

MAY 2016

The following is a monthly update for the Narrabri CCC regarding activities undertaken by the NSW Environment Protection Authority (EPA) relating to PEL 238 (Narrabri Gas Project).

It includes both activities undertaken relating to Environment Protection Licence (EPL) 20350 and the EPA functions conducted under the NSW Gas Plan.

Attachments to this month's update:

- Gas Regulation Officers' April Inspection Log
- Feature Article "Gas Detection Equipment used by the EPA"
- Site Inspection Map

EPA ACTION ITEMS SINCE LAST NCCC

- Methanol Drum found on road

INVESTIGATIONS

Background

19 February 2013 the EPA became responsible for investigating environmental incidents that occurred during coal seam gas activities under the provisions of the *Protection of the Environment Operations Act 1997* (POEO) and issued Environment Protection Licences (EPL).

1 July 2015 the EPA commenced its new role as the lead regulator for compliance with and enforcement of conditions of approval for gas activities in NSW, including consent conditions and activity approvals issued by other agencies (excluding work health and safety).

In carrying out this role the EPA will work with the relevant experts and NSW Government agencies.

Gas activities must comply with a broad range of regulatory controls, including Acts, regulations, codes of practice, titles, approvals and other controls.

The prioritisation of investigations is determined using a risk assessment for investigations that considers the level of environmental impact and the likelihood of environmental harm occurring.

Current

14 April 2016 – Methanol Drum found on Bohena Creek Road

Santos staff identified a 44 Gallon drum labelled Methanol dumped along Bohena Creek Road near the Leewood Water Treatment Facility. Police and Hazmat attended the scene and secured the product. The drum was not on the Santos site and was not related to the activities conducted by Santos as per media Tweet by the EPA.

Running Log – Old Investigations PEL 238 Outcomes

| Incident | Outcome |
|---|---|
| March 2013 Bibblewindi Water Treatment Facility Pond Liner failure | 11 Feb 2014 The EPA issued a Penalty Notice for s120 Pollution of waters A Pollution Reduction Program (PRP) was added to EPL 20350 (Environment Protection Licence) requiring the development of a Remediation and Monitoring plan and the implementation of these |
| March 2013 Tintsville Ponds – Detection of elevated levels salinity and metals | Insufficient evidence to determine if the changes detected in groundwater were the result of leaks from the Tintsville ponds or were from natural factors. A PRP was added to EPL 20350. Media release: No environmental harm but improvements needed |
| February 2014 Namoi Waste Storage of Santos drilling mud onsite | 6 May 2014 The EPA issued Namoi Waste Corp with a Penalty Notice for breach of s145 of the POEO Act. Note - The Penalty Notice issued was not related to the original complaint regarding waste from coal seam gas, rather other waste material identified during the course of the investigation. |
| January 2015 Santos Dewhurst Southern Water Flow Line | No breach of EPL 20350 identified. Santos varied operational practices for high point vents following negotiations with the EPA. Media release: No environmental harm but improvements needed |
| September 2015 Bohena Creek Piezometer located in creek | No regulatory action required |
| January 2016 Leewood Water Treatment Facility Alleged discharge of sediment laden water | The rainwater discharge followed heavy rain. Santos undertook immediate works to prevent further discharge from the site installing coir mats and construction of bunding. The EPA inspected site and determined no environmental harm and that no regulatory action was required |
| January 2016 Santos Operations in the Piliga Report a 'foamy caramel coloured' material on the roadside near operation site. | The EPA inspected the site and collected samples. Analysis determined it was a natural event, likely due to the decomposition of organic material No further action was required |

| | |
|--|---|
| <p>February 2016 Santos sites at Piliga Report of 35,000 litre spill at unmanned Santos facility</p> | <p>Investigations proved no spills had occurred in NSW Santos sites It was revealed a spill had occurred sometime earlier in Queensland No action was required Media release: Water Run-off From Leewood Water Treatment Facility in Narrabi Cleaned Up</p> |
| <p>March 2016 Leewood pond Alleged leaking</p> | <p>EPA officer inspected storage ponds and met with Santos staff No evidence that produced water was leaking</p> |
| <p>March 2016 Bohena Creek Road Report that a vent had been left open, unattended and emitting methane gas</p> | <p>Santos has approval to vent gas from high and low point vents along the water gathering lines for safety and operational purposes – this is performed manually by a field operator. Santos is currently amending its manual venting procedure to ensure a field operator is present at all times.</p> |
| <p>March 2016 Santos sites at Piliga Report received that there was a “foamy residue” left along Beehive Road Reporter returned some days later with a Geiger counter and recorded a reading allegedly linked to the high and low point vents</p> | <p>EPA officer spoke to reporter who advised that the location they took the Geiger counter reading was a few kilometres away from the area of concern and there was no evidence to support the initial claim No further action required.</p> |
| <p>March 2016 Leewood Water Treatment Facility Report alleging a truck was seen spraying produced water between the internal fence and the property boundary fence for dust mitigation</p> | <p>EPA officer viewed available data confirming raw water from an on-site bore was used for dust suppression at the time of the allegation. Leewood activities are approved on the Development Plan. The EPA supports dust suppression which is a requirement of the Santos EPL. No further action required as at 15 March 2016</p> |

