

No. 1.



No. 21.



Pipeline question raised

LANDHOLDERS and environmentalists have been assured appropriate measures have been taken to minimise environmental impacts where the QGC pipeline crosses the Columboola Creek.

Concerns were raised over how the pipeline would be installed for the stretch that intersects an area of low-lying, flood-prone country south-east of Miles.

Department of Environment and Heritage Protection Executive Director Andrew Connor said an officer met with landholders on Monday.

"Landholders expressed concern about environmental impacts if trenching was used to install the pipeline, rather than drilling under the creek," Mr Connor said.

"The department has issued QGC with an Environmental Authority for the construction of the pipeline which has strict conditions to protect the environment and minimise erosion.

"This EA was issued based on an Environmental Management Plan prepared by QGC that indicates Columboola Creek will be crossed by drilling under the creek.

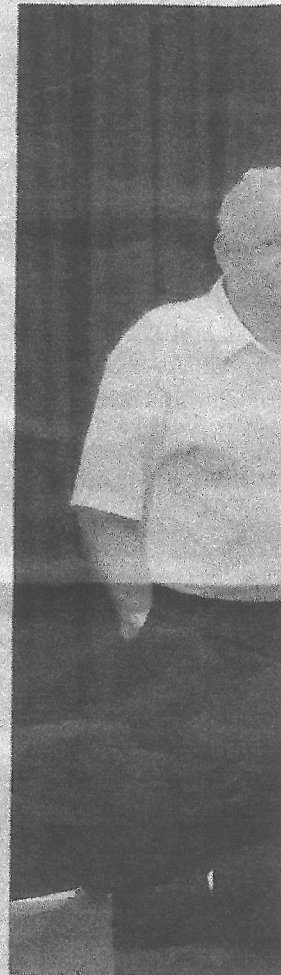
"Departmental officers will conduct further inspections during pipeline construction."

The department has asked QGC to confirm that the proposed method to cross Columboola Creek is by drilling under the creek prior to the commencement of works.

In a statement a QGC spokesperson said the method of installing the pipeline is appropriate for the environment and meets the conditions of the EA.

"Erosion and sediment control plans are prepared for every creek crossing for the QCLNG pipeline," the spokesperson said.

"The plans are examined, verified and certified by an independent third party to ensure they protect the environment and satisfy environmental regulations."



Brian Hedge, Jenny Lambert
WDRRC mayor Ray Brown.

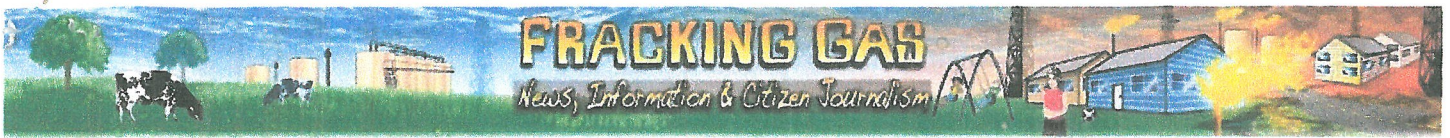
Min loca

QUEENSLAND Local Government Minister David Crisafulli was in Chinchilla last Thursday following an unsuccessful deamalgamation campaign by a group of Western Downs residents.



Local Government M

I want to m
deamalgam
successful in
communitie
are still hea



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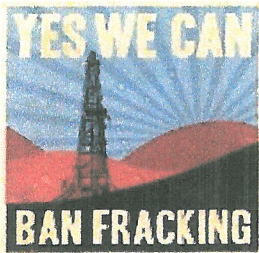
[Index](#) > [United States of America](#) > [Pennsylvania](#) > **Cattle Quarantined Contact with Fracking Wastewater**

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Shale Gas

COMMONWEALTH OF PENNSYLVANIA

Dept. of Environmental Protection
Commonwealth News Bureau
Room 308, Main Capitol Building
Harrisburg PA., 17120

Cattle from Tioga County Farm Quarantined after Coming in Contact with Natural Gas Drilling Wastewater

07/1/2010 - HARRISBURG -- The Department of Agriculture announced today that it has quarantined cattle from a Tioga County farm after a number of cows came into contact with drilling wastewater from a nearby natural gas operation.

Agriculture Secretary Russell Redding said uncertainty over the quantity of wastewater the cattle may have consumed warranted the quarantine in order to protect the public from eating potentially contaminated beef.

"Cattle are drawn to the taste of salty water," said Redding.

"Drilling wastewater has high salinity levels, but it also contains dangerous chemicals and metals.

We took this precaution in order to protect the public from consuming any of this potentially contaminated product should it be marketed for human consumption."

Redding said 28 head of cattle were included in the quarantine, including 16 cows, four heifers and eight calves.

Those cattle were out to pasture in late April and early May when a drilling wastewater holding pond on the farm of Don and Carol Johnson leaked, sending the contaminated water into an adjacent field where it created a pool.

The Johnsons had noticed some seepage from the pond for as long as two months prior to the leak.

The holding pond was collecting flowback water from the hydraulic fracturing process on a well being drilled by East Resources Inc.

Grass was killed in a roughly 30- x 40-foot area where the wastewater had pooled.

Although no cows were seen drinking the wastewater, tracks were found throughout the pool. The wet area extended about 200-300 feet into the pasture.

The cattle had potential access to the pool for a minimum of three days until the gas company placed a snow fence around the pool to restrict access.

Subsequent tests of the wastewater found that it contained chloride, iron, sulfate, barium, magnesium, manganese, potassium, sodium, strontium and calcium.

Redding said the main element of concern is the heavy metal strontium, which can be toxic to humans, especially in growing children.

The metal takes a long time to pass through an animal's system because it is preferentially deposited in bone and released in the body at varying rates, dependent on age, growth status and other factors.

Live animal testing was not possible because tissue sampling is required.

The secretary also added that the quarantine will follow the recommended guidelines from the Food Animal Residue Avoidance and Depletion Program, as follows:

- Adult animals: hold from food chain for 6 months.
- Calves exposed in utero: hold from food chain for 8 months.

- Halliburton Loophole
- "Father of Fracking" George Mitchell concerns over environmental impacts of fracking
- History of Fracking Only a new technology
- USA Fracking Stories
- A Texan tragedy
- Gas injection may have triggered earthquakes in Texas
- California Lags in Fracking Regulations
- All In for California Water
- Fracking in Michigan
- Fracking in Michigan Potential Impact on Health, Environment, Economy
- Hydraulic fracturing of Marcellus Shale
- Methane Gas from Marcellus Shale Drilling
- Marcellus Shale Gas Economics
- Health impacts of Marcellus shale gas drilling
- Pennsylvania Fracking
- Fracking in Virginia
- Lesson From Wyoming Fracking
- Water Pollution from Fracking
- Hydraulic Fracturing Poses Substantial Water Pollution Risks
- Methane in drinking water wells
- Abandoned gas wells leak
- Natural Gas Leaks Discovered in Boston
- Methane Leaks Under Streets of Boston
- Methane leaks make fracking dirty
- Fracking effects real estate values
- Fracking stimulates earthquakes
- Protecting Gas Pipelines From Earthquakes

Gas Pipeline Earthquake -
Simulations

America's crumbling pipelines

Averting Pipeline Failures

Dangers to Underground
Pipelines

Gas Pipelines Could Serve as
Wireless Links

Government Action needed on
a National Energy Policy

EPA Releases Update on
Ongoing Hydraulic Fracturing
Study

Solar Booster Shot for Natural
Gas Power Plants

Natural Gas Pricing Reform to
Facilitate Carbon Tax Policy

Investing in fracking

What Oil Prices Have in Store?

Methane Out, Carbon Dioxide In

Health impacts of Marcellus
shale gas drilling

Professor Ingraffea

Anti-Fracking Billboard

Natural Gas Drilling

Threats to Biodiversity

Pronghorn Migration
hindered by gas development

Microbes in a Fracking Site

Protozoa May Hold Key to
World Water Safety

Shale Gas Production

Research into the Fracking
Controversy

Convert Methane Into Useful
Chemicals

Methane Natural Gas Into Diesel

'Natural Gas' at the molecular
level

Arctic Methane risks

Arctic Methane Seeps

Great Gas Hydrate Escape

Undersea Methane Seep
Ecosystem

Methane in the Atmosphere of
Early Earth

Methane Natural Gas Linked to
Climate Change

Cutting Methane Pollutants
Would Slow Sea Level Rise

• Growing calves: hold from food chain for 2 years.

In response to the leak, the [Department of Environmental Protection](#) issued a notice of violation to East Resources Inc. and required further sampling and site remediation.

DEP is evaluating the final cleanup report and is continuing its investigation of operations at the drilling site, as well as the circumstances surrounding the leaking holding pond.



Hon Andrew Powell MP
Minister for Environment and Heritage Protection

Ref CTS 09473/13

20 MAY 2013

Mr Joe Hill

Level 13
400 George Street Brisbane 4000
GPO Box 2454 Brisbane
Queensland 4001 Australia
Telephone +61 7 3239 0844
Facsimile +61 7 3224 2496
Email environment@ministerial.qld.gov.au

Dear Mr Hill

Thank you for your letter of 29 April 2013 concerning the construction method of QCLNG Pipeline Pty Ltd (QGC) pipeline at Columboola Creek. The Minister for Environment and Heritage Protection has asked me to respond on his behalf.

QGC has made a determination that horizontal directional drilling is not practicable at this location and is proceeding with open trenching, consistent with the requirements of its environmental authority, issued by the Department of Environment and Heritage Protection.

The environmental authority provides scope for coal seam gas companies to choose which methods they will adopt to carry out pipeline construction works. The conditions of the environmental authority are designed to ensure that methods companies elect to adopt are undertaken in a manner that minimises environmental harm.

The department is closely monitoring QGC's and its contractor's activities throughout the construction of the Columboola Creek crossing which is scheduled for completion shortly.

The department has not identified any offence of the *Environmental Protection Act 1994* which would enable consideration by either the Minister or the department for an application for a restraint order under section 505 of the Act.

The Minister hopes this information is of assistance to you. Should you have any further enquiries, please contact Mr David Darvall, Manager, Environmental Services West of the department on telephone 4699 4314.

Yours sincerely

Chief of Staff

16 February 2010

Joseph & Jennifer Hill

Dear Joseph & Jennifer Hill

Proposed infrastructure for your land described as:- 76BWR198

QGC, a leading Australian coal seam gas explorer and producer, is focused on developing world-class reserves in the Surat Basin for domestic and international supply. The Queensland Curtis LNG Project (QCLNG Project) is a priority project for QGC and represents a major investment in Queensland's coal seam gas resources to unlock new supplies of cleaner energy for domestic and export markets.

We have undertaken detailed studies to identify the land required for the transportation of gas and its processing as part of the QCLNG Project. We have sought to minimise impacts on existing land uses, infrastructure, cultural heritage and environmentally sensitive areas in identifying suitable land.

Your property has been identified as a suitable location for infrastructure as part of the QCLNG Project.

The required infrastructure and its indicative location on your land is identified in the attached plan. The final 'as constructed' location of each piece of infrastructure may vary slightly from the indicative location following detailed site design and investigation.

We will negotiate with you in accordance with our comprehensive land liaison procedure based on the principles of integrity, fairness and respect with a view to reaching mutually acceptable access and compensation arrangements for the location of the infrastructure on your land.

