Annual Environmental Performance Report 2014 - 2015

Camden Gas Project

Date: 15 October 2015

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Document Revision History

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Abbreviations

Abbreviation	Description
AEMR	Annual Environmental Management Report
AEPR	Annual Environmental Performance Report
APPEA	Australian Petroleum Production and Exploration Association
CCC	Community Consultative Committee
CGP	Camden Gas Project
CoC	Condition of Consent
CSG	Coal Seam Gas
DA	Development Application
DG	Director General
DP&E	Department of Planning and Environment
DRE	Department of Industry – Division of Resources and Energy
EECs	Endangered Ecological Communities
EIS	Environmental Impact Statement
EMAI	Elizabeth Macarthur Agricultural Institute
EMP	Environmental Management Plan
EMS	Environmental Management System
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPL	Environment Protection Licence
GGL	Gas Gathering Line
HS&E	Health Safety and Environment
LGA	Local Government Area
NOW	NSW Office of Water
NOX	Nitrogen oxides
NPI	National Pollutant Inventory
OEH	Office of Environment and Heritage
PA	Project Approval
PAC	Planning Assessment Commission
PEL	Petroleum Exploration Lease
POP	Petroleum Operations Plan
PPL	Petroleum Production Lease
RBTP	Ray Beddoe Treatment Plant
RPGP	Rosalind Park Gas Plant
SIS	Surface to-In-Seam
SOX	Sulphur oxides
SSD	State Significant Development
VLMP	Vegetation and Landscape Management Plan

Executive Summary

This Annual Environmental Performance Report (AEPR) has been prepared to meet the reporting requirements of the NSW Department of Planning and Environment (DP&E) and Department of Industry – Division of Resources and Energy (DRE). This AEPR covers the AGL Camden Gas Project (CGP) located in the Camden, Campbelltown and Wollondilly Local Government Areas (LGAs) for the period of 01 July 2014 to 30 June 2015.

Reporting Requirements

The purpose of the AEPR is to report in accordance with the CGP's Development Application Approvals and Project Approvals on the following matters:

- The standards, performance measures and statutory requirements the development is required to comply with;
- An assessment of the environmental performance of the development to determine whether it is complying with these standards, performance measures, and statutory requirements;
- Reporting against the implementation of the Project Commitments Register;
- Copy of the Complaints Register for the preceding twelve month period and indicating what actions were (or are being) taken to address these complaints;
- Indication of what actions were taken to address any issue and/or recommendation raised by the Community Consultative Committee (CCC);
- Provision of the detailed results of all the monitoring required by each consent;
- Review of the results of this monitoring against:
  - Impact assessment criteria;
  - Monitoring results from previous years;
  - Predictions in relevant environmental assessment documents.
- Identify any non-compliance during the year;
- Identify any significant trends in the data; and
- If any non-compliance is detected, describe what actions and measures would be carried out to ensure compliance, clearly indicating who would carry out these actions and measures, when they would be carried out, and how the effectiveness of these measures would be monitored over time.

Field Development

Field development during this reporting period has been limited with no construction works being undertaken. No new wells were drilled. One 375m section of gas gathering line was installed between gas well Wandinong 04 (WG04) and Wandinong 05 (WG05). Plug and abandonment of four wells commenced during the reporting period, being EM02, EM03, EM04 and AP01.

Environmental Management & Performance

In 2008 AGL commenced the development of a Project Environmental Management System (EMS) to manage potential environmental aspects associated with CGP activities. As part of this process an Environmental Management Plan (EMP) and Environmental Sub Plans were prepared in order to facilitate the uniform implementation of environmental management. During this reporting period the EMP and numerous sub-plans were updated to improve AGL's environmental management and procedures.

Air Pollution

Quarterly stack emissions monitoring results were compliant with the licence concentration limits of EPL 12003 for this period.

Nitrogen Dioxide, Sulphuric Acid Mist and Sulphur Dioxide concentrations were measured at the emission monitoring points of the RPGP and compared to the input data used in the modelling for the air impact assessment. The testing confirmed compliance with air emission limits at the RPGP and therefore compliance at the nearest residence during this reporting period.

There were no exceedances of the EPL 12003 licence limits for any of the assessable annual pollutant loads for the RPGP as reported within the 2012/2013 Annual Return. All assessable pollutants were also reported at below the annual load estimations as predicted in the RPGP Environmental Impact Statement (EIS).

Non-compliance with continuous monitoring conditions of EPL 12003 conditions O2 and M2.1 in relation to M2.3, and DA-282-6-2003-I Sch. 4, Condition 58 occurred during this reporting period. Details of this non-compliance are provided within Section 9.1.1 of this report.

The National Pollutant Inventory (NPI) annual report for the 2013/14 financial year was submitted on 25 September 2014. The NPI report for the 2014/15 financial year was submitted on 23 September 2015.

During the reporting period, there were no registered complaints regarding dust or other air pollutants.

Erosion & Sediment Control

Activities associated with erosion and sediment controls were compliant for the period with no community complaints or reportable incidents recorded.

Surface Water

The CGP harvests rain water from the run off of all buildings within the RPGP. This water is stored in above ground rain water tanks and is used to service the RPGP's amenities and wash bay. Once used, the water is separately stored in in-ground tanks as grey water and septic water. A combined total of 344.8 KL of grey water and septic water was transported off site by licensed contractors for disposal at a licensed facility.

There were no issues identified in relation to surface water for the reporting period.

Groundwater

The total volume of produced water generated has decreased from 3,464.34 KL last reporting period to 2,158.91 KL this period, representing a decrease of 37.6%. This decrease continued the trend from last year which experienced a 24.5% decrease from the previous year.

The total volume of produced water reused for well workovers has significantly decreased for this period in comparison with the last reporting period. This reduction reflects the reduced workover and development activity during the period. The total volume of produced water that was reused this reporting year was 56.45 KL compared to 1,190.7 KL for the previous reporting period.

Total recycled produced water from well sites and the RPGP has decreased from 6,427.5 KL last reporting period to 3,346.07 KL this period. This decrease is partially due to a decrease in development activities.

During this reporting period AGL was compliant with bore licence conditions and EPL 12003 groundwater reporting requirements.

Waste Management

Waste volumes were recorded for the RPGP during this reporting period which conforms to the relevant conditions of DA 282-6-2003-I. No non-compliances with waste requirements were identified during this reporting period.

Hazardous Materials

Activities associated with hazardous material management were compliant for the period with no reportable incidents recorded or community complaints received.

Activities associated with land contamination or pollution were compliant for the period with no reportable incidents or community complaints recorded.

Minor environmental incidents that occurred during the reporting period are discussed in Section 5.24. Responses to minor incidents were undertaken in accordance with the Dangerous Goods and Hazardous Materials Sub Plan and the Emergency Response Plan.

Flora & Fauna

No development and/or clearing activities were undertaken with the potential to impact threatened or native flora and fauna. Consequently, activities associated with threatened or native flora and fauna were compliant for the period with no incidents or complaints recorded.

Noxious Weeds

Activities associated with weed control were compliant for the period with no reportable incidents or community complaints recorded.

Noise (Operational and Construction)

No exceedances relating to operational noise from the RPGP were received during the 2014/15 reporting period. This trend is consistent with previous years. Noise performance is consistent with operational noise predictions in the RPGP EIS.

The CGP's operations continued to meet noise requirements during the reporting period.

Noise monitoring of operating wells were assessed as compliant with the relevant noise criteria.

One complaint was received on 31 August 2014 from a Spring Farm resident in regards to noise coming from the SF05 location. Upon being made aware of the noise, AGL stopped the gas flow from the well, after which the noise ceased. The CGP Community Relations Manager contacted the complainant. AGL cooperated with the EPA in its investigation into the incident that caused the complaint. Details of further actions taken in response to this complaint are provided in Section 9.1.2.

No other complaints were received relating to noise from other operations during the reporting period.

Visual Amenity

The Landscape and Lighting Audit Report (September 2014) concluded that ground-truthing of landscape works identified that the majority of the Vegetation and Landscape Management Plan (VLMP) monitoring was correct, in accordance with performance and review objectives, and in a format that is suitable for continued and on-going report monitoring.

One full field flare event occurred during this reporting period for a duration of 4 minutes. This is a decrease from the previous AEPR reporting period where one full field flare event occurred at the RPGP which lasted a total of 125 minutes.

Cultural Heritage

There were no activities associated with Aboriginal or European heritage matters identified and consequently no reportable incidents or community complaints recorded.

Bushfire

During the reporting period, there were no bushfires on land managed by AGL.

Public Safety

During this reporting period there were no public safety related reportable incidents recorded.

Safety and Risk Management

During this reporting period there were no significant safety or risk management related reportable environmental incidents recorded.

Rehabilitation

Rehabilitation during this reporting period consisted of

- A total of 375 m of gas gathering line was installed at WG04. After installation, the area was reshaped, harrowed and seeded. AGL will continue to monitor the success of final rehabilitation of the area.
- Ongoing monitoring of rehabilitation performance of the former EM23 well site against rehabilitation criteria (note: rehabilitation of EM23 commenced in the FY14 reporting period).

Environmental Complaints

One community complaint regarding noise at the SF05 gas well was received during this reporting period.

The number of complaints received in 2014/15 has remained consistent with the previous reporting period where one environmental complaint was also received.

Community Liaison

AGL has pro-actively engaged with the community in order to keep residents informed of the CGP and ensure that community interests are listened to and addressed. AGL has raised awareness of its activities and maintained positive relations with the community through a range of community engagement initiatives.

A considerable amount of consultation has taken place directly with each landowner. This has provided understanding of landowner interests and ensured that these interests can be quickly addressed.

A total of four CCC meetings were undertaken during this reporting period.

Environmental Non Compliance Issues and Incidents

Non-compliances with the RPGP site's EPL 12003 are reported in the Annual Return to EPA.

There were a total of 6 non-conformances with the EPL reported within the Annual Return in relation to the following:

- EPL 12003 Conditions O2 and M2.1 in relation to M2.3 (continuous air monitoring);
- EPL 12003 Condition O1.1 (underground storage tanks);
- EPL 12003 Condition O1.1 (transfer of produced water);

- EPL 12003 Condition M1.3 (quarterly air monitoring reports details);
- EPL 12003 Condition M3.2 (approved methods for water monitoring); and
- EPL 12003 Condition O2 (release of natural gas from Spring Farm 05 well site).

During this reporting period AGL received one Penalty Infringement Notice (PIN) from the EPA in relation to a non-compliance with EPL 12003 for the SF05 incident referred to above.

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1. Introduction

1.1. History of the Camden Gas Project

This Annual Environmental Performance Report (AEPR) has been prepared by AGL Upstream Investments Pty Ltd (AGL) to meet the reporting requirements for the period of 1 July 2014 to 30 June 2015 for the Camden Gas Project (CGP).

The CGP is located 65 kilometres (km) south-west of Sydney in the Camden region of NSW and consists of 144 gas wells, low-pressure underground gas gathering line's (GGLs), a high pressure supply line, gas plant facilities and associated infrastructure.

Sydney Gas initially developed the CGP and established the first two Petroleum Production Leases (PPLs) in New South Wales. Exploration activities in the Camden region commenced in 1998 and since that time an extensive program of geological surveys and exploration drilling has been completed.

The construction of the Ray Beddoe Treatment Plant (RBTP) and the first successful gas delivery into the AGL distribution network occurred in May 2001. This progress led to Sydney Gas applying for PPL 1.

Further appraisal led to the addition of three production wells in 2002 under PPL 2, bringing the total of drilled production wells to twenty-five.

Operation of the Rosalind Park Gas Plant (RPGP) commenced under PPL 4 on 16 December 2004 and the project expanded to include PPL 4, PPL 5 and PPL 6.

In February 2007, the RBTP was shut down and the wells were connected to the RPGP. The RBTP was decommissioned, rehabilitated and the land handed back to the landowner during the 2008/09 reporting period.

In 2008 AGL developed an Environmental Management Plan (EMP) to consolidate the environmental management of the CGP. This plan and selected sub plans were updated during 2012 to improve AGL's environmental management procedures for the CGP. The 2012 EMP was approved by the Director General in July 2012 and implemented. The EMP and numerous Sub-Plans were updated again in this reporting period of 2014 to 2015.

On 1 April 2009 the CGP changed from a Joint Venture between AGL and Sydney Gas (Camden) Operations to become wholly owned by AGL.

Further to AGL's consolidation efforts, PPLs 1, 2, 4, 5, and 6 were transferred to AGL in November 2010.

As part of the progressive development of the CGP gas field, to date, wells have been drilled and proven in the Logan Brae, Wandinong, Glenlee, Menangle Park, Rosalind Park, Mt Taurus, Razorback, Elizabeth Macarthur Agricultural Institute (EMAI), Sugarloaf, Spring Farm and Kay Park fields.

In February 2013 AGL requested that the then NSW Department of Planning & Environment (DP&E) suspend its assessment of the proposed Northern Expansion Project of the CGP so that AGL could consider and address concerns raised by the community.

During this reporting period no new wells were constructed. Construction of a 375 metre length of gas gathering line was installed and rehabilitated during this reporting period. Plug and Abandonment of four wells (EM02, EM03, EM04 and AP01) commenced during this reporting period and will continue into the next reporting period.

1.1.1. Environmental Management Improvements

During this reporting period AGL has maintained a focus on enhanced environmental improvements. On-going environmental management improvements have included:

- Continued enactment of the CGP EMS;
- Review and implementation of the updated CGP EMP and associated sub plans;
- Review and implementation of the updated Environmental Aspects and Impacts Register;
- Testing and revision of the Pollution Incident Response Management Plan (PIRMP);
- Implementation of "myHSE" – AGL's online system for reporting environmental incidents, near misses and hazards;
- Continued monitoring of rehabilitation completion criteria for rehabilitated wells (EM23) in consultation with DRE;
- Continued recycling of produced water for workover operations where possible;
- Continued provision of environmental monitoring data to external stakeholders through the uploading of information to the CGP website;
- Hosting regular Environment Update Meetings with DP&E, EPA and DRE;
- Implementation of the Authority to Work form and ISN Contractor Prequalification to evaluate contractor environmental performance, scope of works and Health, Safety and Environmental Management System prior to engaging contractors to commence work;
- Internal environmental awareness training delivered to CGP employees and contractors;
- Completion of corrective actions from the 2010-2012 Independent Environmental Audit, 2012-2014 Independent Environmental Audit, EPA Enforceable Undertaking, and EPA Compliance Audit;
- Further implementation of AGL's compliance management system, CMO, and expansion to include legislative compliance requirements, as well as internal audits and associated corrective actions; and
- Working in partnership with contracting companies, appropriate authorities and the community to resolve issues and concerns with the CSG industry and ensure a practical and sustainable future for the industry.

1.2. Purpose of Annual Environmental Performance Report

This AEPR has been prepared to meet the reporting requirements of the DP&E and Department of Trade and Investment, Regional Infrastructure and Services (NSW Trade and Investment) for the AGL CGP located in the Camden, Campbelltown and Wollondilly Local Government Areas (LGAs) for the period of July 2014 to June 2015. The requirements of the DP&E and DRE are provided in Section 1.2.1 and 1.2.2 below.

1.2.1. Requirements of the NSW Department of Planning and Environment (DP&E)

The requirements for an AEPR are set out in the following Development Consent Conditions:

- DA No. 15-1-2002-i dated 23 July 2002, Schedule 3 Condition of Consent (CoC) No. 34;
- DA No. 246-8-2002-i dated 20 September 2002 Schedule 3 CoC No. 16;
- DA No. 282-6-2003-i dated 16 June 2004, Schedule 5 CoC No. 5;
- DA No. 183-8-2004-i dated 16 December 2004 Schedule 2 CoC No. 24;

- DA No. 9-1-2005 dated 26 May 2005 Schedule 2 CoC No. 42;
- DA No. 75-4-2005 dated 7 October 2005, Schedule 2 CoC No. 54;
- PA No. 06_0137 dated 9 December 2006, Schedule 4 CoC No. 3;
- PA No. 06_0138 dated 9 December 2006, Schedule 4 CoC No. 3; and
- PA No. 06_0291 dated 4 September 2008, Schedule 4 CoC No.3.