EPA ACTIVITIES

Inspections undertaken by the EPA

| Inspections | | | | | |
|--|----------------|-------------------------------------|---|----------------|---------------------------------------|
| Site ID | Date Inspected | Reasons | Action/Outcome | Status | Standards to be met |
| Bohena 5 | 5 April 2016 | Follow up rehabilitation inspection | Site rehabilitation progress is monitored | Rehabilitating | PAL (Petroleum Assessment Licence) |
| Bohena 7 | 5 April 2016 | Follow up rehabilitation inspection | Site rehabilitation progress is monitored | Rehabilitating | PAL |
| Biblewindi Legacy Salinity Impact Area | 5 April 2016 | Follow up rehabilitation inspection | Site rehabilitation progress is monitored | Rehabilitating | PAL |

| Site ID | Date Inspected | Reasons | Action/Outcome | Status |
|-------------------|----------------|--------------------|------------------------------|-------------------------|
| Leewood RO Plant | 5 April 2016 | General inspection | No non-compliance identified | Site under construction |
| Biblewindi 1 Bore | 5 April 2016 | General inspection | No non-compliance identified | N/A |
| Biblewindi 5 Bore | 5 April 2016 | General inspection | No non-compliance identified | N/A |
| Leewood Bores | 5 April 2016 | General inspection | No non-compliance identified | N/A |

Inspections for LDAR (Leak Detection & Repair) & H₂S (Hydrogen Sulphide)

| Site ID | Date Inspected | Reason | Action/Outcome |
|---|----------------|---------------------------|--------------------------------|
| Dewhurst 6, 23 and 25 | 20 April 2016 | Leak detection monitoring | No reportable leaks identified |
| Biblewindi 3, 4, 5, 6, 7, 8, 9, 10, 13, 14, 16, 17, 22, 23, 24, 25, 26H, 27, 29 | 20 April 2016 | Leak detection monitoring | No reportable leaks identified |
| Coonarah 1B, 4, 6L, 7 and 8 | 21 April 2016 | Leak detection monitoring | No reportable leaks identified |

FEATURE ARTICLE

Gas Detectors Used by the EPA

The main two gas detectors used by the EPA are the RKI instruments Eagle 2 and The Heath Detecto Pak-infrared (DP-IR™).

Eagle 2

The Eagle2 gas detector is calibrated to detect specific gas such as methane, oxygen, hydrogen sulfide, carbon monoxide and carbon dioxide.

The unit is lightweight, versatile and has the ability to sample atmospheric conditions for many gases.



How the Eagle 2 Measures

- 1) Catalytic combustible gas sensor (LEL Sensor) measures methane and other combustible hydrocarbons in either a percentage (%) or part per million (ppm).
The detection principal is based on the catalytic oxidation of combustible gases.
Although calibrated against methane, this sensor can respond to other combustible gases such as hexane, propane, butane, acetone etc.
- 2) Oxygen is measured using galvanic sensor in a volume percentage (vol.%).
The Eagle 2 also has a membrane that allows oxygen to pass through the electrochemical cell where it reacts with the cathode to produce a voltage proportional to the concentrations of oxygen.
- 3) Hydrogen sulfide (H₂S) is measured using electrochemical sensors in either percentage (%) or parts per million (ppm). The sensor consists of metal electrodes in an electrolyte solution. The target gas passes through a gas permeable membrane and reacts with the electrode to produce current which is proportional to its concentration.
- 4) Carbon monoxide (CO) is measured using electrochemical sensor in either percentage (%) or part per million (ppm). The sensor principles and operation are similar to the sensor that detects H₂S.
- 5) Carbon dioxide (CO₂) is measured using infrared sensor. Carbon dioxide absorb infrared (IR) radiation to give characteristic profile that can be used to detect and measure its concentration.

Heath Detecto Pak-Infrared (DP-IR™)

The DP-IR is a very sensitive gas detector that is used to detect only methane in the environment.

The detector that can measure methane down to parts per million concentrations (ppm) with an accuracy of ±10% without being false alarming with other gases.

How the Heath Detecto Pak-Infrared Measures

The DP-IR uses an advanced optical method called infrared controlled interference polarization spectrometry to detect and measure the concentration of methane gas.