Further information on QGC, the QCLNG Project and our land liaison procedure is found in the attached information booklet for landholders.

As part of our approvals processes for the QCLNG Project, QGC has applied to the Coordinator-General for a declaration the Project is an infrastructure facility of significance under the *State Development and Public Works Organisation Act 1971* (Qld).

QGC PTY LIMITED
275 George Street
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Brisbane QLD 4001
Tel: +61 (0)7 3024 9000
Fax: +61 (0)7 3024 8999
www.qgc.com.au
ABN 11 089 642 553

CLIENT: Queensland Gas Company

PROJECT: Queensland Cattle LNG Project

TITLE: Infrastructure Facilities of Significance
Application - LSP Plan 76BWR198

DATE: 10-February-2010

DATA SOURCE:
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DCDS data copyright State of Queensland (2008)

SCALE: 1:20,000 (A4) GDA94 Lat/Long
-400 0 400
Meters



LEGEND:

76BWR198
Hill, Joseph Winston; Hill, Jennifer Joy

Proposed QCLNG Infrastructure

Upstream Infrastructure Corridor

Gas Collection Header

Easement

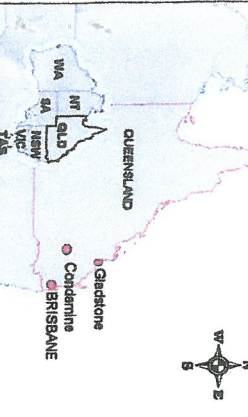
DATE	PROVIN	APPROVED	DRAWING NO.	REV
10/02/2010	J Kohn	M. Sfring	GDAS-SP-038-REV-00001-05	A



GPO Box 3107 - Brisbane QLD 4001
 P (07) 3024 8000 f (07) 3024 8999
 w <http://www.qgc.com.au> e qgc@qgc.com.au



AREA OF DETAIL



The 'as constructed' location of each piece of infrastructure comprising the Facility may vary within the lots identified as a consequence of ongoing landholder negotiations, cultural heritage, native title, ground truthing and geotechnical surveys and studies.



Unidel Group Pty Ltd does not guarantee the accuracy or completeness of the map and does not make any warranty about the data. Unidel Group Pty Ltd is not under any liability to the user for any loss or damage (including consequential loss or damage) which the user may suffer resulting from the use of this map.

22 July 2011

Dear Mssrs Hill & Ms Hill

I am writing to you, as we will be contacting you soon and may need to visit to collect some information about your water bores. Please let me explain why.

QGC is a leading Australian coal seam gas explorer and producer. We supply clean energy for domestic and export markets. As we develop the gas fields in your area, we are committed to minimising any impact that our activities have on you, your property and your family. To do this, we need to undertake an assessment of any water bores on your property before we start exploration work. The information collected will form a baseline for water tables and water quality. We will share it with you and provide a copy to the Queensland Water Commission. Following our initial information gathering, we will establish an ongoing monitoring program on selected bores. This will allow us to assess water table changes across your region and remedy any adverse impacts in the unlikely event that they occur because of our activities. All this work will of course be at our expense, will be carried out by a company of professional hydrogeological consultants and with the least possible disruption to you.

To begin this assessment and help in planning the program, I have enclosed a feedback form for you to complete. I would be grateful if you could complete this and return it to QGC in the prepaid envelope provided. The form will help us to identify any bores on your property that require assessment and help us to plan our visit.

Someone from QGC will contact you shortly by phone to discuss the feedback form.

I have attached a fact sheet that provides more detail on the bore baseline assessment program. If you have any concerns or would like to discuss this program in more detail, please contact QGC on toll free 1800 030 443 or via email community@qgc.com.au.

Thank you in advance for you cooperation.

Kind regards

General Manager, Land and Community Management

QGC

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Brisbane QLD 4000

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Brisbane QLD 4001

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ABN 11 089 642 553

At the time Queensland Gasfields Commission chairman John Cotter described the issue as being of serious concern to beef producers and said it was hoped the MLA project would provide a resolution.

However, although the project was completed more than 12 months ago, the advice it produced cannot be passed on to the producers who funded it and indeed who most need it.

That is because the legal firm contracted to do the work (which has not been publicly identified) advised MLA, CCA and ALFA when it completed the project that its final report "should not be released".

In response to Beef Central's questions as to whether further information was available to explain why the resulting advice could not be released to producers, a spokesperson for Cattle Council of Australia said the information in the report was legally sensitive and "due to the fact that it advises liability, the firm advised that the report itself shouldn't be released".

The **Australian Lot Feeders Association** told Beef Central it was disappointed in the project's outcome.

Chief executive officer Dougal Gordon said the firm which undertook the report was not prepared to release its contents "due to legal professional privilege".

"A summary that was to be provided to industry was so watered down that it unfortunately held little value," Mr Gordon said. "This was a disappointing outcome as we had hoped that its contents would provide some clarity regarding these issues to producers and lot feeders."

While the findings of the report itself have not been released to producers and remain unknown, another document released by Cattle Council of Australia following the project appears to suggest that producers may be liable for CSG related contamination of their cattle.

The communique ([click here to view](#)) offers advice to producers in CSG fields and points out that a major concern for cattle producers is the potential that exists for CSG operations to pollute groundwater, soil and pasture.

It advises that in land access negotiations with CSG companies, landowners should press for a contract which allocates responsibility for managing the risk and any adverse outcome onto the CSG operator.

"While a landowner may have some recourse against a CSG operator, the landowner may still have primary liability," the communiqué states.

The advice infers that the producer having signed the NVD could be liable for any CSG-industry related contamination of cattle, and that recourse for costs/damages would require the producer having proof that the CSG operator was responsible and then taking separate action in the court against the CSG operator.

Cattle Council of Australia told Beef Central that if a producer was concerned about residues in water from mining operations, they should contact their State mining regulator and ask for the water to be tested.

"If test results indicate a potential residue concern, the mine regulator will advise the State DPI who will advise the producer if anything needs to be declared on the NVD," the CCA said.

"It is an LPA requirement to actively manage risks of contamination on property, including exclusion of stock from the source of risk where necessary."

ALFA's Dougal Gordon said the question of liability was a complex area due to the differing requirements under common versus contract law (ie agreements between land owners and CSG operators) and state legislation surrounding environmental, planning and consumer matters.

"Due to these vagaries there is not a general recommendation that is applicable under all circumstances," he said.

"However, in saying this, ALFA would recommend that land owners monitor their bores over time and if they are concerned about potential water/ land contamination, they should seek legal advice that is specific to their individual circumstances."

[See separate story which details SAFEMEAT's response to Beef Central's questions on legal implications for producers who sign NVDs and experience a CSG related contamination incident.](#)

Jennie Hill

From:
To:
Sent: Friday, 25 September 2009 12:08 PM
Subject: FW: Exploration effects on National Vendor Declarations
 Hi Joe,

I met you last night at the Cameby Downs meeting.

I hope you don't mind, but I have forwarded your concerns about chemicals onto AgForce and the Mines and Energy policy people for consideration in the new exploration standard Code of Conduct, which will soon be a legislated requirement for all exploration (petroleum and mineral) across Queensland.

If you have any concerns with this, please let me know.

Otherwise, as discussed last night, we should arrange a meeting for the next fortnight or so to go over the various rights and obligations under legislation, as well as discuss any other concerns you may have. I'm pleased to work to your timeframe.

Chat to you soon.

Cheers

Deputy Mining Registrar (Roma)
Queensland Mines and Energy
Department of Employment, Economic Development and Innovation
 1-3 Alfred Street, PO Box 1401, Roma QLD 4455

Web: www.deedl.qld.gov.au

From:
Sent: Friday, 25 September 2009 12:03 PM
To:
Cc:
Subject: Exploration effects on National Vendor Declarations

Hi Drew,

I have a proposal for the Code of Conduct based upon several discussions I've held with graziers throughout the Surat.

The most recent grazier comment was made last night in an Information Session for the new Cameby Downs Mine outside Miles. The landowner also appeared on this mornings ABC Rural report and a transcript is below (he probably explains all this better than I can):

Does mining exploration pose a contamination risk to the livestock sector?

A southern Queensland landholder has raised concerns about the contamination risk to stock production from mining exploration companies.

Miles-based grazier Joe Hill says he runs an Angus seed stock and suffolk sheep enterprise on his property 'Wondaloo' and he's worried livestock could be exposed to chemicals.

Mr Hill says as a producer he has to sign a vendor declaration, stating what chemicals have been used on his animals and times of application as do all meat producers.

He says the exploration companies use a range of chemicals that could possibly ingested by cattle or sheep and consequently contaminate the meat.

While Joe Hill says he doesn't have any examples or evidence of that happening he wants the matter to be looked at further.

"At the DPI they informed me that those companies should give you a list of all the chemicals and whatever they have on their vehicles prior to entry so that you can have that checked out to see whether those chemicals are approved to be used on beef properties."

"There's nothing to stop cattle from licking or being contaminated, we only need one beast to be contaminated and it could close the whole beef industry down."

His comments last night were to the effect that he wanted the companies to provide landowners with a list of chemicals, but there may be a more suitable option. Should/could this be an item that is considered for inclusion in the Code of Conduct by the LAWG?

Background

Graziers are required to fill out a statutory declaration (National Vendor Declarations - NVD's). NVDs were developed by the livestock industries to assist producers to document the history of **chemical use** and treatment of animals offered for sale. The details provided assist processors and buyers seeking information on the history of sale stock.

28/09/2009

NVDs do not have statutory basis (except where combined with a waybill) and are not compulsory when selling livestock; however answers given on NVDs must be accurate. It is an offence to make a false or misleading declaration. (People completing NVDs are legally obliged to ensure that any information made about their stock is completely accurate. Penalties exist if false or misleading information is given on the declaration).

In relation to resource companies, the chemicals they use or transmit onto properties (including drillers mud, oil, lubricants and other machinery fluids) are not provided to the landowner by industry. This could effect the validity of the signed NVD and as noted above, the grazier faces penalties for inaccurate declarations. Additionally, if a beast is tested and found contaminated with chemicals, it has the potential to damage to good name of Australia's entire livestock export market.

National Vendor Declarations

<http://www.mia.com.au/TopicHierarchy/IndustryPrograms/LivestockQualitySystems/NationalVendorDeclarations/default.htm>

Livestock Production Standard Rules and Standards

<http://www.mia.com.au/TopicHierarchy/IndustryPrograms/LivestockQualitySystems/LivestockProductionAssurance/LPA+Food+Safety/Rules+and+Standards>

Cheers

Deputy Mining Registrar (Roma)
Queensland Mines and Energy
Department of Employment, Economic Development and Innovation
1-3 Alfred Street, PO Box 1401, Roma QLD 4455

Web: www.desa.qld.gov.au

Queensland celebrates its 150th anniversary in 2009. Check out what's on today at <http://www.q150.qld.gov.au>

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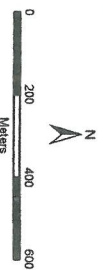
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Hill, J & J 76 BWR198 Overview

- Existing Well Location
- Pegged Well Location
- Proposed Well Location
- Released Well Location
- Proposed Well
- Sensitive Receptors
- Cultural Heritage Survey Points
- Conceptual Gathering Lines
- Export Pipeline (Raw ES)
- Gathering Lines Gas
- Gathering Lines Water
- Gathering Lines Water and Gas
- Export Line
- Trunkline
- Water Line
- Proposed Gas Trunkline
- Proposed Water Trunkline
- OGC Infrastructure
- OGC Hornds
- OGC Owned Land
- Proposed Central Processing Plant
- Proposed Compound
- Proposed Field Compressor Station
- Proposed Laydown Area
- Proposed Pond
- Proposed Potential Borrow Pit
- Proposed Power
- Proposed Water Treatment Facility
- Property Boundary
- Well Pad

DATE: 07/10/10 MAP NO: M 0019194
 CREATED BY: JGM REV NO: 1
 PLAN REF: 76 BWR198



Map Projection: GDA 94 SCALE: 1:12500 (A3)
 DATA SOURCE: 76 BWR198

Note: Every effort has been made to ensure this information is spatially accurate. The location of this information should not be relied on as the exact field location.