In summary, the Development Consents require the preparation of an AEPR within twelve months of the date of the consent, and annually thereafter during the life of the development. As the approval dates vary, the AEPR is prepared on a July to June basis to standardise reporting and to meet the requirements of both the DP&E and NSW Trade and Investment.

The AEPR is to be submitted to the Director-General and shall include, but not be limited to:

- The standards, performance measures and statutory requirements the development is required to comply with;
- An assessment of the environmental performance of the development to determine whether it is complying with these standards, performance measures, and statutory requirements;
- Reporting against the implementation of the Project Commitments Register;
- A copy of the Complaints Register for the preceding twelve month period and indicating what actions were (or are being) taken to address these complaints;
- Indication of what actions were taken to address issues and/or recommendations raised by the CCC;
- Provision of the detailed results of the monitoring required by each consent;
- Review of the results of this monitoring against:
  - Impact assessment criteria;
  - Monitoring results from previous years;
  - Predictions in relevant environmental assessment documents.
- Identify non-compliances during the year;
- Identify significant trends in the data; and
- If a non-compliance is detected, describe what actions and measures would be carried out to ensure compliance, clearly indicating who would carry out these actions and measures, when they would be carried out, and how the effectiveness of these measures would be monitored over time.

This document has been prepared to address the requirement for an AEPR, for the period of 1 July 2014 to 30 June 2015, pursuant to the above listed Development Application Approvals and Project Approvals.

1.2.2. Requirements of Department of Industry – Division of Resources and Energy (DRE)

The requirement for an Annual Environmental Management Report (AEMR) is set out in Clause 3 of PPL 1, 2, 4, 5, and 6 transferred to AGL by the Director-General on 22 November 2010, which states:

The AEMR must:

i) Report against compliance with the POP;
ii) Report on progress in respect of rehabilitation completion criteria;
iii) Report on the extent of compliance with regulatory requirements; and
iv) Have regard to any relevant guidelines adopted by the Director-General.

This AEPR has been prepared in accordance with clause 3 of PPL 1, 2, 4, 5 and 6 and the DRE guideline EDG03 'Guidelines to the Mining, Rehabilitation and Environmental Management Process (Version 3, 2006)'.

Where information required under a heading in EDG03 is not applicable to the CGP, the heading has been kept and the applicability stated. Some documents required by DRE EDG03 guideline (e.g. 'Plan 3 Land Preparation', 'Plan 4 Proposed Mining Activities') are not relevant to the operation of the CGP or its annual reporting, and hence have been excluded from this AEPR.

A plan showing the locations of the PPLs is included as Appendix A.

1.3. Format of the Annual Environmental Performance Report

This AEPR is formatted as follows:

- **Section 1:** Introduction - Provides an introduction and background of the AEPR and its history;
- **Section 2:** Camden Gas Project Area Details – Provides the projects details and relevant contacts;
- **Section 3:** Environmental Standards, Performance Measures and Statutory Requirements - Lists the environmental regulatory performance requirements relevant to the C;
- **Section 4:** Operations within the Reporting Period - Describes the operations during the reporting period;
- **Section 5:** Environmental Management and Performance - Outlines the environmental management and performance of the CGP for the period;
- **Section 6:** Rehabilitation - Describes the rehabilitation undertaken within the CPG during the reporting period;
- **Section 7:** Project Commitments Register - Provides an update to the Project Commitments Register (Compliance Register);
- **Section 8:** Stakeholder Engagement - Describes the stakeholder engagement that has been undertaken during the reporting period; and
- **Section 9:** Summary of Environmental Non-Compliance Issues and Actions – Describes the non-conformances identified and actions to address non-conformances for the reporting period.

2. Camden Gas Project Area Details

2.1. Project Details and Contacts

A map of the CGP and its PPL locations is contained in Appendix A. The details of each property or area of the CGP are provided in Appendix B. The CGP infrastructure map for works undertaken during this reporting period is provided in Appendix C.

A list of project details and contacts as required by NSW Trade & Investment EDG03 is provided in Table 2-1.

Table 2-1: Project Details and Contacts

Project Details	
Project Name	**Camden Gas Project**
Titles / Consents	Refer to Table 3-1
Expiry Date of Titles / Consents	Refer to Table 3-2
Titleholder	AGL Upstream Investments Pty Limited
Operator	AGL Upstream Investments Pty Limited
Project Manager Details	
Contact Name	Kelly Franke
Position	Operations Superintendent
Contact Address	AGL Rosalind Park Gas Plant Lot 35, Medhurst Road, Menangle NSW 2568
Telephone	02 4633 5200
Facsimile	02 4633 5201
Email	kfranke@agl.com.au
Reporting Officer Details	
Contact Name	Aaron Clifton – NSW Environment Manager, Upstream Gas
Contact Address	AGL Rosalind Park Gas Plant Lot 35, Medhurst Road, Menangle NSW 2568
Telephone	02 4633 5200
Facsimile	02 4633 5201
Email	aclifton@agl.com.au
Other Contact Details	
24 hour hotline	1300 799 716
POP and AEMR Reporting Periods	
POP Commencement Date	18 December 2014
POP Period End Date	17 December 2015
AEMR Commencement Date	July 2014
AEMR Period End Date	June 2015

3. Environmental Standards, Performance Measures and Statutory Requirements

This section provides a list of the environmental regulatory requirements relevant to the CGP for the reporting period.

3.1. Consents, Leases and Licences

Seven Development Applications (DAs), three Project Approvals and one Concept Plan Approval have been approved for the CGP under the *Environmental Planning and Assessment Act 1979* (EP&A Act). During the reporting period, there were no new or modifications to existing DAs or Project Approvals. Table 3-1 provides a description of the activities for which each of the DAs and Project Approvals has been issued.

Table 3-1: Activities described by approved Development Applications

Development Application No.	Description of Proposed Development
DA No. 15-1-2002i, dated 23 July 2002	The Minister for Planning (DP&E) determined the development application for Stage 1 in accordance with Section 76A, Section 80, and Section 91 of the *Environmental Planning and Assessment Act 1979* by granting consent to the proposed development referred to as "The Camden Gas Project Stage 1". The Conditions of Development Consent for DA No. 15-1-2002i-I dated 23 July 2002 relate to the Camden Gas Project Stage 1 (the 'Development') issued to Sydney Gas Operations Ltd. The Development Consent describes the Development as: - "The continued operation of the existing 20 production wells; - Operation of 5 additional wells not yet completed and/or drilled; - Operation of the existing and proposed gas gathering system; - Operation of the existing gas treatment plant; - Production of up to 93,000 GL/month from the treatment plant; - Sale and distribution of gas to the AGL gas network; and - Operation of the existing site office and pipeyard depot."
	A modification to this DA, dated 16 May 2006, was issued for the following: - "Construction, drilling and operation of a directional well from LB09".
	A modification to this DA, approved 9 February 2007, was issued for the following: -"re-drilling of wells Apap 01 and Mahon 01."
	A modification to this DA, dated 4 July 2007, was issued for the following: -"construction, drilling and operation of 2 surface to in-seam wells (AP02/AP03) at AP01".
	A modification to this DA, dated 4 August 2008, was issued for the Kay Park and Loganbrae gas gathering line modification project.
DA-246-8-2002i – dated 20 September 2002	The Minister for the then NSW Department of Infrastructure, Planning and Natural Resources (now DP&E) determined the development application in accordance with Section 80 of the *Environmental Planning and Assessment Act 1979*. The Conditions of Development Consent for DA No. DA-246-8-2002i dated 20 September 2002, relate to the Camden Gas Project Stage 1 (the 'Development'). The Development Consent describes the proposed

Development Application No.	Description of Proposed Development
	development as: -"The connection of 3 existing wells (KP1, KP2, and KP3) to the Ray Beddoe Treatment Plant, and the continued production and sale of methane gas from the 3 wells. "
	A modification to this DA, dated 4 July 2007, was issued for the following: -construction, drilling and operation of 2 surface to inseam wells (KP05 and KP06) at KP01"
	A modification to this DA, dated 4 August 2008 was issued for the Kay park and Loganbrae gas gathering line modification project.
	A modification to this DA, dated 3 December 2008 was issued for the construction and operation of one Surface SIS well (KP05) and one direction well (KP06) from KP01.
	A modification to this DA, dated 20 April 2011, was issued for the construction, drilling and operation of 2 surface to in-seam wells (KP05 and KP06).
DA No. 282-6-2003-i – 16 June 2004	The then Minister for Urban Affairs and Planning (now DP&E) determined the development application for Stage 2 in accordance with Section 76A, Section 77A, and Section 91 of the *Environmental Planning and Assessment Act 1979* by granting consent to the proposed development referred to as "The Camden Gas Project Stage 2". The Conditions of Development Consent (reference 112467721) for DA No. 282-6-2003-i dated 16 June 2004 relate to the Camden Gas Project Stage 2 (the 'Development') issued to Sydney Gas Operations Ltd. The Development Consent describes the Development as: - "construction and drilling of 20 wells on the EMAI site; - Operation and production of gas from the existing (drilled) 23 wells and 20 wells to be constructed (a total of 43 wells); - Construction and operation of the gas gathering system; - Construction and operation of the gas treatment plant, associated workshop and office facilities; and - Production of up to 14.5 petajoules per annum from the gas treatment plant."
	A modification to this DA, dated 26 August 2004, was issued to include additional land that was emitted from the development consent.
	A modification to this DA, dated 01 February 2005, was issued to amend an access road and gathering line route on the EMAI.
	A modification to this DA, was issued, dated 01 June 2005.
	A modification to this DA, dated 16 May 2006, was issued for the following: - "Construction, drilling and operation of 1 directional well from GL7 and 2 directional wells from GL10".
	A modification to this DA, approved 22 October 2006, was issued for the following: -"Construction, drilling and operation of 1 directional well (GL16) from GL7 and 1 directional well (GL15) and 1 Surface to in-seam well (GL14) from GL10"
	A modification to this DA, approved 1 November 2006, was issued for the following: -"construction, drilling and operation of 1 directional well (GL16) from GL7 and 2 Surface to in-seam wells (GL14 and GL15) from GL10."
	A modification to this DA, approved 2 May 2007 was issued for the following: - relocation of the Rosalind Park Gas Plant access road
	A modification to this DA, dated 4 July 2007, was issued for the following: -"construction, drilling and operation of 1 surface to in-seam well (EM38) at EM20 and upgrading (twinning) of the gas gathering line between MP14-GL10, GL10-GL05, GL05-GL07 and RP03-RP08"

Development Application No.	Description of Proposed Development
	A modification to this DA, dated 11 April 2008, was issued for the following: "construction, drilling and operation of 2 surface to in-seam wells EM39 (from EM02) and GL17 (from GL05), upgrading (twinning) of the gas gathering line from EM39 to the junction of the gas gathering line and road to the EM03 well, and connection of the new wells to the existing gas gathering system."
	A modification to this DA, dated 16 March 2009, was issued for the construction of an access road to the existing RP09 gas well and the twinning of a small section of the existing gas gathering line between RP08 and the RPGP.
	A modification to this DA, dated 18 September 2009, was approved for the re-routing of a damaged gas gathering line at Glenlee.
	A modification to this DA, dated 25 November 2010, was issued for the modification of RPGP noise monitoring requirements, air emission concentration limits and waste storage and generation volumes.
DA-183-8-2004i – 16 December 2004	The then Minister for the NSW Department of Infrastructure, Planning and Natural Resources (now DP&E) determined the development application in accordance with Section 80 of the *Environmental Planning and Assessment Act 1979*. The Conditions of Development Consent for DA No. DA-183-8-2004i dated 16 December 2004 relate to the Camden Gas Project Stage 2 (the 'Development'). The project involves the following: - Connection of 15 existing coal seam methane wells to the Rosalind Park Gas Plant from the Mount Taurus and Menangle Park properties, for the production of methane gas; and - Construction of a Dam at the MT1 gas well site.
	A modification to this DA , dated 4 July 2007, was issued for the following: "construction, drilling and operation of 1 surface to in-seam well (MP30) at MP13 and upgrading (twinning) of the gas gathering line between MP13 and MP14."
	A modification of this DA (DA 183-8-2004i - Mod 2), dated the 9 July 2012, was issued for the following: "Construction, drilling and operation of 1 surface to in-seam well (MP25) adjacent to MP16 and upgrading (twinning) of the gas gathering line between MP16 and MP13/30."
DA 9-1-2005 – 26 May 2005	The Minister for the NSW Department of Infrastructure, Planning and Natural Resources (now DP&E) determined the development application in accordance with Section 80 of the *Environmental Planning and Assessment Act 1979*. The Conditions of Development Consent for DA No. DA-9-1-2005 dated 26 May 2005, relate to the Camden Gas Project Stage 2 (the 'Development'). The Development Consent describes the proposed development as: - "Construction and drilling of well GL11; - Construction of a gas gathering system between four wells at Glenlee and two wells at EMAI; - Connection of 6 coal seam methane wells to the previously approved Stage 2 Camden Gas Project – Gas Treatment Plant, for the production of methane gas."
	A modification to this DA, dated 16 May 2006, was issued for the following: - "Construction, drilling and operation of a directional well from each of GL02 and GL11."
	A modification to this DA, dated 4 July 2007, was issued for the following: "upgrading (twinning) of the gas gathering line between GL02 and GL05."
	A modification to this DA, dated 16 November 2010, was issued for the following: modification of Schedule 2, Condition 26.
DA 75-4-2005 – 07 October 2005	The then Minister for the NSW Department of Infrastructure, Planning and Natural Resources (now DP&E) determined the development application in accordance with Section 80 of the Environmental *Planning and Assessment Act 1979*. The Conditions of Development Consent for DA No. DA-75-4-2005 dated

Development Application No.	Description of Proposed Development
	07 October 2005 relate to the Camden Gas Project Stage 2 (the 'Development'). The Development Consent describes the proposed development as: - "Construction and drilling of 7 wells; - Construction of a gas gathering system and access roads; - Connection of the wells to the Stage 2 Camden Gas Project – Gas Treatment Plant; and - Production of methane gas."
	A modification to this DA, dated 4 July 2007, was issued for the following: "construction and drilling of 9 wells, including 2 surface to in-seam wells (SL08 and SL09) at SL03."
	A modification to this DA, dated 10 January 2010, was approved for the twinning of a gas gathering line from well surface locations SL03 and SL09 to the Rosalind Park Gas Plant.
Project Approval 06_0137 – 9 December 2006	The then Minister for Planning approved the Project under Section 75J of the *Environmental Planning and Assessment Act 1979*. The Conditions of Consent for Project Approval 06_0137 dated 9 December 2006 relate to the Razorback Wells (RB03-RB12). The project involves the following: - Construction and drilling of wells RB03-RB12 and gas gathering lines.
Project Approval 06_0138 – 9 December 2006	The then Minister for Planning approved the Project under Section 75J of the *Environmental Planning and Assessment Act 1979*. The Conditions of Consent for Project Approval 06_0138 dated 9 December 2006 relate to the Elizabeth Macarthur Institute Wells (EM23-EM36). The project involves the following: - Construction and drilling of wells EM23-36 and gas gathering lines.
	A modification to this Approval, dated 6 August 2007, was issued for the following: "One additional directional well at an existing well, changing an approved but not yet constructed well to a directional well, connection of the wells to the existing gas gathering system and production of coal seam methane gas."
Project Approval 06_0291 – 4 September 2008	The then Minister for Planning approved the Project under 75J of the *Environmental Planning and Assessment Act 1979*. The Conditions of Consent for Project Approval 06_0291 dated 4 September 2008 relate to the Spring Farm and Menangle Park wells. The project involves the following: Construction and drilling of wells and gas gathering lines in the Spring Farm and Menangle Park area.
	Modifications to this PA were issued 7 January 2011 and 20 April 2011 to include gas gathering lines MP06 – 11 and MP11 – MP23 (via MP19), and, MP03-05 and MP22 – SL02 respectively.
Concept Plan Approval 06_0292 – 4 September 2008	The then Minister for Planning approved the Project under 75O of the *Environmental Planning and Assessment Act 1979*. The Conditions of Consent for Project Approval 06_0292 dated 4 September 2008 relate to the Spring Farm and Menangle Park wells. The project involves the following: - Construction and operation of coal seam methane gas wells and associated infrastructure within the Stage 2 Concept Plan area of the Camden Gas Project.

