenance and decommissioning of dams containing hazardous waste

Design:

- (a) Dams with a capacity up to 3 mega litres 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 dispersible 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 towards and on the outer faces of embankment dams to minimise erosion and breaching potential.
- (m) Dispersible 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 12.2 and 12.3 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.

END OF ENVIRONMENTAL AUTHORITY