! W A R N I N G

TRESPASS IS AN OFFENCE

ADMITTANCE TO THIS PROPERTY IS

ONLY

BY INVITATION OR PRIOR APPOINTMENT

APPOINTMENTS MAY BE REQUESTED BY CORRESPONDENCE

OR BY TELEPHONE 46658115 • 'WANDALOO' MS 48 MILES 4415

AUTHORITY

HIGH COURT OF AUSTRALIA

PLENTY v DILLION (1991) CLR 635 F.C. 91 / 004

Recharge area of the GAB

The GAB is a vast groundwater entity underlying one-fifth of Australia.

For the GAB, like many other semi-arid to arid zone aquifers around the world, the current rate of recharge is significantly less than discharge. Groundwater currently stored is a legacy from higher recharge rates that occurred during much wetter periods over the last 2.6 million years.

The significance of the recharge zones to the GAB is not so much as an immediate water supply to central parts of the basin and natural discharge areas, but that they provide the pressure head required to drive the water to the surface. Removal of this pressure through water abstraction associated particularly with CSG risks removing the driving force of many free flowing artesian bores and springs of the GAB. Ransley and Smerdon (2012) estimated this would average about 75 to 98 GL/year over the next 60 years, this process will induce drawdown in overlying and underlying GAB aquifers, the amount of which will depend on the leakiness of the system.

Also from Ransley and Smerdon (2012) .

Across the majority of the Surat Basin, recharge is estimated to be less than 5mm/year, with the exception of portions of the Hutton Sandstone which have greater than 20mm/year. This area covers approximately 9-10% of the GAB recharge area and only 0.2% of the GAB.

Gas and petroleum exploration licenses cover 79% of the critical recharge areas of the GAB.

Recharge mechanisms are discussed in Herczeg and Love (2007) and fall into the following categories

1. Via direct infiltration to the soil into the outcropping regions of the Jurassic Aquifers
2. Direct recharge through ephemeral creeks and rivers and mountain block alluvial fan systems.
3. Downward hydraulic movement through aquifers above the GAB aquifers where conditions permit.
4. Upward hydraulic movement from aquifers underlying the GAB aquifers.

A concept of the value of land of high agricultural value being taken into account with regard to licences for gas and mining extraction has been given some consideration and I maintain that the same should apply to the high recharge zones of the GAB to protect this resource for future agricultural and community use.

It is done in other countries of the world and I would expect that a modern environmentally advanced Country such as ours should give this a high priority when assessing industry that can have such a detrimental effect on the landscape.

The GAB provides the only reliable water resource for 22% of Australia.

Jennie Hill extra to submission 25

DOCUMENT INFORMATION SHEET

TITLE: Gas Collection Header Watercourse Crossing Assessment – Addendum to Appendix 1 of the EMP

PURPOSE AND SCOPE:

This document was developed in 2010 to provide additional information on watercourse crossing construction techniques and potential environmental impacts, in support of the Environmental Authority application for the QCLNG Gas Collection Header (PPL 153).

This document provides high level background information on the process of pipeline route selection, watercourse construction methods and original watercourse crossing assessments.

It has been updated in 2012 to reflect the change of crossing method at two watercourses, arising from completion of an Aquatic Values Management Plan (AVMP) for the QCLNG Pipeline and to ensure consistency of this document with the AVMP.

Although the QCLNG Pipeline has now progressed past the stage of route selection and choice of crossing method, the background information contained in this document has been retained to provide an overview of the process which was followed for this phase of the Pipeline works.

DOCUMENT VERIFICATION

Responsible:

Signature: [Redacted] **Position:** Environment Advisor – Permits and Approvals

Name: [Redacted] **Date:** 18th April 2012

Accountable:

Signature: [Redacted] **Position:** Environment Manager – Compliance

Name: [Redacted] **Date:** 18th April 2012

Consulted:

Enter name/position of those required to review the document

Informed:

Enter name/position of those to receive the completed document

- QCLNG Pipelines Delivery Manager
- QCLNG Pipelines Senior Project Manager
- : MC(QCLNG)JV Project Manager

Endorsed:

Signature: [Redacted] **Position:** Environment Manager – Compliance

Name: [Redacted] **Date:** 18th April 2012

Release authorisation

Originator	Ecologist
Reviewed	Senior Environmental Planner
Approved	Principal Ecologist Signed: he protection of an indi

Revision record

Rev	Date	Status	Originator	Reviewed	Approved
A	17 Oct 2011	Draft	SC	JG	RF
1	7 Dec 2011	Final	SC	LK	RF

Recommendations

As this creek line is predominantly dry, it is expected to provide poor quality aquatic habitat. However, the following recommended mitigation measures are required to ensure the long term aquatic values of this creek line are protected:

- No construction activities should occur at this watercourse during the breeding season of the Murray Cod (from mid-October to mid-December);
- Clearing of riparian vegetation for the crossing of this watercourse should be minimised as much as possible;
- Snags present within the watercourse should be removed and stored for later reinstatement; and
- Appropriate sedimentation and erosion controls should be implemented throughout all construction activities to ensure minimal impacts upon water quality and habitats within this creek line.

The proposed construction of a pipeline crossing of this creek line using an open-cut trenching technique is not expected to result in any adverse impacts on MNES species with the adoption of these specified mitigation measures.

Released by EHP
under the RTI Act 2009

25 March 2010

Dear Joseph Winston Hill & Jennifer Joy Hill

Australia Pacific LNG Project (Project)
Affected property: 76BWR198

Background

Australia Pacific LNG Pty Limited proposes to develop a world scale, long-term coal seam gas (CSG) to liquefied natural gas (LNG) project in Queensland (Project), utilising Australia Pacific LNG's substantial CSG resources which will bring significant benefits to the region, Queensland and Australia.

The Project is a 50:50 joint venture between Australia's largest integrated energy company, Origin Energy Limited (Origin) and one of the largest energy companies in the United States, ConocoPhillips Australia Pacific Pty Ltd.

On behalf of APLNG, Origin will be responsible for the construction and operation of the pipeline connecting the gasfields to the LNG facility on Curtis Island in Gladstone.

What is happening now?

In order to ensure ongoing security for the pipelines, the Project needs to secure suitable land tenure. For this to be progressed Origin, on behalf of Australia Pacific LNG, will be liaising with landholders to negotiate suitable agreements for the acquisition of the land tenure.

As a result of recent studies, your property has been identified as a suitable location for the pipeline and associated infrastructure.

If you haven't already been contacted by one of our representatives, you will be contacted in the coming weeks with respect to the Project and the proposed impact of the alignment of the pipeline on your property.

Application to the Coordinator-General

In addition to working with landowners impacted directly by the Project, Australia Pacific LNG has applied to the Coordinator-General for the project to be approved as an infrastructure facility of significance under the *State Development and Public Works Organisation Act 1971*.

You will shortly receive a letter from the Coordinator-General about APLNG's application, which will enclose a copy of the application, including mapping which will identify your property and show the proposed alignment of the pipeline, for your information. The letter will advise you how submissions to the Coordinator-General about the application can be made.

It is important to note that we are committed to negotiating an agreement with you. However, should the application be approved, Australia Pacific LNG will be able to, as a last resort, apply to

the Coordinator-General to have the necessary interests in land acquired to enable the Project to proceed.

Over the following few months you will be contacted by Origin to discuss arrangements for access to your property to facilitate preliminary studies for the Project. You will also be contacted to discuss reaching a formal agreement for the required interest in your property for the Project. It is our preferred approach to work with you to reach agreement in order to achieve a mutually acceptable outcome.

Further information about the Project can be found on the Project website www.aplng.com.au and in the Information Pack enclosed.

Thank you again for your assistance so far. Should you like to discuss the Project with a representative of APLNG, please contact APLNG on 1800 526 369.

Yours faithfully

Manager - Stakeholder Relations & Land Strategy
Origin Energy Limited

Environmental Protection Act 1994
Level 1 Environmental Authority (chapter 5A activities)

DERM Permit¹ Number: PEN100953310

Under section 310Y of the *Environmental Protection Act 1994* this permit is issued to:

QCLNG Pipeline Pty Ltd
Level 30, 275 George Street
BRISBANE QLD 4000

in respect to carrying out a Level 1 chapter 5A activity(ies) as per Section 23 of the *Environmental Protection Regulation 2008* on the relevant resource authority(ies) listed below:

Project Name	Resource Authority Type(s) and Number(s)
QCLNG Project – Gas Collection Header Pipeline	Petroleum Pipeline Licence (PPL) 153

This environmental authority takes effect from **5 April 2012**

The anniversary date of this environmental authority is the **20 August**.

This environmental authority is subject to the attached schedule of conditions.

5/4/2012

Date

Delegate of Administering Authority
Department of Environment and Resource Management

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Department of Environment and Resource Management.

SCHEDULE A – GENERAL CONDITIONS

Prevent and/or Minimise Likelihood of Environmental Harm

- (A1) This authority does not authorise environmental harm unless a condition contained within this authority explicitly authorises that harm. Where there is no condition or the authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.
- (A2) In carrying out petroleum activities the holder of this authority must prevent or minimise the likelihood of environmental harm being caused.

Maintenance of Measures, Plant and Equipment

- (A3) The holder of this authority must:
- install all measures, plant and equipment necessary to ensure compliance with the conditions of this authority; and
 - maintain such measures, plant and equipment in a proper and efficient condition; and
 - operate such measures, plant and equipment in a proper and efficient manner.
- (A4) All instruments, equipment and measuring devices used for measuring or monitoring in accordance with any condition of this authority must be calibrated, appropriately operated and maintained.
- (A5) No change, replacement or alteration of any plant or equipment is permitted if the change, replacement or alteration increases the environmental harm caused by the petroleum activities.
- (A6) The holder of this authority must ensure that daily operation and maintenance of all plant and equipment relating to the authorised petroleum activities are carried out by suitability qualified, competent and experienced person(s).
- (A7) All analyses and tests required to be conducted under this authority must be carried out by a laboratory that has NATA certification for such analyses and tests, except as otherwise authorised by the administering authority.

Compliance with Australian Pipeline Industry Association Code of Environmental Practice

- (A8) The holder of this authority must undertake petroleum activities in relation to the operation of petroleum pipelines in accordance with the Australian Pipeline Industry Association Code of Environmental Practice – Onshore Pipelines, October 2005 (the Code) or subsequent versions thereof. To the extent of any inconsistency between the conditions of this environmental authority and the Code, the conditions of this authority prevail.