The standards, performance measures and statutory requirements the CGP is required to comply with are outlined in the consents, leases and licences for the CGP. A list of the relevant consents, leases and licences is contained in Table 3-2. The standards, compliance levels and regulatory requirements resulting from the consents, leases and licences are identified for each matter reported in Section 5 Environmental Management and Performance of this AEPR.

Table 3-2: Consents, Leases and Licences

Title	Grant Date and Term
Petroleum Exploration Licence No.2 (PEL), issued by the Department of Mineral Resources (now DRE)	*Since the reporting period, AGL has surrendered PEL 2.*
PPL No.1, issued by the Department of Mineral Resources (now DRE)	2 September 2002 (for a period of 21 years - the lease holder shall relinquish areas where no wells have been drilled within 10 years of granting this lease)
PPL No.2, issued by the Department of Mineral Resources (now DRE)	10 October 2002 (for a period of 21 years)
PPL No.4, issued by the Department of Mineral Resources (now DRE)	6 October 2004 (for a period of 21 years)
PPL No.5, issued by the Department of Mineral Resources (now DRE)	28 February 2007 (for a period of 21 years)
PPL No. 6, issued by the Department of Industry and Investment (now DRE)	29 May 2008 (for a period of 21 years)
Conditions of Consent for DA 15-1-2002i (file no. S00/00945), issued by the DP&E. The requirements of the Environment Protection Licence 12003 have been incorporated into relevant conditions of consent	23 July 2002 (for a period of 21 years from date of granting of the production lease). If after 5 years of the date of this consent any well that is subject of this consent has not yet been drilled or completed, then the applicant shall surrender the approval for that well. The following modifications have been issued to this DA: - modification dated 16 May 2006 - modification dated 9 February 2007 - modification dated 4 July 2007 - modification dated 4 August 2008
Conditions of Consent for DA 246-8-2002i (file no. S02/01615), issued by the DP&E	20 September 2002 (for a period of 21 years from date of granting of the production lease). The following modifications have been used to this DA: -modification dated 4 July 2007 -modification dated 4 August 2008 -modification dated 3 December 2008 -modification dated 20 April 2011
Conditions of Consent for DA 282-6-2003-i, issued by the DP&E. The requirements of the Environment Protection Licence 12003 and 3A Permit have been incorporated into this Condition of Consent.	16 June 2004 (for a period of 21 years). The following modifications have been issued to this DA: - modification dated 26 August 2004 - modification dated 01 February 2005 - modification dated 01 June 2005 - modification dated 16 May 2006 - modification dated 22 October 2006 - modification dated 1 November 2006 - modification dated 2 May 2007

Title	Grant Date and Term
	- modification dated 4 July 2007 - modification dated 11 April 2008 - modification dated 16 March 2009 - modification dated 18 September 2009 -modification dated 25 November 2010
Conditions of Consent for DA-183-8-2004i, issued by the DP&E	16 December 2004 (for a period of 21 years). A notice of modification was issued on the 4 July 2007. A notice for modification was issued on the 9 July 2012
Conditions of Consent for DA 9-1-2005, issued by the DP&E	26 May 2005 (for a period of 21 years). The following modifications have been issued to this DA: - modification dated 16 May 2006 - modification dated 4 July 2007 -modification dated 16 November 2010
Conditions of Consent for DA 75-4-2005, issued by the DP&E	07 October 2005 (for a period of 21 years or expiry date of PPL No.4) The following modifications have been issued to this DA: - modification dated 4 July 2007 - modification dated 10 January 2010
Conditions of Consent for DA 171-7-2005, issued by the DP&E	25 March 2006 (for a period of 21 years or expiry date of PPL No.4)
Conditions of Approval for PA 06_0137, issued by the DP&E	9 December 2006 (for a period of 21 years or expiry date of PPL No.4)
Conditions of Approval for PA 06_0138 issued by the DP&E	9 December 2006 (for a period of 21 years or expiry date of PPL No.4) A notice of modification was issued on the 6 August 2007.
Conditions of Approval for PA 06_0291 issued by the DP&E	4 September 2008 (for a period of 21 years or expiry date of PPL No.5) The following modifications have been issued to this PA: - modification dated 7 January 2011 - modification dated 20 April 2011
Conditions of Approval for Concept Plan Approval 06_0292 issued by the DP&E	4 September 2008 (for a period of 5 years)
Environment Protection Licence No.12003, issued by the Environment Protection Authority (>0.5 – 6PJ Produced)	Issued 22 December 2004, anniversary date 22 December. During the reporting period, the licence was varied on four occasions: - variation dated 19 September 2014 (notice #1522947); - variation dated 13 November 2014 (notice # 1526141); - variation dated 16 December 2014 (notice # 1527147); - variation dated 31 March 2015 (notice # 1529286).

Title	Grant Date and Term
Petroleum Operations Plan (POP)	18 December 2014 – 17 December 2015
Pipeline Licence No.30, issued by Department of Energy, Utilities and Sustainability, under NSW *Pipelines Act 1987*	19 May 2004 (for a period of 20 years)
Water Monitoring Bore Licence no. 10BL604845 (relating to Lot 23/585290), issued by issued by NSW Office of Water (now DPI Water)	6 July 2011 in Perpetuity
Water Monitoring Bore Licence no. 10BL605381 (relating to Lot 23/585290), issued by issued by NSW Office of Water (now DPI Water)	31 May 2013 in Perpetuity
Water Monitoring Bore Licence no. 10BL605366 (relating to Lot 10/1022204), issued by issued by NSW Office of Water (now DPI Water)	08 May 2013 in Perpetuity
Water Monitoring Bore Licence no. 10BL605472 (relating to Lot 1/790254), issued by issued by NSW Office of Water (now DPI Water)	12 November 2013 in Perpetuity
Water Monitoring Bore Licence no. 10BL605581 (relating to Lot 35/230946), issued by issued by NSW Office of Water (now DPI Water)	17 June 2014 in Perpetuity
Water Access Licences, (WAL25054, WAL24856, WAL24736 and WAL24965) and associated Works Approvals and Use Approvals	Various

3.1.1. WorkCover Notification of Storage of Hazardous Chemicals

There is no requirement to notify WorkCover regarding the storage of Hazardous Chemicals (Dangerous Goods) at the RPGP due to the minor quantities of Hazardous Chemicals stored on site.

4. Operations within the Reporting Period

This section provides a description of the operations undertaken for the CGP for the reporting period and the status as of June 2015.

4.1. Description of Operations from July 2014 to June 2015

4.1.1. Development/Construction

During the reporting period development associated with the CGP comprised of the following:

Drilling

No new wells were drilled in this reporting period.

Plug and Abandonment

Plug and Abandonment of a total of four wells (EM02, EM03, EM04 and AP01) commenced during this reporting period. Plug and Abandonment was carried out in accordance with the 'NSW Code of Practice for Coal Seam Gas Well Integrity'.

The locations of the existing wells and the four plugged and abandoned wells are illustrated in Appendix C.

Gathering Line Installation

A new section of approximately 375 m of gas gathering line was installed and commissioned during this reporting period. The gas gathering line was installed to convey extracted gas from the gas well Wandinong 04 (WG04) to the RPGP. Installation of the WG04 gas gathering line was completed on 13 November 2014. After installation the disturbed area was reshaped, harrowed and seeded. Rehabilitation of the area is being monitored by AGL.

Workover Maintenance Activities

The following workover activities took place during this reporting period:

Table 4-1: Description of Workover Maintenance Activities

PPL	Well Name	Date Workover Conducted	Description of Activities
PPL4	GL17	Aug 2014	Remove pump and clean out well
PPL5	MP03	Sept-Oct 2014	Remove pump and clean out well
PPL5	MP08	Jan-Feb 2015	Replace pump and clean out well
PPL5	MP02	Feb 2015	Replace pump and clean out well
PPL5	MP10	Feb 2015	Replace pump and clean out well
PPL1	EM40	Mar 2015	Remove jet pump and install PC pump
PPL4	MP22	Mar-Apr 2015	Replace pump and clean out well
PPL4	MP11	Apr-May 2015	Clean out well and retrieve poly liner
PPL4	SL03	May 2015	Replace pump and bail out sand

Rosalind Park Gas Plant Compressors

The RPGP compressors operated during the reporting period for:

- Compressor No.1 operated for 1 hour;
- Compressor No.2 operated for 8266 hours; and
- Compressor No.3 operated for 8213 hours.

Land Access and Approvals

The EPL 12003 was varied on four occasions within the reporting period. Table 4-2 identifies the details of each licence variation.

Table 4-2 - EPL 12003 Variations (FY15)

Variation Number / Date	Material Effects of Licence Variation
Variation dated 19 September 2014 (notice #1522947)	- Approval of the following method of analysis for the following pollutants: o Methane - ALS "Static Headspace GC/FID technique" o Phenols - USEPA method 8270D. o Polycyclic aromatic hydrocarbons - USEPA method 8270D - Recognising that the Pollution Study and Reduction Program (PRP) "Predictive Emissions Monitoring System (PEMS)" trial on Compressors 2 and 3 was successfully completed by the due date of 31 August 2014.
Variation dated 13 November 2014 (notice # 1526141)	- Addition of a 'Special Condition' to the licence for the 'Start-up period' outlining the operation details, communications and monitoring parameters during the start-up period (including reducing Nitrogen Oxides overall load from RPGP during this period).

Variation Number / Date	Material Effects of Licence Variation
	- The 'Special Condition' includes requirements on how the Licensee operates Compressor 1, 2 and 3 to reduce risks to human health and prevent the degradation of the environment.
Variation dated 16 December 2014 (notice # 1527147);	- Addition of a PRP for "Stage 2 Predicative Emissions Monitoring System" (PEMS) to provide additional and more sensitive monitoring of Compressors 2 and 3.
Variation dated 31 March 2015 (notice # 1529286).	- Scheduled activity varied from "Coal seam gas exploration, assessment and production" to "Petroleum exploration, assessment and production'. - Fee based activity varied from "Coal seam gas assessment/ production" to "Petroleum exploration, assessment and production'. - Fee scale varied from ">6 – 15PJ produced" to ">0.5 – 6PJ produced" - Extension of the due date of the PRP for "Stage 2 Predicative Emissions Monitoring System" (PEMS), from 16 October 2015 to 16 December 2015.

No new Development Applications have been applied for or Development Consents granted in this reporting period.

Current Status of Well Operations

The status of CGP well operations as of 30 June 2015 is summarised in Appendix E. The only amendment from the previous reporting period is the commencement of plug and abandonment of four wells: EM02, EM03, EM04 and AP01.

4.1.2. Exploration

No exploration activities were undertaken during this reporting period.

4.1.3. Production

Production information is provided to the DRE on a monthly basis. These monthly production reports include monthly production volumes from each well in the PPLs and total gas flow rates into the RPGP.

4.1.4. Land Preparation

No wells were drilled during this reporting period.

Plug and abandonment of four wells (EM02, EM03, EM04 and AP01) by AGL commenced in Q4 of FY15 in accordance with the 'NSW Code of Practice for Coal Seam Gas Well Integrity'. Plug and abandonment of these wells will be completed (i.e. cut and capped) in FY16. Rehabilitation works will be conducted in consultation with the DRE.

4.1.5. Mining, Mineral Processing and Ore Production Stockpiles

The CGP produces coal seam gas. No mining, mineral processing or ore stockpiling is undertaken. Hence, this section is not applicable to AGL's operations at the CGP.

4.1.6. Other Infrastructure Management

No other infrastructure development associated with the CGP has occurred during the reporting period.

4.1.7. Production and Waste Summary

A summary of waste produced is included in Section 5.7.

4.1.8. Water Management

A summary of water management is included in Section 5.5 and 5.6 of this report.

4.1.9. Hazardous Material Management

A summary of hazardous material management for the reporting period is included within Section 5.8 of this report.

5. Environmental Management and Performance

This section of the AEPR outlines the environmental management and performance of the CGP for the reporting period. Where environmental monitoring is required by the Conditions of Consent for the development, the monitoring requirement and results are discussed under the relevant sections headings. The specific environmental control measures, conditions of consent or monitoring requirements are provided within Appendix F.

This section documents the implementation and effectiveness of control strategies for environmental risks identified in the EMP and previous AEPR.

5.1. Overview of Environmental Management

CGP Environmental Management Plan (EMP)

In 2008 AGL commenced the development of a Project Environmental Management System (EMS) to manage potential environmental aspects associated with CGP activities. As part of this process an Environmental Management Plan (EMP) and Environmental Sub Plans were prepared in order to facilitate the implementation of environmental management. The EMP was revised and submitted to the DP&E in April 2015, improving AGL's environmental management and procedures.

The EMP included Sub Plans and Management plans are listed below, with plans updated during this reporting period noted accordingly:

- Noise Management (May 2015);
- Flora and Fauna Management (April 2015);
- Soil and Water Management (May 2015);
- European Heritage Management (April 2015);
- Landscape and Rehabilitation Management (April 2015);
- Aboriginal Cultural Heritage Management (December 2013);
- Air Quality Management (July 2015);
- Waste Management (May 2015);
- Traffic Management (April 2015);
- Dangerous Goods and Hazardous Materials Storage (April 2015); and
- Emergency Response (May 2015).

EMP Sub Plan Compliance Audits have been developed and progressively introduced to enable in-house compliance assessments of each Sub Plan. During the reporting period, in-house compliance assessments were completed against the following EMP Sub Plans:

- Groundwater Management (July 2014);
- Soil and Water Management (August 2014);
- Landscape and Rehabilitation Management (September/ October 2014);
- Waste Management (October 2014);
- Aboriginal Cultural Heritage Management (November 2014);
- Dangerous Goods and Hazardous Materials Storage (December 2014);
- Noise Management (December 2014);
- Flora and Fauna Management (January 2015);
- Traffic (March 2015); and

› European Heritage (April 2015).

Pollution Incident Response Management Plan

In November 2012, AGL prepared a Pollution Incident Response Management Plan (PIRMP) for the CGP in response to an amendment to the *Protection of the Environment Operations Act 1997* (POEO Act). The PIRMP was most recently updated in April 2015

The PIRMP details the procedures for the notification of pollution incidents causing, or having the potential to cause, material harm to the environment. The notification of environmental incidents under the PIRMP is only required for those incidents causing or threatening to result in material harm to the environment (a material harm incident) as defined in the POEO Act. During the reporting period, AGL undertook a mock drill of the PIRMP.

All other incidents deemed by AGL not to be causing or threatening to cause material harm to the environment will be managed through AGL's Emergency Response Plan and supporting procedures. In situations where notification of environmental harm is required under a condition of Camden's EPL 12003 or a development consent, AGL will report the incident to the relevant authority in accordance with the requirements of the relevant condition.

Petroleum Operations Plan

As required under PPLs 1, 2, 4, 5 and 6, AGL conducts its production operations in accordance with an approved POP.

The POP is reviewed annually, and subsequent versions are provided to the DRE for approval. The POP was revised within this reporting period. Version 8 of the POP applies to the period 18 December 2014 through to 17 December 2015, which was approved by the DRE in December 2014.

The POP summarises the general processes and stages of petroleum operation at the CGP. The sections of the POP are summarised below, and where applicable, referenced to relevant sections of this AEPR.