This instrument is highly selective to methane gas and will not false alarm in the presence of other hydrocarbon gases. For an example, 5000 ppm propane produces about 1 ppm methane equivalent reading.

It has an internal calibration cell that verifies instrument is giving accurate results. It also continuously monitors internal parameters to ensure they are within operational limits.

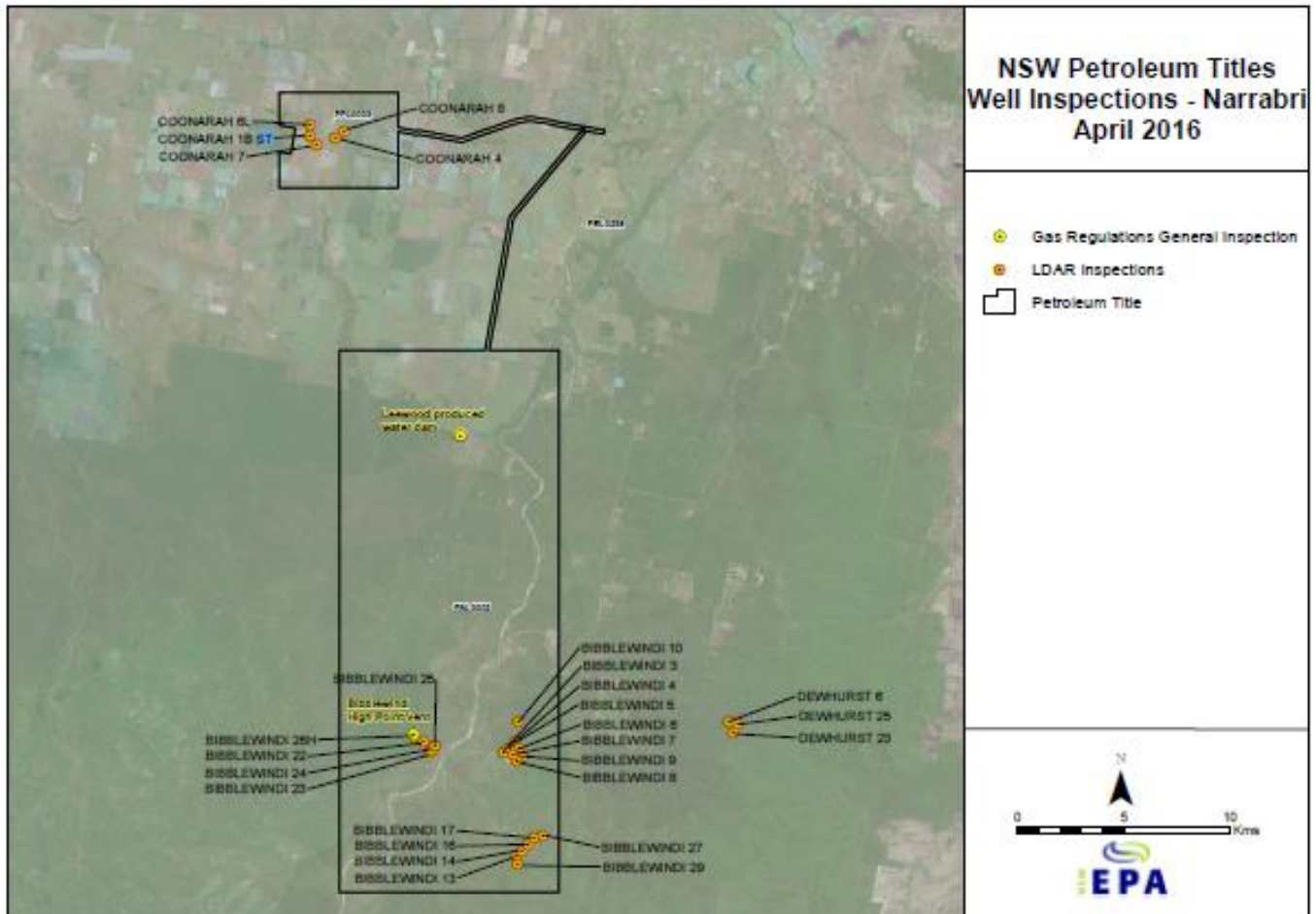


Heath Detecto Pak-Infrared (DP-IR™)

SITE INSPECTION MAP

Narrabri

EPA Site Inspections April 2016



Every effort has been made to ensure that the information in this document is accurate at the time of publication. However, as appropriate, readers should obtain independent advice before making any decision based on this information.

Published by:
Environment Protection Authority
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: +61 2 9995 5000 (switchboard)
Phone: 131 555 (NSW only – environment information and publications requests)
Email: info@environment.nsw.gov.au
Website: www.epa.nsw.gov.au

ISSN 2206-3234
EPA 2016/ 0276
May 2016