Financial Assurance

- (A9) The holder of this authority must provide a financial assurance in the amount and form required by the administering authority for the construction, operation and decommissioning of the relevant petroleum pipeline. The calculation of financial assurance must be calculated in accordance with the DERM guideline *Financial assurance for petroleum activities*.
- (A10) The financial assurance must be provided to the administering authority prior to the commencement of any petroleum activities and no later than **7 September 2010**.
- (A11) 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.

Definitions

- (A12) Words and phrases used in this authority are defined in Schedule L – Definitions. Where a definition for a term used in this authority is sought and the term is not defined within this authority, the definitions in the *Environmental Protection Act 1994*, its Regulation and Environmental Protection Policies must be used.

Environmental Management Plan

(A13) An Environmental Management Plan (EM plan) must be implemented that provides for the effective management of the actual and potential impacts resulting from the carrying out of the petroleum activities and which demonstrates compliance with the conditions of this environmental authority. Documentation relating to the EM plan must be kept.

(A14) The EM plan required by Condition (A13) must address, at least, the following:

- a) describe each of the following:
 - i. each relevant resource authority for the environmental authority;
 - ii. all relevant petroleum activities;
 - iii. the land on which the activities are to be carried out;
 - iv. the environmental values likely to be affected by the activities; and
 - v. the potential adverse and beneficial impacts of the activities on the environmental values.
- b) state the environmental protection commitments the applicant proposes for the activities to protect or enhance the environmental values under best practice environmental management;
- c) include a rehabilitation program for land and waters proposed to be disturbed under each relevant resource authority for the application;
- d) state a proposed amount of financial assurance for the environmental authority as part of the rehabilitation program;
- e) training of staff in the awareness of environmental issues related to carrying out the petroleum activities, which must include at least:
 - i. the environmental policy of the authority holder, so that all persons that carry out the petroleum activities are aware of all relevant commitments to environmental management;
 - ii. any relevant environmental objectives and targets, so that all staff are aware of the relevant performance objectives and can work towards these;
 - iii. control procedures to be implemented for routine operations for day to day activities to minimise the likelihood of environmental harm, however occasioned or caused;
 - iv. contingency plans and emergency procedures to be implemented for non-routine situations to deal with foreseeable risks and hazards, including corrective responses to prevent and mitigate environmental harm (including any necessary site rehabilitation);
 - v. organisational structure and responsibility to ensure that roles, responsibilities and authorities are appropriately defined to ensure effective management of environmental issues;
 - vi. effective communication procedures to ensure two-way communication on environmental matters between operational staff and higher management;
 - vii. obligations with respect to monitoring, notification and record keeping obligations under the EM plan and relevant approvals; and
 - viii. monitoring of the release of contaminants into the environment including procedures, methods and record keeping.
- f) the conduct of periodic reviews of environmental performance and procedures adopted, not less frequently than annually; and
- g) a program for continuous improvement.

Third Party Auditing

(A15) Compliance with the conditions of this authority must be audited by an appropriately qualified third party auditor, nominated by the holder of this authority and accepted by the administering authority:

- a) every year during the construction of the pipeline; and
- b) following commissioning of the pipeline.

(A16) Within three (15) business days of receiving the final third party audit report, the holder of this authority must submit a copy to the administering authority.

- (A17) The third party auditor must certify the findings of the audit in the report.
- (A18) The financial cost of the third party audit is borne by the holder of this authority.
- (A19) The holder of this authority must, within a reasonable period of time agreed in writing with the administering authority, act upon any recommendations arising from the audit report and:
- a) investigate any non-compliance issues identified; and
 - b) as soon as practicable, implement measures or take necessary action to ensure compliance with this authority.
- (A20) Subject to Condition (A19), and not more than three (3) months following the submission of the audit report, the holder of this authority must provide written advice to the administering authority addressing the:
- a) actions taken by the holder to ensure compliance with this authority; and
 - b) actions taken to prevent a recurrence of any non-compliance issues identified.

Cultural Heritage

- (A21) In the carrying out of the petroleum activities, the holder of this environmental authority must not adversely impact the cultural heritage values of any place registered on the Queensland Heritage Register.

SCHEDULE B – ENVIRONMENTAL NUISANCE

Odour, dust and airborne contaminants

- (B1) The release of odour, dust or any other airborne contaminant(s), or light from the petroleum activities must not cause an environmental nuisance at any sensitive place or commercial place.
- (B2) Prior to the commencement of any petroleum activities that may generate dust at a sensitive place or commercial place, the holder of this authority must notify and consult with any potentially affected person.

Noise

- (B3) Prior to undertaking petroleum activities, including temporary workers accommodation, that are likely to impact upon a sensitive place or a commercial place, the holder of this authority must investigate potential noise emissions from the proposed petroleum activities and determine if noise emissions are likely to exceed the limits set in Condition (B4).
- (B4) If noise emissions are likely to exceed the limits specified in Schedule B, Table 1, then the holder must take appropriate measures to either relocate the petroleum activities or incorporate noise abatement and / attenuation measures to mitigate those impacts. These measures must be in place prior to undertaking the proposed petroleum activities.
- (B5) In the event of a complaint about noise from a petroleum activity made to the administering authority (and the administering authority considers the complaint is not frivolous nor vexatious nor based on mistaken belief) the emission of noise from the petroleum activity must not exceed the levels specified in Schedule B, Table 1 – Noise limits when measured at the sensitive place.
- (B6) The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's *Noise Measurement Manual*, the most recent version of AS1055 Acoustics – Description and measurement of environmental noise, the EPA guideline *Assessment of low frequency noise* and the EcoAccess guideline *Planning for noise control*.

Schedule B, Table 1 – Noise Limits

Sensitive place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and public holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
L _{A90} , adj, 15 mins	lesser of bg+3 or 48	lesser of bg+0 or 40	bg+0	bg+0	bg+0	bg+0
L _{A10} , adj, 15 mins	lesser of bg+5 or 50	lesser of bg+3 or 45	bg+0	bg+0	bg+0	bg+0
L _{A1} , adj, 15 mins	lesser of bg+10 or 55	lesser of bg+5 or 50	lesser of bg+5 or 45	bg+0	bg+0	bg+0
Commercial place						
Noise level dB(A) measured as:	Monday to Saturday			Sundays and public holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
L _{A90} , adj, 15 mins	lesser of bg+5 or 50	bg+0	bg+0	lesser of bg+3 or 43	bg+0	bg+0
L _{A10} , adj, 15 mins	lesser of bg+10 or 55	lesser of bg+10 or 50	lesser of bg+5 or 45	lesser of bg+10 or 50	bg+0	bg+0
L _{A1} , adj, 15 mins	lesser of bg+15 or 60	lesser of bg+15 or 55	lesser of bg+10 or 50	lesser of bg+15 or 55	bg+0	bg+0

- bg = background noise level
- In the event that measured bg is less than 25 dB(A), then 25 dB(A) is to be substituted for the measured level
- If the background is higher than the number shown on the second line in any box, the limit is to be background plus 0

Alternative Arrangements Available When Noise Emissions May Cause Nuisance for Limited Periods

- (B7) Where the holder of this authority has, at their cost, made alternative arrangements to the satisfaction of and with the written agreement of each person affected by nuisance noise emissions for a limited period, at a sensitive or commercial place, then the requirements specified in Table B1, Noise Limits will not apply at that sensitive or commercial place for the period of the alternative arrangements.
- (B8) As a minimum each written agreement of an alternative arrangement must state:
- the location of the sensitive or commercial place;
 - the names of the affected persons;
 - the nature of the alternative arrangement(s) (e.g. provision of alternative accommodation); and
 - the period of the alternative arrangement(s).
 - details of the activities causing the noise, including the maximum noise levels expected at the noise sensitive receptor for the period defined in (d).

Blasting Activities

- (B9) Prior to undertaking any blasting activities, the holder of this authority must notify any identified noise sensitive receptor of the proposed blasting activity. The notification must include:
- proposed location of blasting;
 - proposed time of blasting; and
 - noise levels expected at the sensitive receptor.
- (B10) All blasting must be carried out in a proper manner by a competent person in accordance with best practice environmental management and Australian Standard 2187 to minimise the likelihood of any adverse effects being caused by airblast overpressure and/or ground borne vibrations at any sensitive receptor.
- (B11) Noise from blasting operations must not exceed an airblast overpressure level, when measured at or extrapolated to any noise sensitive or commercial place, of 120 dB (linear peak) at any time.
- (B12) Ground-borne vibration peak particle velocity caused by blasting operations, when measured at or extrapolated to any noise sensitive or commercial place, must not exceed 5 mm per second at any time.

Blast and Vibration Monitoring

- (B13) The holder of this authority must monitor and record air blast overpressure and ground borne vibration for each blast that uses more than a 20 kg maximum instantaneous charge (MIC) and/or is closer than 700 m to a sensitive receptor. Monitoring must include:
- maximum instantaneous charge (MIC);
 - location of the blast within the site (including any bench level);
 - airblast overpressure level (dB Linear Peak);
 - peak particle velocity (mms⁻¹);
 - location, date and time of recording;
 - measurement instrumentation and procedure;
 - meteorological conditions for blast monitoring (including temperature, relative humidity, temperature gradient, cloud cover, wind speed and direction); and
 - distance/s from blast site to potentially noise-affected building/s or structure/s.

SCHEDULE C – WATER MANAGEMENT

Release to Surface Waters

- (C1) The holder of this authority must not release contaminants to surface waters.

Release to Land

- (C2) The holder of this authority may allow pipeline trench water to be released to land for disposal provided that the water does not have any properties nor contain any organisms or other contaminants in concentrations that are capable of causing environmental harm.
- (C3) Subject to Condition (C2), the holder of this authority must ensure that the release of trench water to land must be carried out in a manner that ensures that:
- a) vegetation is not damaged;
 - b) soil erosion and soil structure damage is avoided;
 - c) the quality of groundwater is not adversely affected; and
 - ~~d) there are no releases of trench water to any surface waters.~~
- (C4) The holder of this authority is not authorised to use untreated CSG water for dust suppression whilst undertaking petroleum activities authorised under this authority.

Associated Water Use for Dust Suppression

- (C5) CSG water produced from the authorised petroleum activities may be used for dust suppression within tenures covered by this environmental authority, provided the water quality meets the limits specified in Schedule C, Table 1 – Road dust suppression water contaminant release limits for each of the water quality characteristics.

Schedule C, Table 1 – Road dust suppression water contaminant release limits

Water Quality Characteristics	Unit	Limit	Limit Type
pH	pH units	6.0 to 9.0	range
Total Suspended Solids	mg/L	30	maximum
Total Dissolved Salts	mg/L	2000	maximum
Total Petroleum Hydrocarbons	mg/L	10	maximum
Sodium Adsorption Ratio (SAR)	ratio	15	maximum
Bicarbonate Ion Concentration	mg/L	100	maximum

- (C6) Dust suppression can only be carried out in a particular location for a period not exceeding three months, whereupon more permanent solutions for dust suppression shall be developed, if required.
- (C7) Use of CSG water for dust suppression activities must be carried out in a manner that:
- a) vegetation is not damaged
 - b) soil erosion and soil structure damage is avoided
 - c) there is no surface damming of the CSG water
 - d) minimises deep drainage below the root zone of any vegetation
 - e) quality of shallow aquifers is not adversely affected
 - f) there are no releases of CSG waters to any surface waters.