Table 5-1 – POP Commitments Referenced in this AEPR

POP Section	Aspect of Operations	Petroleum Activity	Relevant AEPR Section(s)
2.1	Production Operations	Construction	4.1.1.
		Production	4.1.3.
		Maintenance (Workover)	4.1.1.
		Produced Water Management	5.6; Appendix F
		Rehabilitation and Final Closure	6.1 – 6.6; Appendix F
2.2	Exploration	Core Holes	4.1.2.
		Stratigraphic Exploration Holes	4.1.2.
		Production Test Wells	4.1.2.
2.3	Surface Infrastructure	Wells	4.1.1; 4.1.2; Appendix E
		Gas Gathering Lines	4.1.1
		Access Roads	6.1.4
		Gas Plant	4.1.1
3	Environmental Management and Rehabilitation	Rehabilitation	6.1 – 6.6; Appendix F.

5.2. Actions Required by Regulatory Authorities from Previous AEPR Review

No comments have been received from the DRE or DP&E in response to the 2013 - 2014 AEPR for the AGL CGP.

5.3. Air Pollution

5.3.1. Air Pollution Management

Air emissions associated with the CGP are primarily oxides of nitrogen (NO_x) and oxides of sulphur (SO_x) associated with compression of the coal seam gas, and to a lesser extent vehicle emissions. Other air emissions include potential dust emissions associated with construction activities and vehicle movements and fugitive emissions from production operations.

During the reporting period there were significant improvements to the Leak Detection and Repair (LDAR) SOP, LDAR Program, LDAR Form and LDAR training for Field Production Operators. As a result of these changes, the number of LDAR checks completed throughout the reporting period has increased and resulted in fewer leaks reported. External specialist consultants are engaged to undertake annual gas leak detection surveys of the entire gas gathering system network, RPGP and well sites. If leaks are detected leaks, repairs are completed within the EPL prescribed timeframe.

Management of air emissions is summarised in the CGP Air Quality Management Sub Plan (AQMSP). The objective with regards to air quality is to prevent or minimise air pollution by:

- Controlling the quality and minimising the quantity of air emissions associated with compression of the coal seam gas resource;
- Minimising the quantity of vehicle exhaust emissions;
- Preventing dust generation during construction, maintenance and operations and rehabilitation activities; and
- Reporting uncontrolled air emissions and implementing corrective actions promptly.

Targets relating to air quality management are identified in the AQMSP as follows:

- Zero exceedences of the in-stack and ambient licence limits to controlled air emissions.
- Zero incidents or complaints received regarding uncontrolled air emissions.

Control measures used to meet the objectives for air quality that are contained in the CGP AQMSP are detailed in Table F-1 in Appendix F.

Predictive Emissions Monitoring System (PEMS) Trial

In July 2014, AGL concluded a Predictive Emissions Monitoring System (**PEMS**) Trial in compliance with EPL 12003, Condition U1. In August 2014, AGL provided its report on the PEMS Trial to the EPA.

The aim of the PEMS Trial was to assess the suitability of PEMS as an alternative monitoring system for Compressor Engine 2 (Monitoring Point 2) and Compressor Engine 3 (Monitoring Point 3) Nitrogen Oxides (**NOx**) emissions.

For the duration of the Trial, Compressor Engine 2 and Compressor Engine 3 operated simultaneously, generally at or very near to full engine speed and full engine load. During the Trial, NOx results remained below the EPL concentration limit at all times.

The results of the Trial showed that Compressor Engine 2 and 3 predicted NOx emissions were generally conservatively higher than actual stack testing results, with the exception of Compressor Engine 3 in April and May. AGL's investigation into this exception on Compressor Engine 3 NOx emissions identified that the catalyst was slowly deteriorating, and this was not detected through the PEMS or existing preventative maintenance program. The catalyst was replaced during the Trial.

Recognising the limitations of the existing PEMS Trial, AGL consulted with the EPA to seek an opportunity to further investigate additional and more sensitive monitoring of Compressors 2 and 3. In December 2014, the EPA varied AGL's EPL12003, adding a PRP for "Stage 2 Predicative Emissions Monitoring System" (PEMS). The date for submission of the Report on the Stage 2 PEMS Trial was later extended by the EPA to 16 December 2015.

5.3.2. Air Quality Criteria and Monitoring Requirements

Ray Beddoe Treatment Plant – DA-15-1-2002i

The Ray Beddoe Treatment Plan (RBTP) was shut down in February 2007, decommissioned, rehabilitated and the EPL surrendered in June 2009; consequently there are no further requirements to undertake air emissions monitoring.

Rosalind Park Gas Plant – DA-282-6-2003-i

Development Consent DA-282-6-2003-i, Schedule 4 CoC 47, 48, and 58 specifies requirements to monitor air quality for the production area and air emission criteria. These requirements are as per the EPL No. 12003 (with the exception of CoC 47 which is not a requirement of the EPL) and are reproduced in Table F-2 in Appendix F.

DA 282-6-2003, Schedule 5, CoC 12 and EPL 12003 (L2) stipulate load limits for assessable pollutants that must not be exceeded during the reporting period from the RPGP. These are summarised in Table F-3 in Appendix F.

Construction and Field Operations – Dust

A number of development consents stipulate requirements relating to dust management. These are summarised in Table F-4 of Appendix F.

5.3.3. Air Quality Monitoring Results

Rosalind Park Gas Plant – Quarterly Stack Emission Monitoring

Quarterly monitoring reports for the RPGP were prepared by Ektimo and Emission Testing Consulting (ETC):

- Quarterly Stack Emission Survey, 2-3 September 2014;
- Quarterly Stack Emission Survey, 15 December 2014;
- Quarterly Stack Emission Survey, 30 March 2015; and
- Quarterly Stack Emission Survey, 9 June 2015.

Monitoring results for the 2013-14 Annual Return period are provided in Appendix I. All quarterly monitoring results were compliant with the licence concentration limit conditions of the current EPL 12003 for this period.

Rosalind Park Gas Plant – Air Emissions at Residences (Schedule 4, CoC 47)

ETC undertook emission testing at the RPGP in accordance with the air pollutant criteria stipulated in DA 282-6-2003-I, Schedule 4, CoC 47.

Nitrogen Dioxide, Sulphuric Acid Mist and Sulphur Dioxide concentrations were measured at the emission points and compared to the input data used in the modelling for the air impact assessment. The testing confirmed compliance with input data used in the modelling for the air impact assessment and therefore compliance at the nearest residence during this reporting period.

Rosalind Gas Plant – Assessable Pollutants and Air Concentration Limits

Under EPL 12003 for the RPGP, AGL is required to meet load limits for assessable pollutants plus calculate the annual pollutant loads and associated fees. Monitoring to enable the annual pollutant loads to be calculated was conducted quarterly by ETC and Ektimo and continuously by AGL with the results included in the 2013/2014 Annual Return (summarised in Appendix I and Appendix J). In addition to this, the EPL requires the monitoring of air concentration levels at discharge points for which the concentration of the pollutant must not exceed, which is monitored quarterly and continuously.

No exceedances of the pollutant load limits, or exceedences of air concentration limits, were reported within the 2013/2014 Annual Return.

Rosalind Park Gas Plant – Continuous Monitoring

The EPL 12003 Condition M2.3 and DA-282-6-2003-i Schedule 4 CoC 58 require continuous monitoring of NOx, temperature, moisture, flow rate, and oxygen at Points 1, 2 and 3 at all times when the compressors are operating. No exceedences of the limits identified in EPL 12003, Condition L3.1, were identified in continuous monitoring monthly reports during the period.

National Pollutant Inventory Reporting

The National Pollutant Inventory (NPI) Report for the RPGP for the 2013/2014 financial year was prepared and submitted on 25 September 2014. The 2014/15 NPI Report was submitted on 23 September 2015. The NPI lists the fuel and energy usage plus emissions data for the RPGP for the financial year.

Construction and Field Operations – Dust Monitoring

During construction and field operations, various measures are implemented to avoid or ameliorate dust generation; including reduced travelling speeds on unsealed roads and use of water carts to suppress dust. Visual assessment of dust conditions are undertaken by site personnel during construction and field operation.

No registered complaints regarding dust were recorded during the reporting period.

5.3.4. Air Pollution Environmental Performance / Trends

RPGP Quarterly Stack Emissions Monitoring

Quarterly stack emissions monitoring results were compliant with the licence concentration limits of EPL 12003 and Development Consent DA-282-6-2003-i, Schedule 4 CoC 48 for this reporting period. Air emission monitoring methodology complies with EPL 12003 Condition M2.2.

RPGP Assessable Pollutant and Air Concentration Limits

The following pollutants are assessable emissions from the RPGP for which limits of the pollutants annual load or its air concentration is stipulated by the EPL 12003. These limits

are reproduced in Appendix F. The annual assessable pollutant loads are calculated and reported within the EPL Annual Return.

The assessable pollutants and air concentration limits for this reporting period are:

- **Benzene** - Benzene is an assessable pollutant, measured annually in order to calculate the annual pollutant loads and associated fees under EPL 12003. For the 2013/2014 Annual Return the calculated annual load for benzene was 4.927 kg/year, which is well below the limit of 47 kg/year as required by EPL 12003. This represented a slight increase from the previous Annual Return reporting period where 3.49 kg/year was calculated and is less than the annual load estimation of 42.5 kg/yr as predicted in the RPGP Environmental Impact Statement (EIS).
- **Benzo(a)pyrene (equivalent) -** Benzo(a)pyrene air emissions are an assessable pollutant and are measured annually in order to calculate the annual pollutant loads and associated fees under the EPL 12003. For the 2013/2014 Annual Return, the calculated annual load for Benzo(a)pyrene was 0.0 kg/yr, which is less than the annual load limit of 0.27 kg/yr as required by EPL 12003. There was no change from the 2012/13 Annual Return reporting period. This is also less than the annual load estimation of 0.24 kg/yr as predicted in the RPGP EIS.
- **Fine Particulates -** Fine particulates are an assessable pollutant and are calculated annually to determine the associated fees under EPL 12003. For the 2013/2014 Annual Return, the calculated annual total load for fine particulates was 223.61 kg/year. This is less than the 460 kg/year load limit required by EPL 12003, and less than the annual load estimation of 415 kg as predicted in the RPGP EIS. However, this result represents an increase from the previous year's level of 0.0 kg/year.
- **Hydrogen Sulphide -** Hydrogen sulphide is an assessable pollutant and is calculated annually to determine the associated fees under EPL 12003. For the 2013/2014 Annual Return, the calculated annual load for hydrogen sulphide was 0.0 kg/yr. This is less than the 1.6 kg/yr load limit required by EPL 12003, and also less than the annual load estimation of 1.4 kg/yr as predicted in the RPGP EIS. The results reported in the 2013/2014 Annual Return represents no change from the annual load of the previous Annual Return period.
- **Nitrogen Oxides -** NOx annual pollutant loads and air concentration limits are monitored on a quarterly and continuous basis. AGL has also completed additional monthly monitoring for NOx at compressors 1, 2 and 3 when operating. For the 2013/2014 Annual Return, the calculated annual load for NOx was 6,920.66 kg/yr, which is well below the licensed limit of 103,000 kg/yr. This represents a significant decrease compared with the 31,386.08 kg/yr reported in the 2012/2013 Annual Return. The NOx annual load reported in the 2013/14 Annual Return was approximately less than one-tenth of the predicted assessable load of 93,226 kg/yr as stated in the RPGP EIS.
- **Sulphur Oxides** – Sulphur oxides are measured quarterly in order to calculate the annual pollutant loads and the associated fees under EPL 12003. For the 2013/2014 Annual Return, the calculated annual total load for Sulphur Oxides was 0.0 kg/yr. This is significantly less than the 3,000 kg/yr load limit required by EPL 12003 and less than the annual load estimation of 2,689 kg/yr for sulphur oxide emissions as predicted in the RPGP EIS. This result is significantly less than the results reported in the 2012/13 Annual Return of 65.24 kg/yr.
- **Volatile Organic Compounds (VOCs) –** VOCs discharged to air are measured annually in order to calculate the annual pollutant loads and associated fees under EPL 12003. For the 2013/2014 Annual Return, the calculated annual load for VOCs was 12.184 kg/yr, which is well below the limit of 33,000 kg/year as required by EPL 12003; this result is also less than the annual load limit of 29,696 kg/yr as predicted by the RPGP EIS. The 2013/14 load result represented an increase from the 2012/13 Annual Return result of 3.65 kg/yr.

There were no exceedances of the EPL 12003 licence limits for the assessable annual pollutant loads for the RPGP as reported within the 2013/2014 Annual Return. Assessable pollutants were also reported at below the annual load estimations as predicted in the RPGP EIS.

RPGP Continuous Air Monitoring

Non-compliance with EPL 12003 conditions O2 and M2.1 in relation to M2.3, and DA-282-6-2003-I Sch. 4, CoC 58 occurred during this reporting period as continuous monitoring for air emissions at the RPGP was not carried out for the full reporting period. Details of this non-compliance are provided within Section 9.1.1 of this report.

Due to this non-compliance, AGL did not fully meet its AQMSP target for this reporting period.

5.4. Erosion and Sediment

5.4.1. Erosion and Sediment Management

Soil types within all project areas are assessed on a regional and local scale. The aim of the assessment is to determine the impact of the existing and proposed operations on the soil groups identified within the area and assess what, if any, impacts may arise.

It has been determined that the soils and land capability within the area of current or proposed operations do not pose a significant constraint to development.

Activities that necessitate the removal of vegetation and disturbance to the soil surface have the potential to cause an increase in the effects of wind and water erosion. In order to manage the potential impacts of operations on soil and surface water, all activities that pose a potential threat to soil and or surface water are conducted in accordance with AGL's Soil and Water Management Sub Plan (SWMSP).

Management of erosion and sedimentation issues is summarised in the SWMSP. The objectives of the SWMSP are to:

- Minimise soil disturbance, prevent contamination and associated impacts on riparian corridors and native vegetation and promote and maintain soil stability throughout the life of the project; and
- Minimise negative impacts from construction and operational activities on surface water resources.

Targets relating to soil and erosion identified in the SWMSP are as follows:

- Zero complaints received from landowners or government agencies concerning land disturbance, contamination or soil stability;
- Zero incidents concerning water levels or water quality during operations.

Control measures employed to meet the objectives for erosion and sediment are outlined in the SWMSP (updated during this reporting period) of the CGP EMP. A summary of some of the strategies is presented in Table F-5 of Appendix F.

5.4.2. Erosion and Sediment Related Activities

A new section of approximately 375 m of gas gathering line was installed and commissioned during this reporting period. The gas gathering line was installed in compliance with the

SWMSP. After installation the disturbed area was promptly reshaped, harrowed and seeded promote vegetation growth and minimise loss of soil.

During this reporting period AGL's SWMSP was updated. The Sub Plan details specific sediment and erosion control measures across construction, operation and rehabilitation project phases.

5.4.3. Erosion and Sediment – Environmental Performance

Activities associated with erosion and sediment controls were compliant with regulatory requirements and the SWMSP targets and objectives for the reporting period with no community complaints or reportable incidents recorded.

5.5. Surface Water

5.5.1. Surface Water Management

Control of water erosion is a key environmental issue requiring careful consideration and management, to avoid the reduction of surface water quality through erosion processes and subsequent siltation, and potential contamination. Control measures employed to meet the objectives for surface water are outlined in the SWMSP of the CGP EMP.

The target identified in the SWSMP relating to surface water management is as follows:

› Zero water contamination incidents from construction and operational activities.

The SWMSP was updated during this reporting period. A summary of the strategies for erosion and sediment measures which relate to surface water are presented in Table F-5 of Appendix F.

5.5.2. Surface Water Generation Results

The CGP harvests rain water from the run off of all buildings within the RPGP. This water is stored in above ground rain water tanks and is used to service the RPGP's amenities and wash bay. Once used, the water is separately stored in in-ground tanks for grey water and septic water. A combined total of 344.8 KL of grey water and septic water was transported off site by licensed contractors for disposal at a licensed facility.

5.5.3. Surface Water Monitoring Requirements and Results

The monitoring requirements for water quality stored within the RPGP flare pit, required by DA-282-6-2003-I, are outlined in Table F-7 of Appendix F. It is noted that there are no concentration limits for the specified parameters below as the water is not discharged to the environment.

The RPGP flare pond stores treated water from the RPGP, filtered produced water and direct rainfall. Analysis results for water stored within the RPGP flare pond are as follows:

› The water level in the flare pond ranged between 2m – 2.2m;
› Electrical conductivity levels ranged from 5,580 µS/cm to 9,960 µS/cm;
› Total suspended solids ranged from <5 to 130 mg/L;
› Biochemical oxygen demand levels ranged from 7 to 48 mg/L;

- Oil and grease results ranged from <5 mg/L to 8 mg/L;
- Total polycyclic aromatic hydrocarbons results were below the Limit of Reporting;
- Total phenols were all below the Limit of Reporting;
- Total organic carbon levels ranged from <1 to 118 mg/L; and
- Total petroleum hydrocarbons ranged from 0 to 1,530 µg/L.

While the SWMSP outlined water monitoring requirements, AGL does not trigger the need to monitor surface water.

5.5.4. Surface Water Related Activities

During the reporting period, activities included:

- WG04 gas gathering line installation;
- Workover of nine wells;
- Commencement of plug and abandonment of four wells;
- The continued operation of the RPGP; and
- Continued operation of the RPGP water treatment plant.

Rain water that is not collected at the RPGP is diverted to the site's permanent sediment control pond.

5.5.5. Surface Water – Environmental Performance

There were no reportable incidents recorded or community complaints received in relation to surface water for the reporting period. Hence, AGL met its target as outlined in the SWMSP for the reporting period.

5.6. Groundwater

5.6.1. Groundwater Management

Control measures employed to meet the objectives for groundwater are outlined in the SWMSP and Groundwater Management Plan (GMP) of the CGP EMP. The objectives of the GMP are to:

- Describe the water level and water quality monitoring network across the different groundwater systems located beneath the CGP area;
- Build a database of baseline information (both water levels and water quality for shallow beneficial aquifers) located beneath the Camden North extension area;
- Identify water level and water quality trends that may suggest connectivity or contamination of aquifers due to CSG activities;
- Provide a monitoring (and an action response) framework for water users and regulators on the groundwater monitoring program at Camden;
- Provide water triggers for an action plan should there be unexpected water level or water quality impacts; and
- Outline the reporting and review requirements for the monitoring program.

A summary of the strategies for erosion and sediment measures which relate to groundwater are presented in Table F-5 of Appendix F.

The roles and responsibilities for groundwater management as stated in the Groundwater Management Plan are included under heading 'Surface Water and Groundwater Management' and Table F-6 of Appendix F.

5.6.2. Groundwater Generation Results

During the reporting period, water was produced from CSG wells during dewatering and well workovers in Menangle Park, Glen Lee, EMAI, and Sugarloaf fields. The following volumes were generated and recycled or disposed during the 2014/2015 reporting period:

- 2,158.91 KL of produced groundwater was generated from wells during dewatering during this reporting period. This volume is well below the licensed 30 ML (i.e. 30,000 KL) of groundwater allocated to the CGP;
- 56.45 KL of produced water from AGL wells was reused for production and well workovers;
- A total of 3,289.6 KL of water RPGP flare pit and RPGP frac tanks was recycled by AGL's licensed liquid waste contractor.

5.6.3. Groundwater Related Activities

During the reporting period, AGL has actively undertaken a number of measures in relation to groundwater management:

- For borehole integrity maintenance, two groundwater monitoring bores (Glenlee Monitoring Bores 1 and 2) were converted to vibrating wire piezometers in March 2015;
- Six monitoring bores were installed for the purpose of monitoring potential seepage around in-ground tanks at the RPGP;
- A 2013/14 Annual Groundwater and Surface Water Monitoring Report was published in October 2014;
- A Drilling and Completion Report for the installation of the groundwater monitoring bore network was published in November 2014;
- AGL continued its revision of the CGP Groundwater Management Plan in consultation with DPI Water;
- Quarterly water quality monitoring events were completed at selected producing gas wells as part of the groundwater monitoring network and as required by the EPL;
- Three water quality sampling events and continuous water level monitoring were completed at dedicated groundwater monitoring bores.

AGL's Annual Bore Licence Compliance Report (2014/15) was submitted after the reporting period on 28 September 2015 in accordance with requirements within the NOW bore licence conditions for the CGP CSG wells.

5.6.4. Groundwater Monitoring Requirements

The groundwater quality monitoring requirements for quarterly and annual sampling of water quality, required by *EPL 12003 Condition M2.7 and M2.8*, and the Water Bore Licences are outlined in Table F-7 and Table F-8 of Appendix F.

5.6.5. Groundwater Monitoring Results

Groundwater quality monitoring is required under Condition M2.7 of EPL 12003. The EPL requires groundwater monitoring to be undertaken at monitoring points 8-15; monitoring for some parameters is required on a quarterly basis, while others are required to be monitored annually. Results are released quarterly and are available on the CGP website. In addition, the results of the monitoring are submitted annually as a Groundwater Monitoring Report (GMR) with the Annual Return.

Of the eight monitoring points identified by the Condition P1.3 of the EPL, only one gas well (RB10) contained sufficient water for sampling to take place during the latest GMR period (i.e. 22 December 2013 – 21 December 2014). This is due to many of the operating wells within the CGP producing very low volumes of water. Where produced water from operating wells was sufficient for sampling and testing, salinity (measured by electrical conductivity) ranged between 10,300 and 11,700 µs/cm during the 2013/2014 period.

Details of results of groundwater monitoring required under EPL 12003 are provided in Table M-1 at Appendix M of this report.

In addition to groundwater monitoring required under EPL 12003, AGL collects data from seven groundwater monitoring bores located within close proximity to operational gas wells (within approximately 40 meters). This data is compared to data collected from a remote site with four groundwater monitoring bores (RMB site), providing additional information for assessing impacts of wellfield operation on the shallow beneficial aquifers. Results are measured on a quarterly basis and reported in the CGP Annual Bore Licence Compliance Report, which is provided to DPI Water.

The salinity (electrical conductivity) results at the shallow groundwater monitoring bores (where data was available) did not alter significantly during the 2014/15 year. Details of salinity trends from groundwater monitoring bore results are provided at Appendix M of this report.

5.6.6. Groundwater – Environmental Performance / Trends

The total volume of produced water generated has decreased from 3,464.34 KL last reporting period to 2,158.91 KL this period, representing a decrease of 37.6%. This decrease continued the trend from last year which experienced a 24.5% decrease from the previous year. Approximately 90% of operating wells each produced less than 50 KL of produced water.

The total volume of produced water reused for well workovers has significantly decreased for this period in comparison with the last reporting period. The total volume of produced water that was reused this reporting year was 56.45 KL compared to 1,190.7 KL for the previous reporting period.

Total recycled produced water from well sites and the RPGP has decreased from 6,427.5 KL last reporting period to 3,346.07 KL this period. This decrease is partially due to a decrease in development activities.

During this reporting period AGL was compliant with its bore licence conditions and EPL 12003 reporting requirements.

Data collected from the seven groundwater monitoring bores located within close proximity to operational gas wells (within approximately 40 meters) and compared to data collected from a remote site with four groundwater monitoring bores (RMB site) provides additional information for assessing impacts of wellfield operation on the shallow beneficial aquifers. The salinity (electrical conductivity) at all eleven shallow groundwater monitoring bores (where data was available) did not alter significantly during the reporting period. In addition,

the water levels collected from the individual dedicated groundwater monitoring bore sites do not show any evidence of long term effects other than seasonal/climatic variations.

All groundwater analysis results collected as part of the monitoring requirements for AGL's EPL 12003 (eight gas wells requiring quarterly water quality monitoring) and all results collected from the 11 dedicated shallow groundwater monitoring bores (RMB01-04, MPMB01-04, GLMB01-03) are available on the CGP website.

Groundwater monitoring was undertaken in accordance with GMP requirements. There were no reportable incidents recorded or community complaints received in relation to groundwater for the reporting period, consequently AGL's objectives as outlined in the GMP have been met for the reporting period.

5.7. Waste Management

5.7.1. Waste Management

The Waste Management Sub Plan (WMSP) was revised within the reporting period. The objective of the WMSP is to minimise waste generation and disposal by:

- Purchasing environmentally friendly materials;
- Implementation of reuse and recycling initiatives; and
- Ensuring that environmental impacts relating to waste management are reported and acted upon immediately.

The CGP WMSP identifies the following targets against which performance can be measured:

- Waste disposal and recycling records are accurately maintained for the Environmental Footprint Report and reviewed annually for improvement opportunities; and
- Zero non-conformances concerning waste management practices.

Control measures used to meet the objectives for waste management are outlined in the CGP WMSP (updated during this reporting period) of the CGP EMP with a summary included in Table F-9 of Appendix F.

5.7.2. Waste Generated and Disposed/Recycled

Table 5-1 summarises the amount of waste generated, disposed and recycled during the reporting period.

Table 5-1: Waste Generated and Disposed / Recycled

Waste Stream	Amount Disposed	Amount Recycled
Sewage and grey water from the RPGP site and workover rig facilities	248.26 tonnes	
General Waste	45.39 tonnes	
Produced water		3,346.07 KL
Hazardous Waste (exclusive of septic)	85.21 tonnes	
Waste Oil		17.89 tonnes
Coal Sludge/Drilling Mud		67.94 tonnes

Waste Stream	Amount Disposed	Amount Recycled
Scrap steel		34.72 tonnes
Batteries		1.31 tonnes
Oil filters		1.20 tonnes
Paper		31.68 tonnes

AGL continues to operate a small wastewater treatment and separation plant at the RPGP. Oily water from the 65,000 L holding tank is pumped to the plant which separates the oil from the water by injecting the wastewater with a clay polymer that binds to the hydrocarbons producing a solid effluent. The solid effluent is stored in a skip bin and is taken off site to a licensed landfill. The clean water is transferred to the flare pond on site. Oil recycling contractors routinely extract the oil from the top of the holding tank and take it off site for recycling.

5.7.3. Waste Management – Environmental Performance

AGL has maintained its process of waste disposal and recycling records over the reporting period. Additionally, the bi-annual 2012-14 Independent Environmental Audit Report, finalised in the reporting period, recorded zero non-compliances concerning waste management practices at CGP. Hence, AGL has met the WMSP targets for this reporting period.

5.8. Hazardous Materials

5.8.1. Hazardous Material Management

AGL has developed a Dangerous Goods and Hazardous Materials Sub Plan (DGHMSP) to specifically address and manage Dangerous Goods and Hazardous Materials at the CGP. The DGHMSP was updated during this reporting period.

The main objective of the DGHMSP is to outline strategies to manage the purchasing, storage, transport, handling and disposal of Dangerous Goods and Hazardous Materials (including waste Dangerous Goods and Hazardous Materials) during construction, operation and maintenance activities so as to minimise the risk of impact to the environment (soil, surface water, groundwater, atmosphere).

The DGHMSP identifies the following target against which performance can be measured:

- Zero incidents resulting in Dangerous Goods or Hazardous Materials entering the environment or causing harm or injury to personnel.

A summary of the control measures identified in the DGHMSP is presented in Table F-10 of Appendix F.

5.8.2. Hazardous Materials Related Activities

AGL maintains an on-site chemicals register of all chemicals in use. The register includes Safety Data Sheets (SDS) for chemicals and appropriate emergency response and first aid provisions.

A Dangerous Goods Notification issued by WorkCover NSW is not required due to the small quantities of Dangerous Goods stored at the RPGP.

5.8.3. Hazardous Materials – Environmental Performance

Activities associated with hazardous materials management were compliant for the period with no reportable incidents recorded or community complaints received. Hence, AGL has met the DGHMSP target for the reporting period.

5.9. Contaminated Land

5.9.1. Contaminated Land Management

No land identified as contaminated or polluted forms part of AGL CGP land holdings.

Management objectives and strategies relating to contamination or pollution are covered in the SWMSP and the DGHMSP. The objectives are to:

- Prevent contamination and associated impacts on riparian corridors and native vegetation throughout the life of the project;
- Minimise negative impacts from construction and operational activities on surface water resources; and
- Manage Dangerous Goods and Hazardous Materials during construction, operation and maintenance activities so as to minimise the risk of impact to the environment.

A summary of contaminated land control measures is presented in Table F-11 of Appendix F.

5.9.2. Contaminated Land Management Requirements

The prevention of contamination or pollution management includes a duty to report and manage pollution incidents in accordance with the POEO Act. The provisions of the POEO Act include a requirement for holders of EPLs to prepare, keep, test and implement a Pollution Incident Response Management Plan (PIRMP). The specific requirements for PIRMPs are set out in Part 5.7A of the POEO Act and the *Pollution of the Environment Operations (General) Regulation 2009*.

AGL completed their requirement to develop and implement a PIRMP in 2012. AGL reviewed, updated and tested its CGP PIRMP during the reporting period, in accordance with *Pollution of the Environment Operations (General) Regulation 2009.*

5.9.3. Contaminated Land – Environmental Performance

As noted at sections 5.5.5 and 5.8.3, activities were compliant for the period with no reportable incidents or community complaints associated with land contamination or pollution. Hence, AGL met the relevant Sub Plan targets for this period.

5.10. Threatened Flora and Fauna

5.10.1. Threatened Flora and Fauna Management

An assessment of flora and fauna is undertaken as part of each environmental assessment application relating to a new project development. The aim of the assessment is to determine the potential impact of AGL's operations on the local ecology and to develop suitable management practices to be applied during the project's current and future full scale operational activities. The site assessments are based on a detailed site survey of individual well sites, access routes, pipeline routes and project areas.

In general terms, AGL's selection criteria for new sites, aims to target previously disturbed areas and actively avoids areas of native vegetation or of environmental significance.

The disturbance created by the activities involved with the project is primarily limited to construction activities including ground disturbance from vehicles and drilling related equipment, pipeline trenching activities and limited land clearing for well sites.

Through careful planning the project components avoid significant flora and fauna habitats. There have been no identified significant issues that have been unable to be effectively avoided or managed during the project to date.

The EMAI is an area where preservation of significant stands of Cumberland Plains Woodland provides a breeding area suitable for numerous raptor species. During the reporting period no construction related activities were undertaken in the EMAI field.

Management objectives relating to native flora and fauna are covered in the Flora and Fauna Management Sub Plan (FFMSP). The objectives are:

Flora

- Minimise the loss of remnant native vegetation and promptly carry out rehabilitation activities.
- To promote, monitor and maintain regrowth of rehabilitated vegetation cover to ensure that it is consistent with the surrounding environment and to the satisfaction of the landowner.

Fauna

- Ensure habitat disturbance is avoided during construction and operational activities and to protect fauna from physical harm.

The FFMSP identifies the following targets against which performance can be measured:

- Zero unauthorised disturbance to native flora;
- Zero complaints from landowners relating to native vegetation disturbance; and
- No injured fauna.

Control measures employed to meet the objectives for flora and fauna are outlined in the CGP FFMSP with a summary included in Table F-12 of Appendix F.

5.10.2. Threatened Flora and Fauna – Environmental Performance

Activities associated with threatened or native flora and fauna were compliant for the period with no unauthorised disturbance to native flora, injured fauna, incidents or complaints recorded. Hence, AGL met its target for management of Flora and Fauna during the reporting period.

5.11. Noxious Weeds

5.11.1. Noxious Weeds Management

Management of noxious weeds is covered under the Rehabilitation and Landscape Management Sub Plan (RLMSP) of the CGP. The objective of the RLMSP is to "prevent the introduction and dispersal of noxious weeds, pathogens and pest species". Noxious weeds may be introduced and/or dispersed via personnel vehicles, equipment and plant.