Management of Hydrostatic Test Water

- (C8) The holder of this authority must develop a hydrostatic water management plan prior to the commencement of any hydrostatic water testing of the pipeline. The management plan must include but not be limited to the following:
- a) details of the impacts of hydrostatic test water activities along the pipeline route;

- b) source water quality data and characteristics of additives (particularly biocides);
 - c) the proposed storage, treatment and disposal methods; and
 - d) site specific mitigation measures including monitoring and reporting.
- (C9) The hydrostatic water management plan must be submitted to DERM for review prior to the commencement of any hydrostatic testing of the pipeline.
- (C10) The holder of this authority must have due regard to any comments provided by the administering authority in finalising and implementing the hydrostatic test water management measures.
- (C11) The holder of this authority must ensure that:
- a) hydrostatic test water is not released to waters;
 - b) hydrostatic test water containing chemical additives is not released to land without written consent from the administering authority; and
 - c) hydrostatic test water released to land does not exceed the water quality limits specified in Schedule C, Table 1 – Limits for the disposal of hydrostatic test water to land.

Note: Where contaminants contained in the hydrostatic test water are to be stored in a dam, an assessment against the latest version of the DERM Manual for assessing the hazard category and hydraulic performance of dams is required to determine the hazard level of the dam.

Schedule C, Table 1 – Limits for the disposal of hydrostatic test water to land

Parameter	Maximum Value
pH	6.5 - 8.5 (Range)
Arsenic (mg/L)	2.0
Cadmium (mg/L)	0.05
Chromium (mg/L)	1
Copper (mg/L)	5
Iron (mg/L)	10
Lead (mg/L)	5
Manganese	10
Zinc (mg/L)	5
Nitrogen (mg/L)	35
Phosphorus (mg/L)	10
Electrical Conductivity (µS/cm)	2000

- (C12) Any release of hydrostatic test water authorised by Condition (C11) must be located at least 100 metres from the nearest watercourse and carried out in a manner that ensures that:
- a) vegetation is not damaged;
 - b) soil erosion and soil structure damage is avoided; and
 - c) hydrotest water does not migrate outside the nominated land discharge areas.
- (C13) The holder of this authority must undertake hydrotesting of pipe sections crossing water bodies prior to installation of these pipe sections.

Determining Water Quality Contaminants

- (C14) All determinations of the quality of contaminants released must be made in accordance with methods prescribed in the latest edition of the *DERM Monitoring and Sampling Manual, 2009*, and carried out on samples that are representative of the discharge.

Contaminant Releases to Groundwater

- (C15) The holder of this authority must not release contaminants to groundwater.

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SCHEDULE D – WASTE MANAGEMENT

- (D1) The holder of this authority must develop and implement a waste management plan consistent with the *Environmental Protection (Waste) Policy 2000*.
- (D2) The waste management plan must address at least the following matters:
- the types and amounts of waste generated;
 - how the waste will be dealt with, including a description of the types and amounts of waste that will be dealt with under each of the waste management practices mentioned in the waste management hierarchy (section 10 of the *Environmental Protection (Waste Management) Policy 2000*);
 - procedures for dealing with accidents, spills and other incidents that may impact on waste management;
 - how often the performance of the waste management practices will be assessed (i.e. at least annually); and
 - the indicators or other criteria on which the performance of the waste management practices will be assessed.
- (D3) The holder of this authority must ensure that petroleum activities do not result in the release or likely release of contaminants to the environment from the storage, conditioning, treatment and disposal of regulated waste materials.
- (D4) The holder of this authority must ensure that petroleum activities do not result in the release or likely release of a hazardous contaminant to the environment.
- (D5) Any spillage of hazardous waste or other contaminants that may cause environmental harm, must be effectively contained and cleaned up as quickly as practicable. Such spillages must not be cleaned up by hosing, or otherwise thereby releasing such waste or contaminants to any land or waters.
- (D6) The holder of this authority must as soon as practicable remove and dispose of all regulated waste to a licensed waste disposal facility or recycling facility.
- (D7) 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 1994* and sent to a facility licensed to accept such waste.
- (D8) When regulated waste is removed from within the boundary of the petroleum tenure and transported by the holder of this authority, a record must be kept of the following:
- date of waste transport;
 - quantity of waste removed and transported;
 - type of waste removed and transported;
 - route selected for transport of waste;
 - quantity of waste delivered; and
 - any incidents (e.g. spillage) that may have occurred on route.
- (D9) If a person removes regulated waste associated with activities within the operational land and disposes of such waste in a manner which is not authorised or is improper or unlawful then, as soon as practicable, notify the administering authority of all relevant facts, matters and circumstances known concerning the disposal.

Sewage Treatment and Disposal Works

- (D10) Any sewage treatment and disposal activities undertaken within the pipeline license area must be designed with a peak design capacity of 21 to 450 EP and must not exceed this peak design capacity.
- (D11) The sewage treatment activities must be designed to produce a Class C effluent standard using a disinfection process.

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Release of Treated Sewage Effluent Contaminants to Land

- (D12) Sewage pump stations must be fitted with a stand-by pump and a visible or audible high-level alarm.
- (D13) Any release to land authorised under this authority requires a buffer distance of at least 100 metres to any residential area, watercourse, wetland or protected area.
- (D14) Treated effluent may only be released to land at the designated, fenced and delineated contaminant release area/s.
- (D15) The contaminant release area/s must be maintained in a proper and efficient condition so as to provide adequate assimilation, percolation, evaporation and transpiration of the released contaminants.
- (D16) Treated effluent must not be applied by spray irrigation and must be applied in a manner that does not cause damming or runoff of effluent beyond the contaminant release area/s.
- (D17) When weather conditions or soil conditions preclude the release of contaminants, the contaminants must be directed to on-site storage or lawfully disposed of off-site.
- (D18) All sewage sludge and sanitary bio-solids resulting from treatment is to be disposed at a licenced sewerage disposal facility.

Quality of Contaminants Released from the Sewage Treatment Works

- (D19) Treated effluent must comply, at the sampling and in-situ measurement point(s), with each of the release limits specified in Schedule D, Table 1 – Treated sewage effluent standards for each quality characteristic.
- (D20) The release of treated effluent to land must be monitored at the frequency and at the sampling and in-situ measurement point specified in Schedule D, Table 1 – Treated sewage effluent standards and records of the monitoring results kept for at least five years and made available to the administering authority on request.

Schedule D, Table 1 – Treated sewage effluent standards

Quality characteristic	Sampling Unit	Sampling and in-situ measurement point location	Limit type	Release limit	Frequency
5-day Biochemical Oxygen Demand (inhibited)	mg/L	Release valve from package sewage treatment plant, prior to irrigation	Median	20	Monthly
Suspended Solids	mg/L		Median	5	
Turbidity	NTU		Median (95 th %ile)	2	
Total N	mg/L		Maximum (95 th %ile)	5	
Total P	mg/L		50 th %ile	30	
TDS	mg/L		Maximum	45	
EC	µS/cm		Maximum	15	
pH	pH unit		Median	<1000	
<i>E. coli</i>	cfu/100ml		Median	<1600	
			Range	6-8.5	
			Maximum	<10	

SCHEDULE E – LAND AND WATERWAY MANAGEMENT

Minimising Disturbance to Land and Soil Management

(E1) The holder of this authority must:

- a) limit the pipeline right of way width to a maximum of 40 metres except as otherwise authorised by the administering authority in writing;
- b) minimise disturbance to land in order to prevent land degradation;
- c) ensure that for land that is to be significantly disturbed by petroleum activities (except in areas of highly erosive soils), 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 (E39).

(E2) The holder of this environmental authority must develop and implement soils management procedures for areas to be disturbed by petroleum activities prior to commencement of petroleum activities in these areas to prevent or minimise the impacts of soil disturbance. These procedures must include but not be limited to:

- a) the establishment of baseline soils information for areas to be disturbed including soil depth, pH, electrical conductivity (EC), chloride, cations (calcium, magnesium and sodium), exchangeable sodium percentage (ESP), particle size and soil fertility (including nitrogen, phosphorous, potassium, sulphur and micronutrients);
- b) the identification of baseline soil units at a scale of 1:100,000 for areas to be disturbed in accordance with the *Guidelines for Surveying Soil and Land Resources, 2nd Edition* (McKenzie et al. 2008), *Australian Soil and Land Survey Handbook, 3rd Edition* (National Committee on Soil and Terrain 2009) and *The Australian Soil Classification* (Isbell 2002);
- c) the development of soil descriptions that are relevant to assessment for agricultural suitability, topsoil assessment, erodibility and rehabilitation, for example:
 - i. shallow cracking clay soils;
 - ii. deep cracking clay soils;
 - iii. deep saline and/or sodic cracking clay soils with melonholes;
 - iv. thin surface, sodic duplex soils;
 - v. medium to thick surface (>15 cm), sodic duplex soils; and
 - vi. non-sodic duplex soils.
- d) assessment of the potential impacts of the petroleum activities with appropriate mitigation measures and construction methods applicable to the identified soil types or landforms;
- e) identification by ground truthing of all sensitive soil and landform areas along the pipeline corridor including Good Quality Agricultural Land and Strategic Cropping Land;
- f) measures to protect and restore any Good Quality Agricultural Land and land that could qualify as Strategic Cropping Land under the Government's *Strategic Cropping Land – Policy and planning framework Discussion paper, February 2010*;
- g) a soils monitoring program outlining the parameters to be monitored, frequency of monitoring and maximum limits for each parameter;
- h) detailed mitigation measures and procedures to manage the risk of adverse soil disturbance in the carrying out of the petroleum activities; and
- i) for areas of good quality agricultural land, detailed methods to be undertaken to minimise potential impacts.

(E3) The holder of this authority must provide details of the soils management procedures to DERM for review prior to the commencement of construction of the pipeline.

(E4) The holder of this authority must have due regard to any comments provided by the administering authority when implementing the soils management measures.

(E5) The holder of this authority must undertake an acid sulfate soils (ASS) investigation for the proposed linear disturbance (excavation, filling) on land areas that may potentially contain ASS (including all

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areas <5 m AHD) according to the *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998*.

- (E6) The holder of this authority must provide detailed management measures in accordance with the *Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines 2002* to the administering authority at least 20 business days prior to commencement of excavation or filling activities within areas identified as potential for containing ASS in the investigation outlined in Condition (E5).
- (E7) The holder of this authority must have due regard to any comments provided by the administering authority when implementing ASS management measures.

Good Quality Agricultural Land

- (E8) On land with GQAL class A or B, the holder of this authority must bury the pipeline to at least 1.2 m below the finished land surface, or greater if deep ripping occurs as a normal farming practice.
- (E9) On land with GQAL class C1, the holder of this authority must bury the pipeline to at least 0.9 m below the finished land surface, or greater if deep ripping occurs as a normal farming practice.
- (E10) Upon completion of construction of the pipeline, on any land identified as being good quality agricultural land (GQAL), the holder of the authority must:
- remove temporary access tracks, unless otherwise agreed in writing with the affected landholder;
 - lightly rip disturbed areas, replace topsoil and return the surface to a land use condition that serves the preconstruction use; and
 - implement and maintain land management and erosion control measures.