Specific targets identified in the RLMSP as regards weed management are:

- Close out of identified weed issues within two weeks;
- Zero complaints from landowners relating to vegetation cover or weed growth.

Control measures employed to meet the objectives and targets for weed control are included within the RLMSP. A summary of these measures is outlined in Table F-13 of Appendix F.

5.11.2. Noxious Weed Related Activities

Details of weed spraying including dates, areas sprayed, chemicals used, weather conditions and personnel details are maintained at the RPGP site. The following provides a summary of the date and locations of weed spraying undertaken during the reporting period:

- 4 July 2014: MP03, MP25, RPGP yard, LB yard;
- 23 September 2014: EM23 well site;
- 31 October 2014: MP25, MP17 well sites;
- 13 November 2014: SF17, SF20 well sites;
- 18 November 2014: EM07, EM 11, EM12, EM14, EM17, EM10, EM13, EM15, EM27, EM24, EM25, EM18, EM28, EM30, EM31, EM32, EM33, EM38; MP17, MP16, MP25, MP15 well sites.
- 20 November 2014: MP14, MP30, MP12, MP23, MP11, MP22, ARTC, MP03 well sites;
- 26 November 2014: Glen Lee field;
- 10 December 2014: WG2, WG3, LB7, LB11, RB10 well sites;
- 16 December 2014: GL06, GL16, GL08, GL17, GL11, GL13, GL02, GL12, RP02, RP06, RP09 well sites;
- 16 January 2015: RP10, RP12, RPGP yard and front gate areas;
- 22 January 2015: RPGP Yard and around gas plant;
- 06 February 2015: RPGP Plant;
- 03 March 2015: GL02, GL12, GL05, GL17, GL11, GL13, GL08, GL09, GL07, GL16, GL04, GL06, RP11;
- 20 March 2015: SF17, SF20, EM22, Loganbrae Cottage;
- 27 March 2015: RPGP;

- 08 May 2015: RPGP and yard;
- 19 May 2015: EM23 well site.

The main herbicides used were Round Up (glyphosate), Round Up 450, Six Gun 360 and Kamba M (selective herbicide). Approximately 19L of herbicides were used during the reporting period.

5.11.3. Noxious Weeds – Environmental Performance

Activities associated with weed control were compliant with the targets identified in the RLMSP during this period, with no reportable incidents or landholder/community complaints recorded.

5.12. Blasting

No blasting is undertaken as part of the project.

5.13. Operational Noise

5.13.1. Operational Noise Management

All project aspects are designed with the aim of safeguarding the amenity of surrounding residents through the proper management of noise generating activities. The assessment of noise and the design of safeguards have been carried out in conjunction with field noise studies that have been undertaken since the inception of the project.

A program of monitoring has been established at the RPGP. The purpose of the monitoring is to meet licence conditions; demonstrate compliance with licence limits; and to link potential complaints to operational procedures in order to discern those aspects of the project which may be responsible for causing a specific noise problem.

Any noise complaints are compiled and presented for discussion at the regular CCC meetings.

Objectives and targets regarding noise relating to operational activities carried out at the CGP are identified in the Noise Management Sub Plan (NMSP) of the CGP EMP, and are as follows:

Objectives:

- To comply with the operations noise criteria
- To ensure that there are no unresolved noise related complaints from the public
- Best available practice noise management measures for Production Operation works
- Comply with the operations noise criteria
- Ensure that there are no unresolved noise-related complaints from the public
- Implement best available practice noise management measures for Production Operation works.

Targets:

- Zero exceedances of noise criteria
- Zero complaints received from sensitive receivers.

Control measures employed to meet the objectives for noise are outlined in the NMSP. A summary of these measures are outlined in Table F-14 of Appendix F.

5.13.2. Operational Noise Limits and Monitoring Requirements

The noise limits and monitoring requirements for the project are summarised in Table F-15 of Appendix F.

Project Approval No. 282-6-2003, 75-4-2005, 06_0137 and 06_0291

Noise monitoring of a number operating gas wells was carried out by acoustic consultants Wilkinson Murray during this reporting period. Noise monitoring was undertaken in order to assess compliance with the relevant noise criteria set out in Project Approvals No. 282-6-2003, 75-4-2005, 06_0137 and 06_0291.

Noise generation from the operating gas wells was measured, assessed and estimated to predict the expected noise levels at the closest sensitive receivers for each well site.

Noise monitoring of operating wells was undertaken in day, evening and night times on 20 November 2014 at the following well locations:

- Razorback (RB07, RB10);
- Elizabeth Macarthur Agricultural Institute or EMAI (EM20/38);
- Sugarloaf (SL02);
- Spring Farm (SF20); and
- Menangle Park (MP12/23, MP11/22 and MP03).

The well locations were monitored under suitable weather conditions.

A subsequent noise monitoring event took place at SF20 on 15 January 2015.

Results of monitoring are discussed at section 5.13.3.

DA 282-6-2003-i Schedule 4 Clause 40 – Annual Noise Monitoring

Noise compliance reports are submitted annually to the EPA as part of the EPL Annual Return. The DP&E receive a summary of this information as part of this AEPR. A summary of the annual report's results is provided in Appendix K.

DA 282-6-2003-i Schedule 4 Clause 41 – Quarterly Noise Monitoring

Quarterly noise monitoring in accordance with DA 282-6-2003-i Schedule 4 Clause 41 was undertaken by Wilkinson Murray at sites R1 and R7, which represent the residential premises most impacted by noise emanating from the RPGP.

Quarterly noise monitoring for this reporting period included:

- Attended noise monitoring 29 October 2014;
- Attended noise monitoring 15 December 2014;
- Attended noise monitoring 26 March 2015; and
- Attended noise monitoring 23 June 2015.

Four quarterly operational noise monitoring reports were prepared for the reporting period of July 2014 to June 2015 for the RPGP.

All reports stated the RPGP to be compliant with noise limits identified in DA-282-6-2003-i. A summary of the findings of each report is included within Appendix K.

5.13.3. Operational Noise - Environmental Performance / Trends

Operational Noise performance at the Rosalind Park Gas Plant

No exceedances of noise limits or noise complaints relating to operational noise from the RPGP were received during the 2014/15 reporting period. This trend is consistent with previous years. Noise performance is consistent with operational noise predictions in the RPGP EIS.

Operational Noise Performance – Field Monitoring

One community complaint was received during this reporting period regarding operational noise from the SF05 well site. This complaint is discussed in further detail in section 8.1.3 and section 9.1.2.

Noise monitoring was undertaken in order to assess compliance with the relevant noise criteria set out in Project Approvals No. 282-6-2003, 75-4-2005, 06_0137 and 06_0291.

Noise monitoring of operating wells was undertaken in day, evening and night times on 20 November 2014 at the following well locations:

- Razorback (RB07, RB10);
- Elizabeth Macarthur Agricultural Institute or EMAI (EM20/38);
- Sugarloaf (SL02);
- Spring Farm (SF20); and
- Menangle Park (MP12/23, MP11/22 and MP03).

Initial monitoring results indicated compliance with all but one well site (SF20), where noise levels generated by well site SF20 could not be accurately established due to interfering traffic noise, and was assessed as "Undetermined".

Due to the undetermined compliance of night time noise levels generated by the SF20 well site, additional noise monitoring was carried out. Noise walls were erected at the SF20 well site on Wednesday, 26 November 2014 in order to reduce noise impacts at the residential receivers to the southwest of the site. Subsequent noise monitoring carried out on Thursday, 15 January 2015 confirmed compliance with site noise criteria.

Due to the one community complaint from operational noise at the SF05 well site, the NMSP operational noise targets and objectives were not met.

5.14. Construction Noise

5.14.1. Construction Noise Management

A new section of approximately 375 m of gas gathering line was installed and commissioned during this reporting period. The gas gathering line was installed over a one week period in compliance with the NMSP. No other construction activities were undertaken during this reporting period.

Noise generating activities associated with the construction of wells, gas gathering system and access roads may include:

- Drilling of wells;
- Installation of well heads and casing;
- Hydraulic fracturing of the coal seam;
- Earth moving activities associated with construction of infrastructures i.e. drilling pads, gathering lines, access roads and rehabilitation; and

- Truck movements.

The NMSP objectives and targets regarding construction noise are listed below.

Objectives:

- Comply with the construction noise criteria;
- Minimise noise during the construction phase;
- Limit work activities (other than drilling where approved for 24 hours/ 7 days) to daylight hours between 7:00am and 6:00pm weekdays and between 8:00am and 1:00pm on Saturday. No work on Sundays or public holidays except in emergencies; and
- Implement best available practice noise management measures for construction works.

Targets:

- Zero exceedances of noise criteria
- Zero non-conformances with construction hours
- Zero complaints received from sensitive receivers.

Control measures employed to meet the objectives for noise are outlined in the NMSP of the CGP EMP. A summary of the measures are provided in Table F-16 Appendix F.

5.14.2. Construction Noise Limits and Monitoring Requirements

The noise limits and monitoring requirements detailed in the Development Consents, Project Approvals and Modifications for the project are summarised in Table F-17 of Appendix F.

5.14.3. Construction Noise Monitoring Results

The WG04 gas gathering line installation was completed over a one week period during construction hours only. During this time there were no construction related noise complaints. The WG04 site does not have site specific noise criteria, and as the construction period was minimised, no noise monitoring was completed.

5.14.4. Construction Noise Performance and Trends

WG04 gas gathering installation works were undertaken during construction hours only over a one week period. During this construction work, there were no noise complaints and hence the NMSP construction noise targets and objectives were met for the reporting period.

5.15. Visual Amenity

5.15.1. Visual Amenity Management

The visual impact of the well sites can be considered to be relatively low, primarily due to the small area of land surface occupied. The visual impacts of well sites are minimized further through their design, spacing and integration with the prevailing topography.

Flaring at the RPGP can result in a glow in the event that it occurs at night. The overall approach by AGL has however progressed to the point where flaring at the RPGP was minimal during the reporting period.

Management of Visual Amenity issues is covered in the CGP RLMSP. The objective of the RLMSP as regards visual amenity is to minimise the impacts to the visual characteristics of the Project area. The target set in the Plan is to achieve zero complaints from local residents relating to visual impacts.

5.15.2. Visual Amenity Monitoring Requirements

The monitoring requirements for visual amenity, required of DA 282-6-2003-i are outlined in Table F-19, Appendix F.

The biennial independent "Landscape and Lighting Audit Report" (Landscape and Lighting Audit) was conducted during the reporting period (September 2014). The results of this audit are reflected in this AEPR.

The Landscape and Lighting Audit reviewed the performance of the mitigation measures implemented to prevent and minimise visual impacts of the RPGP. It also specifically assessed the performance of the recommended actions raised in the 2012 audit, in relation to lighting performance and visual impact from the RPGP to the adjoining residence of Mount Gilead.

5.15.3. Visual Amenity Monitoring Results

Flare Events (Schedule 4, Clause 11)

In accordance with DA 282-6-2003-i Schedule 4 Clause 11, AGL recorded the frequency and operation of the flare. The Flare event log is provided in Appendix L.

Two flare events occurred during the reporting period, due to a restart of the plant. These events occurred on the same day (31 August 2014), two minutes apart, and had a total duration of only four minutes.

The duration of flaring events decreased since the previous AEPR period, where a full field flare event lasted 125 minutes.

Independent Audit of Vegetation and Landscape Management Plan (Schedule 4, Clause 13 and 14)

In accordance with DA 282-6-2003-i Schedule 4 Clause 13, a Vegetation and Landscape Management Plan (VLMP) was prepared, submitted and approved by the DP&E on 2 July 2004. The RPGP is maintained and monitored in accordance with the VLMP to ensure the condition of the landscaping and the effectiveness of visual mitigation measures remain adequate.

In accordance with DA 282-6-2003-i Schedule 4 Condition 14 the VLMP was independently monitored every six months for the first two years and thereafter every two years by an approved independent and suitably qualified arborist.

The September 2014 Landscape and Lighting Audit specifically assessed the performance of the mitigation measures to prevent and minimise the visual impacts of the RPGP.

The auditor concluded:

"Ground-truthing of landscape works identified that the majority of all aspects of VLMP monitoring were correct, in accordance with performance and review objectives, and in a format that is suitable for continued and on-going report monitoring.

Landscape maintenance works and adherence to the landscape plan by AGL was clearly evident. Responsive remediation and reparation works to any landscape zone identified in the monitoring report was also evident at time of assessment. No suggestions for further

development of landscape works are included in the audit report as the landscape is considered to be highly effective in achieving the desired goals."

Table 5-2 provides a summary of recommended actions in the 2014 Independent Audit of the VLMP, and the status of AGL's actions in response.

Table 5-2: AGL's Actions in Response to 2014 Vegetation and Landscape Audit

Landscape Zones	Recommendations of the 2014 Independent Audit of the Vegetation and Landscape Management Plan	Action Undertaken by AGL (As at August 2015)
A1	Trees established with consistent growth No plant replacement required Well established grass cover and evidence of routine mowing for fire reductions measures. Grass cover to all areas established and no washout Continued maintenance and tree establishment in all areas No further need for fertilising. Trees well established	Maintenance including tree pruning has continued for this reporting period. This work was completed by AGL's contractors.
B3	Extensive mulching for improvement of growing conditions	AGL has closely monitored this section and applied mulch to maintain plant growth and bank stability during this reporting period.

Independent Audit of Visual Impacts of the RPGP (Schedule 4, Clause 18)

The Landscape and Lighting Audit also reported in relation to lighting performance and visual impact from the RPGP to the adjoining residence of Mount Gilead as required by DA 282-6-2003-I, Schedule 4 Clause 18.

The Landscape and Lighting Audit identified that lighting visibility of the RPGP from Mt Gilead Homestead was in accordance with the lighting performance requirements of the development. The audit also noted that all recommendations of the 2012 audit had been successfully implemented, and that no further recommended actions were deemed necessary.

No complaints were received relating to lighting controls during the reporting period.

Landscape Planting Plan for the relocated access road (DA Mod 2 May 2007, Schedule 4, Clause 19A and 19B)

A Landscape Planting Plan was prepared for the Rosalind Park access road and approved by the Director-General (DG) of the then Department of Planning on 21 May 2007.

Clause 19B requires that the requirements of the Landscape Planting Plan is independently audited initially within six months of completion of the landscaping and biennially thereafter. The independent audit was combined with the independent audit of the VLMP required under Clause 18 and was undertaken in September 2014.

A Tree Planting Progress Inspection and accompanying Report was completed by Ultimate Horticultural Solution on 22 December 2014. The report concluded that all species were maturing well and had made progress since the last inspection. Notwithstanding this, the report identified that some acacia shrubs were found to be affected by insect damage; however, it was noted that the current level of infestation would be considered "economically insignificant".

The Progress Report recommended more regular pruning, ongoing control of weeds and the removal of any dead or damaged vegetation. This work is being completed by AGL as required.

5.15.4. Visual Amenity Performance / Trends

Landscaping and Lighting

The Landscape and Lighting Audit Report concluded that ground-truthing of landscape works identified that the majority of all aspects of VLMP monitoring was correct, in accordance with performance and review objectives, and in a format that is suitable for continued and on-going report monitoring.

Landscape maintenance works and adherence to the landscape plan by AGL was clearly evident. The audit of the VLMP monitoring report is considered complete and successful.

The established landscape now provides layered screening, dense canopy growth and delivers effective and maturing screening to the Mt Gilead Homestead.

Ground-truthing for lighting performance identified that the RPGP was in accordance with the objectives of the development consent and the audit of the Visual Impact Assessment for lighting performance is considered complete and successful.

No complaints or reportable incidents were received during this reporting period in relation to landscaping or visual impacts at the RPGP for this reporting period.

During the next reporting period, AGL plans to continue the current maintenance program for on-going landscape maintenance measures to ensure continued health of the tree plantings. These include:

- Continued engagement of a qualified landscape contractor to carry out inspections once a year in Spring for insect damage and treatment with insecticide as required;
- Continue to observe for insect attack and respond if an infestation is evident;
- Continue on-going weed and grass control around trees and mulch where necessary to suppress grass growth; and
- Continued update of the Maintenance Log Book.

In the previous reporting period, a Tree Planting Progress Inspection and accompanying Report was completed by Ultimate Horticultural Solution on the 10 December 2013. Actions were recommended in the 2013 report, which AGL committed to completing in the FY2015 and their progress over this reporting period, are summarised in Table 5-2 below:

Table 5-2: Progress with Commitments made in 2014 AEPR

Actions Committed to by AGL in 2014 AEPR	Progress during FY15 AEPR Period
Provide supplementary watering during periods of "extreme" drought	**No supplementary watering was required during FY15.**
Chemically control weeds and grasses in densely planted areas to reduce maintenance costs and eliminate competition	**During FY15, weed and grass control was completed using brush cutters and chemical means. This is an ongoing requirement on an 'as needs' basis.**
"Crown lift" lower limbs to allow easier access for improved maintenance activities	**Completed in FY15. This is an ongoing requirement on an 'as needs' basis.**
Remove tree guards / bags / star pickets from mature plantings (those plantings that have reached 1.5m or	**Completed in FY15. This is an ongoing requirement on an 'as needs' basis.**

Actions Committed to by AGL in 2014 AEPR	Progress during FY15 AEPR Period
greater in height, particularly at Zone J behind sediment pond);	
"Thin Out" struggling vegetation within densely planted locations	**Completed in FY15. This is an ongoing requirement on an 'as needs' basis.**
Chemically control insect infestations throughout plantings	**Not required in FY15.**
Chemically control Blackberry infestations at LA-3 and along "Quarry" boundary fence line.	**Not required in FY15.**

Flare Events

Flaring events within this reporting period totalled only 4 minutes in duration, which represents a significant decrease since the previous AEPR period, where a full field flare event lasted 125 minutes. Please refer to Appendix L for more information.

Summary

No complaints or incidents relating to visual amenity were recorded during the audit period. Hence, AGL has successfully met its target for visual amenity at the CGP.

5.16. Aboriginal Heritage

5.16.1. Aboriginal Heritage Management

Aboriginal cultural heritage and archaeological assessments are conducted over each new drilling program as part of the Environmental Impact Assessment process.

The conclusion from the various assessments is that the CGP area is generally considered to be of low archaeological potential. Despite this, evidence of Aboriginal occupation of the area has been identified during the surveys.

In regard to cultural heritage, the management objective is to protect and preserve cultural heritage. Control measures employed to meet the objectives for Aboriginal heritage are outlined in the Aboriginal Cultural Heritage Management Sub Plan of the CGP EMP. A summary of these measures is provided in Table F-20 of Appendix F.

The Aboriginal Cultural Heritage Management Sub Plan was updated in December 2013 by Biosis Research. This plan provides the process for on-going management of recorded aboriginal archaeological sites and identified areas of Potential Archaeological Deposit (PAD) to guide the design, location and implementation of future works within the CGP.

5.16.2. Aboriginal Heritage Related Activities

During the reporting period there were no new matters identified in relation to Aboriginal cultural heritage significance.

5.16.3. Aboriginal Heritage Management Performance

There were no activities associated with aboriginal heritage matters identified and no reportable incidents or community complaints recorded. Hence, AGL has successfully met its target regarding aboriginal heritage at the CGP.

5.17. European Heritage

5.17.1. European Heritage Management

In terms of European heritage, the area falls within the lands originally granted to early British pastoralist John Macarthur. Accordingly, the project is located within an area associated with early European occupation and land use, particularly in regard to early agricultural expansion.

The project area is located, at least partially, within three Historic Cultural Landscapes. These areas have been classified on the basis of their landscape patterns and historical associations according to relevant and standard evaluation criteria. For the most part, project components were selected to avoid known or potential sites of non-Aboriginal or natural heritage significance.

In regard to cultural heritage, the management objective is to protect and preserve European cultural heritage.

Control measures employed to meet the objectives for cultural heritage are outlined in the European Heritage Management Sub Plan of the CGP EMP and reproduced in Table F-21 Appendix F. The European Heritage Management Sub Plan was updated during this reporting period.

5.17.2. European Heritage Related Activities

No activities impacting on European heritage were carried out by AGL during the reporting period.

5.17.3. European Heritage Management Performance

No activities impacting on cultural heritage were undertaken for this period with no reportable incidents or community complaints recorded in regards to European Heritage. Hence, AGL has successfully met its target regarding European Heritage at the CGP.

5.18. Spontaneous Combustion

Spontaneous combustion is an environmental aspect associated with coal mining and as such is not applicable to this Project.

5.19. Bushfire

5.19.1. Bushfire Management

Operational activities have the potential to ignite bushfires through the operation of flammable fuel powered equipment, flares and / or vehicles. Flaring at the RPGP is strictly controlled to minimise any potential to start or spread a bushfire situation. This is achieved by positioning the flare in a non-hazardous location directly above a flare pond containing water and surrounding the pond adjacent to the flare with non-combustible screens.

In regard to bushfire risk, the management objectives are:

- Manage potential bush fire fuel surrounding our facilities such as grass
- Manage the preparedness and emergency response of AGL employees for bush fires
- Comply with government approval license requirements that form part of AGL Camden Gas Project.

Control measures employed to meet the objectives for bushfire control are outlined in the Emergency Response Plan which has been updated during this reporting period. Bushfire control measures are also reproduced in Table F-22 of Appendix F.

5.19.2. Bushfire – Environmental Performance

During the reporting period, there were no reported bushfires on land managed by AGL.

5.20. Mine Subsidence

Mine subsidence is an environmental aspect associated with coal mining and as such is not applicable to this project.

5.21. Methane Drainage / Ventilation

Methane drainage/ventilation is the process associated with underground coal mining and as such is not applicable to the Camden Gas Project.

5.22. Public Safety

5.22.1. Public Safety Management

Public safety is assured through compliance with:

- Operational Protocols;
- AGL Health, Safety and Environment Policy;
- Implementation of management sub plans within the EMP; and
- Site and Infrastructure Security.

5.22.2. Public Safety - Performance

During this reporting period there were no public safety related reportable incidents recorded.

5.23. Safety and Risk Management

5.23.1. Safety and Risk Management Monitoring Requirement

The monitoring requirements for incident reporting as a result of a Development Consent condition are outlined in Table F-23 of Appendix F.

5.23.2. Incident Reporting

During the reporting period a total of 21 Environmental Hazards, Near Misses, and Incidents were reported within this reporting period, with two of these recorded as 'low' risk rating; 18 of these recorded as 'moderate' risk rating; and one incident recorded as a 'high' risk rating level.

The Environmental Hazards, Near Misses and Incidents recorded can be grouped and summarised as follows:

- Minor spills / leaks of liquids;
- Minor gas leaks; and
- Noise complaint.

The breakdown of environmental hazards, near misses and incidents is provided below:

- Hazards: 18;
- Near Misses: zero;
- Incidents: 3.

5.23.3. Safety and Risk – Environmental Performance

During this reporting period there were no significant safety or risk management related reportable environmental incidents recorded.

5.24. Environmental Training

During the reporting period, AGL personnel were provided with environmental training on the following topics:

Table 5-3: Environmental Training Delivered in FY15

Title of Training	Date Delivered	Summary of training
Pollution Incident Response Management Plan (PIMRP)	05 November 2014	- Definition of 'material harm to the environment' - Objectives, scope, content of the PIRMP - Updates to the PIRMP following the SF05 well incident - Responsibilities of CGP staff as regards pollution incident reporting.
Leak Detection and Repair (LDAR)	28 April 2015	- Background o LDAR program o US EPA Approved Method 21

Title of Training	Date Delivered	Summary of training
		○ Leak Classifications ○ Repair Response times - AGL's EPL LDAR requirements - AGL's management documents (SOPs, PIRMP) - How to perform an LDAR survey
Practical Implementation of Environmental Law	29 April 2015	- Challenges of operating in CSG industry - Focus Areas (Environmental Aspects) - AGL Environmental Tools (e.g. EMPs, SOPs, JSEAs). - Activity: Identify the Environmental Hazard and Treatment

6. Rehabilitation

6.1. Rehabilitation Overview

Operations are planned such that disturbance occurs to the minimum area of land possible. Large trees and canopy areas are avoided wherever possible by careful route and site selection and all disturbed areas restored to as near as practicable their pre-existing conditions and contours. A program of planned maintenance ensures that regrowth is facilitated and weeds do not establish.

At the end of the project's life surface infrastructure is removed prior to full site restoration being undertaken.

The environmental management objectives for rehabilitation are to:

- Promote vegetation regrowth and maintain cover in disturbed areas consistent with the surrounding area and in consultation with the landowner;
- Prevent noxious weeds, pathogens and pest species; and
- Monitor rehabilitated areas for 12 months to ensure areas remain free of weeds.

Control measures employed to meet the objectives for rehabilitation are outlined in the Rehabilitation and Landscape Management Sub Plan. A summary of these measures are contained in Table F-24 of Appendix F.

Targets identified to measure the performance of rehabilitation are listed in the Rehabilitation and Landscape Management Plan as follows:

- Close out of identified weed issues within two weeks;
- Zero complaints from landowners relating to vegetation cover or weed growth; and
- Zero complaints received from landowners relating to land disturbance or infrastructure.

6.1.1. Rehabilitation of Disturbed Land

Specific rehabilitation activities associated with the project may be subdivided into four main components:

- Wellheads;
- Gas gathering system;
- Access Roads; and
- Gas plants.

Progressive rehabilitation is an on-going management practice for all areas that have resulted in disturbance from the project. Table 6-1 lists a summary of the rehabilitation works completed since the project was commenced.

Table 6-1: Summary of project rehabilitation works complete to date

PPL	Wells Drilled (total)	Wells – Initial Rehabilitation (only)	Wells – Fully Rehab-ilitated (including P&A)	Gas Plant – Fully Operational	Gas Plant – Fully Rehabilitated	Gas Gathering Line – Fully Operational (km)	Gas Gathering Line – Fully Rehabilitated (km)
1	38	30	8	0	1	30	5*
2	5	5	0	0	0	1.5	0

PPL	Wells Drilled (total)	Wells – Initial Rehabilitation (only)	Wells – Fully Rehab-ilitated (including P&A)	Gas Plant – Fully Operational	Gas Plant – Fully Rehabilitated	Gas Gathering Line – Fully Operational (km)	Gas Gathering Line – Fully Rehabilitated (km)
4	96	94	2	1	0	68.6	0.3*
5	5	5	0	0	0	1.1	0
6	0	0	0	0	0	0	0

*denotes gas gathering lines which have been fully decommissioned including purging and removal of all surface equipment, but have been left in situ (at the request of the landholder/owner).

Rehabilitation during this reporting period consisted of a total of 375 metres of new gas gathering line connected to gas well WG04.

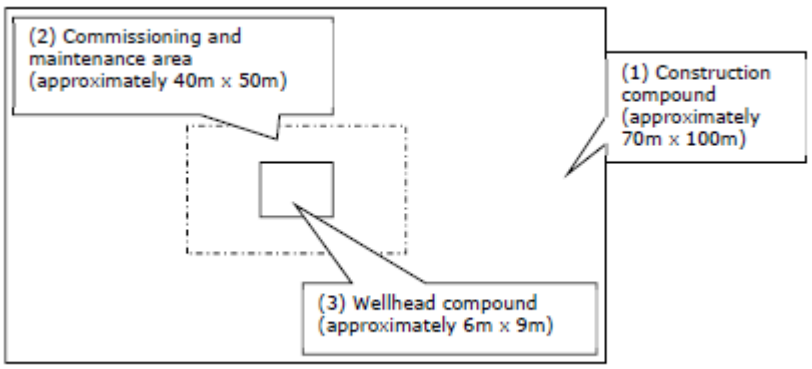
6.1.2. Well Sites

All well sites are located in cleared farmland or in areas clear of native vegetation, with additional clearing being minor or not required.

Rehabilitation of well surface locations is undertaken in stages. These include:

- Initial rehabilitation of surplus construction footprint following completion of the well drilling and construction phase to the commissioning and maintenance area (refer to stages 1 to 2, Figure 6-1);
- Further rehabilitation of the commissioning area to the production compound would occur when the well(s) have reached steady state production (refer to stage 2-3, Figure 6-1); and
- Final rehabilitation of well sites following closure of the wells.

Figure 6-1 – Well Site Progressive Rehabilitation Stages



Long-term operation of the wells requires the retention of a cleared area around each wellhead (indicated as stage 3 in Figure 6-1). The disturbed area outside of the on-going operational area of the well is rehabilitated in the following manner:

- Backfilling excavated areas such as drill pits which are no longer required as part of operation; and
- Rehabilitation, contouring, and revegetating disturbed areas surrounding well surface locations using stockpiled soil.

Upon depletion of the field, the wells will be plugged and abandoned in accordance with the requirements of the NSW Code of Practice for Coal Seam Gas Well Integrity and all surface structures removed.

The final stage rehabilitation works would typically include:

- Removing plant and equipment from well surface locations and removal of fenced compounds;
- Filling in excavated areas and trenches;
- Sealing/ plugging and abandonment of wells in accordance with NSW Code of Practice for Coal Seam Gas Well Integrity;
- Lightly ripping disturbed areas; and
- Rehabilitation, contouring, and revegetating disturbed areas. Revegetating would include broadcast of seed and ongoing maintenance and monitoring activities to ensure successful vegetation cover is promptly established.

Plug and abandonment (P&A) commenced at four wells (EM02, EM03, EM04 and AP01) during May/June 2015; however, P&A of these wells was not completed within this reporting period. Hence, rehabilitation of these wells did not commence during this reporting period.

6.1.3. Gas Gathering System

Rehabilitation of the gas gathering system occurs at the time of construction.

Upon depletion of the field and the completion of the CGP, the preferred method for final rehabilitation of the gas gathering system would be to purge with air or water to remove remaining gas, seal and leave the valuable infrastructure in position for future beneficial use and to prevent any further environmental disturbance. All gas gathering line marker posts would be removed from the surface.

The rehabilitation method for the gas gathering lines would be subject to consultation with the land owner. Should removal of the gas gathering system be required, the excavated trench would be backfilled and rehabilitated, including contouring and revegetation, the same as the initial rehabilitation following installation of the gathering lines.

A 375 m length of gas gathering line, connected to the WG04 well, was installed during the reporting period. Trenching of the WG04 gas gathering line route was completed on 13 November 2014. After installation of the gas gathering line, the disturbed area was rehabilitated by reshaping, harrowing and reseeding to promote revegetation to the original contour and landuse.

6.1.4. Access Roads

Private roads and tracks used during operations will be returned to their pre-operations state, or to a condition agreed by the landholder. As new roads are provided, requirements for, and location of access roads may vary. AGL will work with this to adapt to the evolving nature of road development and access provision in the locality.

No new access roads were constructed or required rehabilitation during this reporting period.

6.1.5. Buildings and Auxiliary Facilities

The provision of offices and auxiliary services for the CGP operations of AGL are located at the RPGP site. There was no rehabilitation of buildings and auxiliary facilities during the reporting period.

6.1.6. Other Infrastructure

Rehabilitation of other infrastructure is not required as part of the CGP.

6.2. Rehabilitation Trials and Research

AGL conducts its operations in areas of extensive previous rural use. It avoids wherever possible stands of remnant native or regrowth native flora at the planning stage. As such AGL rehabilitation processes primarily only require the re-establishment of pastureland.

During this reporting period AGL did not undertake or participate in any rehabilitation research or trials. Ongoing monitoring of rehabilitation completion criteria of the former EM23 well site continued in this reporting period, in conjunction with DRE.

6.3. Further Development of Final Rehabilitation Plan

There are no immediate plans to cease operation of the CGP; however, AGL will continue planning work for site closure. Site closure is a continuous series of activities undertaken throughout the life of a project, and it is important that these activities occur in a systematic and cost-effective manner. AGL recognises that early planning will ensure that the closure of operations is technically, socially and economically feasible, and will result in a more satisfactory environmental outcome.