Erosion and Sediment Control Plans

- (E11) An erosion and sediment control plan must be developed and implemented for all stages of the petroleum activities and which has been certified by a Certified Professional in Sediment and Erosion Control, or a professional with appropriate experience and or qualifications accepted by the administering authority.
- (E12) Appropriate measures to achieve compliance with Condition (E11) for the petroleum activities must be described in the EM plan and include:
- diverting uncontaminated stormwater run-off around areas disturbed by pipeline activities or where contaminants or wastes are stored or handled that may contribute to stormwater;
 - collecting, treating, reusing or releasing contaminated stormwater runoff and incident rainfall in accordance with the conditions of this environmental authority;
 - roofing or minimising the size of areas where contaminants or wastes are stored or handled;
 - using alternate materials and or processes (such as dry absorbents) to clean up spills that will minimise the generation of contaminated waters;
 - erosion and sediment control structures are placed to minimise erosion of disturbed areas and prevent the contamination of any waters;
 - an inspection and maintenance program for the erosion and sediment control features; and
 - provision for adequate access to maintain all erosion and sediment control measures especially during the wet season months from December to March; and
 - identification of remedial actions that would be required to ensure compliance with the conditions of this environmental authority.
- (E13) Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment and contamination of stormwater from disturbed areas.

- (E14) The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas from which contaminants can be released into any waters, roadside gutter or a stormwater drainage system.

- (E15) Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable. Such spillages must be cleaned up using dry methods that minimise the release of wastes, contaminants or materials to any waters, stormwater drainage system or roadside gutter.

Minimising Disturbance to Areas of Ecological Value

- (E16) Prior to conducting petroleum activities that involve significant disturbance to vegetation, an assessment must be undertaken of the condition, type and ecological value of any vegetation in such areas where the activity is proposed to take place.
- (E17) The assessment required by Condition (E16) must be undertaken by a suitably qualified person and include the carrying out of field validation surveys, observations and mapping of any category A, B or C Environmentally Sensitive Areas (ESA's) and the presence of species classed as endangered, vulnerable, rare or near threatened under the *Nature Conservation Act 1992*.
- (E18) The holder of this environmental authority, when carrying out petroleum activities must:
- a) avoid, minimise or mitigate (in order of preference) any impacts on areas of vegetation or other areas of ecological value;
 - b) minimise the risk of injury, harm, or entrapment to wildlife and stock;
 - c) minimise disturbance to land that may otherwise result in land degradation;
 - d) ensure that for land that is to be significantly disturbed by petroleum activities:
 - i. the top layer of the soil profile is removed;
 - ii. stockpiled in a manner that will preserve its biological and chemical properties; and
 - iii. used for rehabilitation purposes (in accordance with Condition H4).
 - e) prior to carrying out field based activities, make all relevant staff, contractors or agents carrying out those activities, aware of the location of any category A, B or C ESA's and the requirements of this environmental authority.
- (E19) Any vegetation clearing authorised under this authority must be stockpiled in a manner that facilitates respreading or salvaging and does not impede vehicle, stock or wildlife movements.
- (E20) Remnant vegetation must not be cleared for the purposes of camps, borrow pits, vehicle access tracks or additional work areas associated with the construction of the pipeline except where authorised by Condition (E23).
- (E21) The holder of this authority must ensure that clearing activities are not undertaken in Semi-Evergreen Vine Thicket areas.
- (E22) The holder of this environmental authority must comply with any environmental offset agreement made in accordance with the conditions of this environmental authority.

Environmentally Sensitive Areas

- (E23) A maximum area of 396.31 hectares of vegetation may be cleared within the PPL 153 boundary for the pipeline right of way, turnaround bays and Laydown Area – Miles Rail Siding as shown on plan number M_05234_01 revision A, dated 21/2/2011, comprising:
- a) Endangered Regional Ecosystem 11.4.3 – 1.28 hectares
 - b) Of Concern Regional Ecosystems 11.3.2, 11.3.3, 11.3.4 and 11.3.25 – 2.5 hectares
 - c) Not Of Concern Regional Ecosystems – 392.53 hectares
- (E24) Unless otherwise authorised under this environmental authority the holder of this authority must ensure that:
- a) petroleum activities are not located in or within 200 metres of any listed category A ESA; and
 - b) all camps, borrow pits, vehicle access tracks or additional work areas associated with the construction of the pipeline right of way and turnaround bays are not located in or within 200 metres of any listed category B or C ESA.

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- (E25) Activities may only be undertaken within State Forests or Timber Reserves provided the holder of the environmental authority has written approval from the authority responsible for the administration of the *Forestry Act 1959*, the Queensland Parks and Wildlife Service.
- (E26) The holder of this authority must ensure that clearing of Essential Habitat is not undertaken, other than for the pipeline right of way on Lot 58 on BWR355 and Lot 6 on RP893550.

Minimising Disturbance to River and Creek Crossings

- (E27) All crossings must be in accordance with the construction methods described in the *Gas Collection Header Watercourse Crossing Assessment – Addendum to Appendix 1 of the EM Plan*.
- (E28) All investigation summaries, alignment sheets and specific crossing drawings for each creek and river crossing must be made available to the administering authority upon request.
- (E29) The construction of the pipeline must not be in or within 100 metres of any natural wetland, lake or spring with the exception of the infrastructure (and associated activities necessary for construction, operation and maintenance purposes) specified in *Schedule E, Table 1 – Authorised infrastructure within 100 metres of a wetland*.

Schedule E, Table 1 – Authorised infrastructure within 100 metres of a wetland

Infrastructure	Impacted Wetland	Location of wetland entry and exit points
Kenya Collection Lateral infrastructure within right of way including a 6m wide temporary access track	Nine Mile Creek	Northern Entry Point: -26.9290 150.4647 Southern Exit Point -26.9306 150.4650

- (E30) The design and construction of the pipeline, including all creek crossings and waterway barriers must:
- minimise impacts on riparian, aquatic and water dependent flora and fauna;
 - protect flora and fauna during construction and operation, including reduction or disruption to habitat, particularly any potential disruption of endangered species habitat; and
 - rehabilitate disturbed riparian areas including use of locally sourced species and intensive planting.
- (E31) Pipeline and road construction works may be undertaken in watercourses, where there is no practicable alternative such as the use of horizontal directional drilling methods, for a maximum period of ten (10) days, provided that the works are conducted in accordance with the following order of preference:
- conducting work in times of no flow;
 - using all reasonable and practical measures to reduce impacts in times of flow; and
 - horizontal directional drilling may be used for the construction of the pipeline unless the construction occurs in times of no flow or an alternative construction methodology is agreed with the administering authority in writing.
- (E32) Activities or works resulting in significant disturbance to the bed or banks in accordance with Conditions (E30) and (E31) of a watercourse must:
- only be undertaken 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;
 - be no greater than the minimum area necessary for the purpose of the significant disturbance;
 - be designed and undertaken by a suitably qualified and experienced person taking into account the matters listed in Section 5 - Planning Activities and Section 6 - Impact

Management During Activities of DERM's *Guideline – Activities in a watercourse, lake or spring associated with mining operations* dated April 2008, or more recent editions as such become available; and

- d) upon cessation of the activities or works, commence rehabilitation immediately such that the final rehabilitation is to a condition that will ensure the ongoing physical integrity and the natural ecosystem values of the site.

(E33) The holder of this environmental authority must not excavate or place fill in a way that interferes with the flow of water in a watercourse including works that divert the course of flow of the water or works that impound the water.

(E34) Sediment control measures must be implemented to minimise any increase in water turbidity due to carrying out petroleum activities in the bed or banks of a watercourse.

(E35) Routine, regular and frequent visual monitoring must be undertaken while carrying out construction work and/or any maintenance of completed works in a watercourse. If, due to the petroleum activities, water turbidity increases in the watercourse, outside contained areas, works must cease and the sediment control measures must be rectified to limit turbidity before activities recommence.

(E36) Petroleum activities must not be carried out in River Improvement Trust Asset Areas without the approval of the relevant River Improvement Trust.

Note: Locations and details of River Improvement Trust Asset Areas can be obtained from the relevant River Improvement Trust. A list of the relevant River Improvement Trusts will be provided by DERM.

Rehabilitation Requirements

(E37) Progressive rehabilitation of disturbed areas must commence as soon as practicable following the completion of any construction or operational works associated with the authorised petroleum activities on the relevant petroleum authority.

(E38) The holder of this authority must ensure that the pipeline right of way is reinstated to a maximum width of 12 metres once construction of the pipeline is completed.

(E39) For areas of native vegetation, revegetation must use seed sourced from local provenance native species, where available.

(E40) Rehabilitation of the pipeline corridor should allow for the maximum re-establishment of native vegetation including the shrubby understorey and ground cover, providing habitat for small ground dwelling fauna species and restoration of landscape connectivity.

(E41) As soon as practicable and within three months at the end of petroleum activities that cause any significant disturbance to land, the holder of this authority must investigate contaminated land status in accordance with *Environmental Protection Act 1994* requirements and the *National Environment Protection (Site Assessment) Measure 1999* where land has been subject to contamination caused by petroleum activities authorised under this authority.

(E42) All land significantly disturbed by petroleum activities must be rehabilitated to:

- a) a stable landform with a self-sustaining vegetation cover with same species and density of cover to that of the surrounding undisturbed areas, except over the area that must be maintained free of large flora species for pipeline integrity and access, and in cases where approval is sought in accordance with Condition (E37);
- b) ensure that all land is reinstated to the pre-disturbed land use and suitability class;
- c) ensure that the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by petroleum activities.

(E43) Notwithstanding Condition (E39), for any planned rehabilitation outcome that will not fulfil the rehabilitation requirements listed in Condition (E42), written agreement must be sought from the administering authority, prior to the rehabilitation being carried out.

- (E44) Maintenance of rehabilitated areas must take place to ensure and demonstrate:
- a) stability of landforms;
 - b) erosion control measures remain effective;
 - c) stormwater runoff and seepage from rehabilitated areas does not negatively affect the environmental values of any waters;
 - d) plants show healthy growth and recruitment is occurring; and
 - e) declared pest plants are controlled on rehabilitated areas to a level consistent with the surrounding property and prevented from spreading to unaffected areas through authorised petroleum activities.
- (E45) Rehabilitation can be considered successful when the site can be managed for its designated land-use (either similar to that of surrounding undisturbed areas or as otherwise agreed in a written document with the landowner/holder and administering authority) without any greater management input than for other land in the area being used for a similar purpose and there is evidence that the rehabilitation has been successful for at least three years.

Pest and Weed Management

- (E46) The holder of this authority must develop and implement a pest and weed control program that includes but is not limited to the following:
- a) identification of areas requiring pest and weed control;
 - b) control measures to prevent the spread of pest and weed species;
 - c) measures to eliminate infestations of noxious pest and weed species that may occur.

Storage and Handling of Chemicals, Flammable and Combustible Liquids

- (E47) All explosives, hazardous chemicals, corrosive substances, toxic substances, gases and dangerous goods must be stored and handled in accordance with the relevant Australian Standards.
- (E48) Flammable and combustible liquids (including petroleum products and associated piping and infrastructure), must be stored, handled and maintained in accordance with the latest edition of *Australian Standard 1940 – The Storage and Handling of Flammable and Combustible Liquids*.
- (E49) Any liquids stored on site that have the potential to cause environmental harm must be stored in or serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land. Where no relevant Australian Standard is available, the following must be applied:
- a) storage tanks must be bunded so that the capacity and construction of the bund is sufficient to contain at least 110% of a single storage tank or 100% of the largest storage tank plus 10% of the second largest storage tank in multiple storage areas; and
 - b) drum storages must be bunded so that the capacity and construction of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.
- (E50) All containment systems must be designed to minimise rainfall collection within the system.

SCHEDULE F – FAUNA MANAGEMENT

- (F1) The holder of this authority must develop and implement a species management plan for all fauna, including all endangered, vulnerable or rare (EVR) listed species likely to be impacted by the pipeline activities. The plan must:
- a) address the impacts to the species; and
 - b) provide for the survival of the species in the wild.
- (F2) The holder of this authority must develop and implement fauna management procedures in such a manner that petroleum activities are undertaken to prevent and/or minimise environmental harm. The fauna management procedures must include but not be limited to:
- a) training and awareness of staff and contractors;
 - b) conduct of a preconstruction ecological survey to identify the presence of any endangered, vulnerable or rare fauna species and identify and mark hollow-bearing trees;
 - c) minimising the clearing of mature and hollow-bearing trees;
 - d) minimising the length of time the trench is open through the staging of activities;
 - e) temporary exclusion fencing where practicable to restrict fauna access to the trench;
 - f) the use of "night caps" over open pipe string ends to prevent the ingress of wildlife;
 - g) pipes being strung with gaps to allow for fauna movement across the line of the pipe;
 - h) a suitably qualified person for fauna handling must be present during clear and grade activities to relocate fauna or recover any injured fauna and must check the entire trench for captured fauna at least daily, preferably in the morning;
 - i) ensure any vertebrates injured by clearing activities under this permit are referred to an appropriate wildlife carer group or veterinarian (to be predetermined prior to clearing) and DERM must be notified within 24 hours of any injuries or deaths;
 - j) installation of ramps and trench plugs with a slope less than 50% at least every 1,000 metres to assist fauna to leave the trench; and
 - k) installation of shelter material to provide wet weather protection and reduction of heat stress, such as by placing sawdust filled Hessian bags in pairs every 250 metres.
- (F3) A copy of the fauna management procedures must be made available to the administering authority on request.

Note: This environmental authority does not authorise the taking of protected animals or the tampering with an animal breeding place as defined under the Nature Conservation Act 1992 and Regulations.

SCHEDULE G – DECLARED WILD RIVER AREAS

- (G1) 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 this 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 relevant to the petroleum activities.

SCHEDULE H – PROJECT INFRASTRUCTURE

- (H1) The pipeline corridor must be built within the locations outlined in Schedule H, Table 1 – Location of the PPL 153 pipeline corridor.

Schedule H, Table 1 – Location of the PPL 153 pipeline corridor

PPL153 Component	Location	Latitude	Longitude	Lot on Plan Reference
Collection Header	KP0 (Start Point) – Braemar SF	-27.230	150.858	3RP194939
	KP100 – Warrego Highway	-26.668	150.275	-
	KP141 – Intersection with Export Pipeline (PPL 154)	-26.317	150.202	-
	KP197 (End Point) – Woleebee Creek CPP, Wandoan	-26.285	149.726	2FT394
Bellevue Collection Lateral	(Start Point) Collection Header connection	-26.694	150.279	-
	(End Point) Bellevue CPP	-26.691	150.281	47BWR107
Kenya Collection Lateral	(Start Point) Collection Header connection	-26.948	150.455	-
	(End Point) Kenya CPP	-26.862	150.483	20RG34
Jordan Collection Lateral	(Start Point) Collection Header connection	-27.110	150.716	-
	(End Point) Jordan CPP	-27.112	150.714	13SP226733

- (H2) All petroleum infrastructure must be removed from the relevant petroleum authority prior to the surrender of this authority, except where agreed in writing by the administering authority and the current landowner.
- (H3) Prior to the commencement of decommissioning or abandonment activities, the scope of work for decommissioning or abandonment of project infrastructure shall be developed and agreed to with the administering authority.
- (H4) The holder of this authority must decommission the pipeline to a situation where ongoing, or potential environmental harm is prevented or minimised. As a minimum, the pipeline must be decommissioned such that:
- it no longer contains hazardous contaminants;
 - it is left in stable condition;
 - all the above ground infrastructure is removed; and
 - all areas disturbed by above ground infrastructure are rehabilitated in accordance with the requirements of this authority.

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SCHEDULE I – MONITORING PROGRAMS

- (11) The holder of this authority must:
- a) develop and implement a monitoring program that will demonstrate compliance with the conditions in this authority; and
 - b) document the monitoring and inspections carried out under the program and any actions taken.
- (12) The holder of this authority must ensure that a suitably qualified, experienced and competent person(s) conduct all monitoring required by this authority.
- (13) The holder of this authority must record, compile and keep for a minimum of five years all monitoring results required by this authority and make available for inspection all or any of these records upon request by the administering authority. Monitoring results relating to rehabilitation must be kept until the relevant petroleum tenure is surrendered.
- (14) An annual monitoring report must be prepared each year and submitted to the administering authority when requested. This report shall include but not be limited to:
- a) a summary of the previous twelve (12) months monitoring results obtained under any monitoring programs required under this authority and, a comparison of the previous twelve (12) months monitoring results to both this authority limits and to relevant prior results; and
 - b) an evaluation/explanation of the data from any monitoring programs; and
 - c) a summary of any record of quantities of releases required to be kept under this authority; and
 - d) a summary of the record of equipment failures or events recorded for any site under this approval; and
 - e) an outline of actions taken or proposed to minimise the environmental risk from any deficiency identified by the monitoring or recording programs.

SCHEDULE J – COMMUNITY ISSUES

Managing Complaints

- (J1) When the administering authority advises the holder of a complaint alleging nuisance (e.g. caused by dust or noise), the holder must investigate the complaint and advise the administering authority of the action proposed or undertaken in relation to the complaint.
- (J2) If the administering authority is not satisfied with the proposed or completed action, the holder must undertake monitoring or other actions requested by the administering authority.
- (J3) Maintain a record of complaints and incidents causing environmental nuisance or environmental harm, and actions taken in response to the complaint or incident.
- (J4) Retain the record of complaints required by this condition for five (5) years.

Complaint Response

- (J5) The holder of this authority must record the following details for all complaints received and provide this information to the administering authority on request:
 - a) time, date, name and contact details of the complainant;
 - b) reasons for the complaint;
 - c) any investigations undertaken;
 - d) conclusions formed; and
 - e) any actions taken.

SCHEDULE K – NOTIFICATION PROCEDURES

Notification of Emergencies and Incidents

- (K1) The holder of this authority must telephone the DERM's Pollution Hotline (1300 130 372) and any affected landholder or occupier on the day of becoming aware of any release of contaminants or any event where environmental harm has been caused or may be threatened not in accordance with the conditions of this authority.
- (K2) Subject to Condition (K1), the holder of this authority is required to report in the case of uncontained spills (including hydrocarbon) of the following volumes or kind:
- releases of any volume to water;
 - releases of volume greater than 200 L to land; and
 - releases of any volumes where potential serious or material environmental harm is considered to exist.
- (K3) The notification of emergencies or incidents as required by Conditions (K1 and K2) must include but not be limited to the following:
- the holder of the authority;
 - the location of the emergency or incident;
 - the number of the authority;
 - the name and telephone number of the designated contact person;
 - the time of the release;
 - the time the holder of the authority became aware of the release;
 - the suspected cause of the release;
 - the environmental harm caused, threatened, or suspected to be caused by the release; and
 - actions taken to prevent any further release and mitigate any environmental harm caused by the release.
- (K4) Not more than fourteen (14) days following the initial notification of an emergency or incident, written advice must be provided of the information supplied in accordance with Condition (K3) in addition to:
- proposed actions to prevent a recurrence of the emergency or incident; and
 - outcomes of actions taken at the time to prevent or minimise environmental harm.
- (K5) As soon as practicable, but not more than six (6) weeks following the conduct of any environmental monitoring performed in relation to the emergency or incident, which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this authority, written advice must be provided of the results of any such monitoring performed to the administering authority.
- (K6) A record of incidents must be maintained to include a record of all incidents occurring in the previous 5 years.

SCHEDULE L – DEFINITIONS

Note: Where a term is not defined in this environmental authority the definition in the Environmental Protection Act 1994, its regulations and Environmental Protection Policies or the Petroleum and Gas (Production and Safety) Act 2004 and its regulations must be used in that order.

"aggregation dam" means a dam that is used to aggregate and contain CSG water prior to use, treatment or disposal of that water (by means other than evaporation). The primary purpose of the dam must not be to evaporate the water even though this will naturally occur.

"associated works" in relation to a dam, means:

- operations of any kind and all things constructed, erected or installed for that dam; and
- any land used for those operations.

"background noise level" means the sound pressure level, measured in the absence of the noise under investigation, as the L A90, T being the A-weighted sound pressure level exceeded for 90 percent of the measurement time period T of not less than 15 minutes, using Fast response.

"bed and banks" for a watercourse or wetland means land over which the water of the watercourse or wetland normally flows or that is normally covered by the water, whether permanently or intermittently; but does not include land adjoining or adjacent to the bed or banks that is from time to time covered by floodwater.

"beneficial use" means

- with respect to dams, that the current or proposed owner of the land on which a dam stands, has found a use for that dam that is:
 - of benefit to that owner in that it adds real value to their business or to the general community,
 - in accordance with relevant provisions of the *Environmental Protection Act 1994*,
 - sustainable by virtue of written undertakings given by that owner to maintain that dam, and
 - the transfer and use have been approved or authorised under any relevant legislation. Or
- with respect to coal seam gas water, refer the DERM's Operational Policy *Management of water produced in association with petroleum activities (CSG water) and Notice of decision to approve a resource for beneficial use – CSG water* which can be accessed on DERM's website at www.derm.qld.gov.au.

"brine" means either saline water with a total dissolved solid concentration greater than 40,000 mg/l or CSG water after it has been concentrated through water treatment processes and/or evaporation.

"bund or banded" in relation to spill containment systems for fabricated or manufactured tanks or containers designed to a recognised standard means an embankment or wall of brick, stone, concrete or other impervious material which may form part or all of the perimeter of a compound and provides a barrier to retain liquid. Since the bund is the main part of a spill containment system, the whole system (or banded area) is sometimes colloquially referred to within industry as the bund. The bund is designed to contain spillages and leaks from liquids used, stored or processed above ground and to facilitate clean-up operations. As well as being used to prevent pollution of the receiving environment, bunds are also used for fire protection, product recovery and process isolation.

"category A ESA" means any area listed in Section 25 of the *Environmental Protection Regulation 2008*.

"category B ESA" means any area listed in Section 26 of the *Environmental Protection Regulation 2008*.

"category C ESA" means any of the following areas:

- Nature Refuges as defined under the *Nature Conservation Act 1992*;
- Koala Habitat Areas as defined under the *Nature Conservation Act 1992*;
- State Forests or Timber Reserves as defined under the *Forestry Act 1959*;
- Declared catchment areas under the *Water Act 2000*;
- Resources reserves under the *Nature Conservation Act 1992*;
- An area identified as "Essential Habitat" for a species of wildlife listed as endangered, vulnerable, rare or near threatened under the *Nature Conservation Act 1992*, and adopted for the purpose of the *Vegetation Management Act 1999*;

- Any wetland shown on the Map of Referable Wetlands available from DERM's website; or
- "Of concern" regional ecosystems identified in the database maintained by DERM called 'Regional ecosystem description database' containing regional ecosystem numbers and descriptions.

"certification or certified by a suitably qualified and experienced person" in relation to a design plan or an annual report regarding dams, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

- exactly what is being certified and the precise nature of that certification;
- the relevant legislative, regulatory and technical criteria on which the certification has been based;
- the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
- the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

"clearing" means:

- in relation to grass, scrub or bush—the removal of vegetation by disturbing root systems and exposing underlying soil (including burning), but does not include—
 - the flattening or compaction of vegetation by vehicles if the vegetation remains living; or
 - the slashing or mowing of vegetation to facilitate access tracks; or
 - the clearing of noxious or introduced plant species; and
- in relation to trees—cutting down, ringbarking, pushing over, poisoning or destroying in any way.

"commercial place" means a work place used as an office or for business or commercial purposes, which is not part of the petroleum activities and does not include employees accommodation or public roads.

"construction" in relation to a dam includes building a new dam and modifying or lifting an existing dam.

"CSG water" means groundwater that is necessarily or unavoidably brought to the surface in the process of coal seam gas exploration or production. CSG water typically contains significant concentrations of salts, has a high sodium adsorption ratio (SAR) and may contain other contaminants that have the potential to cause environmental harm if released to land or waters through inappropriate management. CSG water is a waste, as defined under s13 of the EP Act.

"CSG water dams" include any type of dam (storage or evaporation) used to contain groundwater that is necessarily or unavoidably brought to the surface in the process of coal seam gas exploration or production.

"dam" means a land-based structure or a void that is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. A dam does *not* mean a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container.

"design plan" means the documentation required to describe the physical dimensions of the dam, the materials and standards to be used for construction of the dam, and the criteria to be used for operating the dam. The documents must include design and investigation reports, specifications and certifications, together with the planned decommissioning and rehabilitation works and outcomes. A design plan may include 'as constructed' drawings.

"discharge area" means:

- (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 Environment and Resource Management.

"ecosystem functioning" means the interactions between and within living and nonliving components of an ecosystem and generally correlates with the size, shape and location of an area of vegetation.

“end” means the stopping of the particular activity that has caused a significant disturbance in a particular area. It refers to, among other things, the end of a seismic survey or the end of a drilling operation. It does not refer to the end of all related activities such as rehabilitation. In other words, it does not refer to the 'completion' of the petroleum activity, the time at which the petroleum authority ends or the time that the land in question ceases to be part of an authority.

“equivalent person” or “EP” means an equivalent person under volume 1, section 2 of the *Guidelines for Planning and Design of Sewerage Schemes*, October 1991, published by the Water Resources Commission, Department of Primary Industries, Fisheries and Forestry.

“evaporation dam” means a dam where CSG water or brine is contained until the water content has been removed by evaporation.

“fill” means any kind of material in solid form (whether or not naturally occurring) capable of being deposited at a place but does not include material that forms a part of, or is associated with, a structure constructed in a watercourse, wetland or spring including a bridge, road, causeway, pipeline, rock revetment, drain outlet works, erosion prevention structure or fence.

“flowable substance” means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

“foreseeable future” means the period used for assessing the total probability of an event occurring. Permanent structures and ecological sustainability should be expected to still exist at the end of a 150 year foreseeable future with an acceptably low probability of failure before that time.

“hazard” in relation to a dam as defined, means the potential for environmental harm resulting from the collapse or failure of the dam to perform its primary purpose of containing, diverting or controlling flowable substances.

“hazard category” means a category, either low significant or high, into which a dam is assessed as a result of the application of tables and other criteria in DERM's *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (Version 1.0, 2008)* or any updated version of the Manual that becomes available from time to time

“heritage place” means any place that may be of cultural heritage significance, or any place with potential to contain archaeological artefacts that are an important source of information about Queensland's history.

“high bank” means the defining terrace or bank or, if no bank is present, the point on the active floodplain, which confines the average annual peak flows in a watercourse.

“highly erodible soils” means very unstable soils that are generally described as Sodosols with hard – setting, fine sandy loam to silty clay loam surfaces (solodics, solodised solonetz and solonetz) or soils with a dispersible layer located less than 25 cm deep or soils less than 25 cm deep.

“hydraulic performance” means the capacity of a regulated dam to contain or safely pass flowable substances based on a probability (AEP) of performance failure specified for the relevant hazard category in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (Version 1.0, 2008)* published by the Environmental Protection Agency on its website.

“impulsive sound” means sound characterised by brief excursions of sound pressure (acoustic impulses) that significantly exceed the background sound pressure. The duration of a single impulsive sound is usually less than one second.

“infrastructure” means water storage dams, roads and tracks, equipment, buildings and other structures built for the purpose and duration of the conduct of the petroleum activities, but does not include other facilities required for the long term management of the impact of those activities or the protection of potential resources. Such other facilities include dams other than water storage dams (e.g. evaporation dams), pipelines and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.

"lake" means:

- (a) a lagoon, swamp or other natural collection of water, whether permanent or intermittent; and
- (b) the bed and banks and any other element confining or containing the water.

"landfill monocell" means a specialised, isolated landfill facility where a single specific waste type is exclusively disposed (i.e. salt).

"leachate" means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of on site which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

"levee" means a dyke or bund that is designed only to provide for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from unplanned releases from other works of infrastructure, during the progress of those stormwater or flood flows or those unplanned releases; and does not store any significant volume of water or flowable substances at any other times.

"limited petroleum activities" mean activities including geophysical surveys (including seismic activities), well sites, well pads, sumps, flare pits, flow lines and supporting access tracks. Limited petroleum activities do not include the construction of production infrastructure for processing or storing petroleum or by-products, dams, compressor stations, campsites/workforce accommodation, power supplies, waste disposal or other supporting infrastructure for the project.

"max $L_{PZ,15 \text{ min}}$ " means the maximum value of the Z-weighted sound pressure level measured over 15 minutes.

"mg/L" means milligrams per litre.

"overland flow water" means water, including floodwater, flowing over land, otherwise than in a watercourse or lake:

- after having fallen as rain or in any other way; or
- after rising to the surface naturally from underground.

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

"pest" means species:

- (a) declared under the *Land Protection (Pest and Stock route Management) Act 2002*;
- (b) declared under Local Government model local laws; and
- (c) which may become invasive in the future.

"ppt" means parts per thousand.

"regulated dam" means any dam in the significant or high hazard category as assessed using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (Version 1.0, 2008)* or any updated version of the Manual that becomes available from time to time.

"rehabilitation" means the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.

"remnant unit" means a continuous area of remnant vegetation representative of a single Regional Ecosystem type or a single heterogeneous unit (multiple Regional Ecosystem types that cannot be distinguished individually due to the scale of mapping).

"River Improvement Trust Asset Area" means an area within a River Improvement Area declared under the *River Improvement Trust Act 1940* that is or has been subject to restoration or flood mitigation works. The locations and details of these areas can be obtained from the relevant River Improvement Trust.

“sensitive place” means

- a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel; or
- a library, childcare centre, kindergarten, school, university or other educational institution;
- a medical centre, surgery or hospital; or
- a protected area; or
- a public park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment.

“significantly disturbed land or significant disturbance to land” means disturbance to land as defined in section 28 of the *Environmental Protection Regulation 2008*.

“site” means the petroleum authority(ies) to which the environmental authority relates.

“spring” means the land to which water rises naturally from below the ground and the land over which the water then flows.

“stable” in relation to land, means landform dimensions are or will be stable within tolerable limits now and in the foreseeable future. Stability includes consideration of geotechnical stability, settlement and consolidation allowances, bearing capacity (trafficability), erosion resistance and geochemical stability with respect to seepage, leachate and related contaminant generation.

“state heritage place” means a place entered in the Queensland heritage register under Part 4 of the *Queensland Heritage Act 1992*.

“suitably qualified person” means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis to performance relative to the subject matter using the relevant protocols, standards, methods or literature.

“suitably qualified and experienced person” in relation to a hazard assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

- exactly what has been assessed and the precise nature of that assessment;
- the relevant legislative, regulatory and technical criteria on which the assessment has been based;
- the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
- the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

“suitably qualified and experienced person” in relation to dams means one who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 1988*, OR registered as a National Professional Engineer (NPER) with the Institution of Engineers Australia, OR holds equivalent professional qualifications to the satisfaction of the administering authority for the Act; AND the administering authority for the Act is satisfied that person has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below:

- knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams; and
- a total of five years of suitable experience and demonstrated expertise in the geomechanics of dams with particular emphasis on stability, geology and geochemistry, and
- a total of five years of suitable experience and demonstrated expertise each, in three of the following categories:
 - investigation and design of dams;
 - construction, operation and maintenance of dams;
 - hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology;
 - hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes;
 - hydrogeology with particular reference to seepage, groundwater;

- solute transport processes and monitoring thereof; or
- dam safety.

“third party auditor” means a suitably qualified person who is either a certified third party auditor or an internal auditor employed by the holder of the environmental authority and the person is independent of the day to day management and operation of activities covered by this environmental authority.

“threatening processes” means processes, features and actions that can have a detrimental effect upon the health and viability of an area of vegetation. For example, altered hydrology, land use practices, invasion by pest and weed species, land degradation, edge effects and fragmentation.

“tolerable limits” means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values. For example, a range of settlement for a tailings capping, rather than a single value, could still meet the objective of draining the cap quickly, preventing damage and limiting infiltration and percolation.

“topsoil” means the surface (top) layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300 mm in depth from the natural surface.

“void” means any man-made, open excavation in the ground (includes borrow pits, drill sumps, frac pits, flare pits, cavitation pits and trenches).

“waters” includes all or any part of a creek, river, stream, lake, lagoon, dam, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.

“watercourse” means a river, creek or stream in which water flows permanently or intermittently:

- (a) in a natural channel, whether artificially improved or not; or
 - (b) in an artificial channel that has changed the course of the watercourse;
- but, in any case, only:
- (c) unless a regulation under paragraph (d), (e) or (f) declares otherwise-at every place upstream of the point (point A) to which the high spring tide ordinarily flows and reflows, whether due to a natural cause or to an artificial barrier; or
 - (d) if a regulation has declared an upstream limit for the watercourse-the part of the river, creek or stream between the upstream limit and point A; or
 - (e) if a regulation has declared a downstream limit for the watercourse-the part of the river, creek or stream upstream of the limit; or
 - (f) if a regulation has declared an upstream and a downstream limit for the watercourse-the part of the river, creek or stream between the upstream and the downstream limits.

Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

“wetland” means an area shown as a wetland on a 'Map of referable wetlands', a document approved by the chief executive (environment). A map of referable wetlands can be viewed at www.derm.qld.gov.au.

“wild river declaration” means a statutory instrument under the *Wild Rivers Act 2005*. A declaration lists the relevant natural values to be preserved and delineates certain parts of the wild river area and the different constraints that may apply in these areas. With reference to environmental authorities for petroleum, each declaration also specifies conditions to be included in a new authority if the activity is to be located within the wild river area.