Upon decommissioning of the gas field infrastructure and cessation of gas production, the current plan for final rehabilitation of the RPGP includes the salvage and sale of equipment, buildings and facilities, ripping of hardstand and compacted areas, the re-profiling and filling of any voids, and spreading of retained topsoil and revegetation with a species mix compatible with the former vegetation.

6.4. Rehabilitation Activities Proposed in Next AEPR Period

Planned rehabilitation activities during the next AEPR reporting period will include AP01, EM02, EM03 and EM04 well sites.

6.5. Further Improvements

Over the forthcoming reporting period, AGL will continue to develop the CGP in accordance with the CGP EMS and AGL's Health, Safety and Environment Management System which is based on ISO 14001: 2004.

6.6. Closure Plan

There are no immediate plans to cease operation of the CGP, however, AGL will continue planning for site closure and progressively plug and abandon each well in accordance with the NSW Code of Practice for Coal Seam Gas Well Integrity as each well reaches the end of its production. Details of wells planned to be P&A will be provided to the DRE annually within the POP.

7. Project Commitments Register

To meet AGL's ongoing commitment to compliance of relevant regulatory requirements, the Compliance Management Team has developed a centralised compliance management system, CMO.

This web-based system is the new central repository for entering, tracking and demonstrating compliance with regulatory obligations relating to relevant AGL assets. CMO provides easy entry of requirements, alerts for pending actions, and reporting of obligations. CMO is a significant shift in the way AGL manages compliance; in a move away from Mipela, CMO is a robust audit and compliance tool, requiring documented records of completed actions to be lodged in the system for verification.

This initial phase of CMO encompassed the obligations under Upstream Gas' various Petroleum Titles, Development Approvals, Pipeline Licences and Environment Protection Licences and Authorities.

During this reporting period, AGL continued its development and use of the CMO system relating to the CGP. Water licences and additional obligations covering general legislative requirements were included in CMO within this reporting period. CMO has also been used successfully for tracking progress with corrective actions arising out of internal and independent audits.

CMO includes project commitments relevant to the CGP. No non-compliances with these commitments were identified during the reporting period.

8. Stakeholder Engagement

This Section of the AEPR describes stakeholder engagement that has been undertaken during the reporting period.

8.1. Environmental Complaints

8.1.1. Stakeholder Management

A complaint handling procedure has been established for the CGP operations. AGL has a 24 hour contact telephone number (1300 799 716) which allows the community to raise issues or concerns that relate to the operations of the Project.

This number is included on signs at property entries and well site compounds as well as on notifications to landowners.

Complaints are entered into a complaints database which triggers AGL personnel to undertake an investigation. Relevant site personnel are also notified to resolve issues and to make them promptly aware of the concern.

Resolution details are communicated directly to the complainant and are presented at the next CCC meeting.

8.1.2. Complaints Register Requirements

This section provides a summary of the environmental complaints received and management actions taken to address issues. The requirement for a complaints register to be maintained and complaints' actions is outlined in the following Development Consents as well as the EPL 12003 for the RPGP:

- DA 246-8-2002-I Schedule 3, Clause 15;
- DA 282-6-2003-i Schedule 5, Clause 19;
- DA 15-1-2002i Schedule 3, Clause 29; and
- DA 75-4-2005 Schedule 2, Clause 59.

The requirements detailed in the above Development Consents are similar with only minor differences in wording between the different approval documents.

In summary the Development Consents require the applicant to record details of all complaints received in an up to date register and record but not necessarily limited to the following:

a) *the date and time, where relevant of the complaint;*

b) *the means by which the complaint was made;*

c) *any personal details of the complainant that were provided, or if no details were provided, a note to that effect;*

d) *the nature of the complaints;*

e) *any action(s) taken by the Applicant in relation to the complaint, including any follow-up contact with the complainant; and*

f) *if no action was taken by the Applicant in relation to the complaint, the reason(s) why no action was taken.*

The Complaints Register shall be made available for inspection by the EPA or the Director-General upon request. A record of the complaint must be kept for at least 4 years after it was made.

8.1.3. Summary of Environmental Complaints

One community complaint regarding environmental concerns was received during this reporting period.

Table 8-1: Environmental Complaint Details

Complaint	Date	Action Taken
Noise Complaint A local resident contacted AGL in regards to noise coming from the SF05 well site.	31 August 2014	Upon being made aware of the noise, AGL stopped the gas flow from the well and contacted the relevant regulators. The CGP Community Relations Manager contacted the complainant. AGL cooperated with the EPA in its investigation into the incident that caused the complaint. Details of further actions taken in response to this complaint are provided in Section 9.1.2

8.1.4. Complaint Trend

The number of complaints received in the 2014 – 2015 reporting period remained the same in comparison with the previous reporting period where one environmental complaint was received.

8.2. Community Consultative Committee

8.2.1. Monitoring Requirement

The requirement for a CCC is outlined in the following Development Consents:

- DA 246-8-2002-I Schedule 3, Clause 31;
- DA 282-6-2003-i Schedule 5, Clause 17;
- DA 15-1-2002i Schedule 3, Clause 90;
- DA 75-4-2005: Schedule 2 Clause 61;
- PA 06_137: Schedule 4, Clause 8;
- PA 06_138: Schedule 4, Clause 8; and
- PA 06_0291 Schedule 4, Clause 8.

The requirements detailed in the above Development Consents are similar with only minor differences in wording between the different approval documents.

In summary the Development Consents require that a CCC is established to oversee the environmental performance of the development. This Committee shall:

a) be chaired by an independent chairperson approved by the Director-General in consultation with the Applicant, Wollondilly Council and Camden Council;

b) have four community representatives residing in the PAL 1 area;

c) have one representative from each council;

d) two representatives appointed by the Applicant (including the environmental officer);

e) two (2) representatives from a recognised environmental group;

f) meet at least quarterly;

g) take minutes of the meeting; and

h) make comments and recommendations about the implementation of the development and environmental management plans, monitor compliance with conditions of this consent and other matters relevant to the operation of the development during the term of the consent.

Representatives from relevant government agencies or other individuals may be invited to attend meetings as required by the Chairperson.

8.3. Community Engagement

AGL has pro-actively engaged with the community in order to keep residents informed of the CGP and ensure that community interests are listened to and addressed. AGL has raised awareness of its activities and created a strong relationship with the community through a range of community engagement initiatives which include:

- Employment of a permanent Community Relations Manager for the CGP;
- Consultation with affected landholders;
- Hosting community member and industry stakeholder site tours and information sessions;
- Listening to and addressing community concerns through monitoring initiatives and studies;
- Participation in community events;
- Volunteering with local initiatives;
- Ensuring the AGL Camden Website is regularly updated; and
- Distributing community consultation material at local events.

A considerable amount of consultation has taken place directly with each landowner. This has ensured that their interests can be quickly understood and specifically addressed.

The CCC was formed in early 2003. The purpose of the committee is to provide a forum of open discussion between AGL and the community. It is aimed at facilitating good working relationships amongst committee members and to act as a channel to assist AGL in improving communication, education and notification within the general community.

The committee consists of:

- Chairperson;
- Camden Council;
- Campbelltown City Council;
- Wollondilly Shire Council;
- Three Community Members; and
- Three AGL Members.

AGL plans to continue to pro-actively engage the community for the duration of the project.

8.3.1. Community Consultative Committee (CCC)

CCC meetings were undertaken on the following dates:

- No. 40: 30 July 2014;
- No. 41: 24 September 2014;
- No. 42: 4 December 2014;
- No. 43: 11 March 2015; and
- No. 44: 17 June 2015.

CCC meeting minutes are made available on the CGP project website[1] once they have been accepted at the following meeting.

The following table outlines a summary of actions arising from meetings and their current status at the time of this document's publication.

Table 8-2: CCC Meeting Action Items (1 July 2014 to 30 June 2015)

Action Item	Responsible	Status
Meeting 40 – 30 July 2014		
Provide current Development Consent for the Rosalind Park Gas Plant to the CCC	AGL	Completed
Discuss process of additional Council representation at the CCC	CCC member	Completed
Meeting 41 – 24 September 2014		
Provide CCC with link to most recent version of CGP Development Consents on DP&E website.	AGL	Completed
Provide CCC with AGL's Annual Sustainability Report when published.	AGL	Completed
Meeting 42 – 4 December 2014		
Provide CCC with AGL's Annual Sustainability Report when published.	AGL	Completed
Meeting 43 – 11 March 2015		
[no actions raised]		
Meeting 44 – 17 June 2015		
Auditor of 2012-14 IEA Report to present findings at next meeting	AGL	To be completed at September 2015 meeting
Write letter to request P&A well locations to be made available to public	CCC Chair	Complete
Circulate NSW Government Community Benefits Fund Discussion Paper	CCC Chair	Completed

[1] http://www.agl.com.au/about-agl/how-we-source-energy/natural-gas/natural-gas-projects/camden-gas-project/camden-gas-project?yearFilter=&categoryFilter=CCC Meetings CGP&sortOrder=DESC&pg=1

8.3.2. Other Consultation and Community Support

The following consultation processes have also been undertaken during this reporting period:

- Platinum Sponsor of Narellan Chamber of Commerce;
- Attendance at monthly Narellan Chamber of Commerce meetings;
- Regular email updates to General Managers and Mayors of Camden, Wollondilly and Campbelltown Local Governments;
- Regular email and phone updates to local State Members of Parliament in the Camden, Campbelltown and Wollondilly Councils;
- Regular email and phone updates and face to face briefings to local Federal Member for Macarthur, Russell Matheson;
- AGL's Camden Website updated regularly *http://www.agl.com.au/about-agl/how-we-source-energy/natural-gas/natural-gas-projects/camden-gas-project*
- Regular project updates and advertorials placed in the Macarthur Chronicle and Camden-Campbelltown Advertisers to update the community on the project, water monitoring and general operations update;
- Information stand at NSW Farmers Association Annual Conference (July 2014);
- Business Community Presentation on AGL projects and Solving for 'x' (July 2014);
- Information Session and Presentation – St Vincent De Paul Nagle Centre (August 2014);
- Presentation on Agriculture and CSG Approaches to coexistence conference (QLD) (September 2014);
- Sponsorship and Information Stand at National Farmers Federation Congress (October 2014);
- Major supporter and sponsor of community event – Christmas in Narellan (November 2014);
- Sponsorship and Marquee at Camden Show (March 2015); and
- External Presentation – APPEA Conference 2015 (May 2015).

8.4. Site Visits

During the reporting period, the following site visits were completed:

- EPA site inspections (x5) to producing well sites (March – June 2015)
- Commonwealth Department of Environment (March 2015)
- Camden Community Open Day (July 2014)
- Macquarie University (August 2014)
- Hunter business owners and landholders (September 2014)
- Victorian State Members of Parliament (September 2014)
- NSW Department of Planning and Environment (September 2014)
- NSW Parliamentary Inquiry Members (December 2014)
- Camden Community Open Day (February 2015)
- Commonwealth Department of Environment (March 2015)
- EPA and Office of Coal Seam Gas (March 2015)
- Camden Council (May 2015)
- Board and Members of Dairy Connect (June 2015).

9. Summary of Environmental Non-Compliance Issues and Actions

9.1. Identification of Environmental Non Compliance Issues

This section describes the performance of the CGP against AGL's environmental regulatory requirements (listed in Section 3.1 of this AEPR). AGL reviews its environmental regulatory requirements through the following process:

- Review during EPL Annual Return process;
- Weekly CMO review;
- Annual revision of the CGP EMP (and Sub Plans, as required);
- Independent Environmental Audits undertaken biennially; and
- Regulatory audits and inspections completed during the reporting period.

This section provides a summary of the environmental non-compliances identified during this reporting period.

9.1.1. Annual Return

Non-conformances with EPL 12003 are reported in the Annual Return to EPA. The Annual Return for EPL 12003 for the period of 22 December 2013 to 21 December 2014 was submitted to the EPA on 18 February 2015 in accordance with the EPL.

There were a total of 6 non-compliances with the EPL reported within the Annual Return in relation to the following:

- EPL 12003 Conditions O2 and M2.1 in relation to M2.3 (continuous air monitoring);
- EPL 12003 Condition O1.1 (underground storage tanks);
- EPL 12003 Condition O1.1 (transfer of produced water);
- EPL 12003 Condition M1.3 (quarterly air monitoring reports details);
- EPL 12003 Condition M3.2 (approved methods for water monitoring); and
- EPL 12003 Condition O2 (unintended release of gas at Spring Farm 05 well site).

The 6 non-compliances recorded within the 2013/14 Annual Return period represents a significant improvement in compliance compared with the 14 non-compliances reported in the 2012/2013 Annual Return. Details of the non-compliances (some of which took place prior to this reporting period given the period covered by the 2013/14 Annual Return), including corrective actions, are provided below.

Non-Compliance with EPL 12003 Conditions M2.1 and O2 – Regarding AGL not operating equipment in a proper and efficient manner for continuous air monitoring

This non-compliance relates to failing to continuously monitor air emissions at Monitoring Points 2 and 3 as required by Licence Condition M2.3. This non-compliance has also been reported in the 2011-12 and 2012-2013 Annual Returns, and reported in the previous AEPR.

Due to the non-compliance with EPL Licence Condition M2.3 and DA-282-6-2003-i Sch. 4 Condition 58 (requirements to undertake continuous monitoring), AGL was unable to comply

with EPL Conditions O2 (requirement to maintain plant and equipment) and M2.1 (requirement to monitor pollutants using the specific sampling method).

EPL Condition O2 requires AGL to maintain and operate all plant equipment in a proper and efficient manner. As equipment failure resulted in the non-compliance for the continuous emissions monitoring system, Condition O2 could not be met.

EPL Condition M2.1 and DA-282-6-2003-i Sch. 4 Condition 58, requires all monitoring to be undertaken in accordance with the specified pollutant concentration, sample frequency and sampling method. Due to equipment failure AGL was not able to comply with the required sample frequency, and hence was not compliant. The non-compliance took place for the full Annual Return reporting period. Monitoring Point 2 and Monitoring Point 3 were non-compliant for the annual return period of 22 December 2013 to 21 December 2014 as monitoring for moisture and flow was not carried out, and monitoring was only conducted for 45 minutes of each hour. At the time of writing, Monitoring Point 2 and 3 are still not fully compliant. AGL has liaised with the EPA on this condition and entered into a PRP for a PEMS 6 month trial as described in section 5.3.1. The PEMS is proposed as a suitable alternative to continuous emissions monitoring to predict NOx in-stack concentrations specifically for Monitoring Point 2 and 3. During the PEMS 6 month trial, AGL will continue monthly independent stack testing on Monitoring Point 2 and 3.

Monitoring Point 1 was not sampled during the Annual Return period as Compressor Engine 1 was shut down due to mechanical issues.

As a result of this non-compliance, AGL entered into an Enforceable Undertaking with the EPA on 8 August 2013. Details of the enforceable undertaking, and actions completed within this reporting period, are provided at section 9.1.3.

Non-Compliance with EPL 12003 Condition O1.1 – Regarding water pollution risk of underground storage tanks

The EPA assessed that AGL was not competently managing the risk of water pollution associated with the storage of oily water in underground concrete storage tanks, in accordance with EPL Condition O1.1

This non-compliance was identified within the 2013 EPA Compliance Audit Report, and included in the 2013-14 Annual Return as the EPA Compliance Audit was not finalised until June 2014.

The non-compliance took place at the two RPGP underground concrete storage tanks (1x 15,000L and 1x 65,000L).

Following the EPA Compliance Audit, AGL has implemented a number of actions to monitor the integrity of the underground storage tanks, including visual assessment of the tank levels up to six times per day, annual tank hold tests, installation of six groundwater monitoring bores around the in-ground tanks and supervision during transfer. AGL is now compliant with this condition.

Non-Compliance with EPL 12003 Condition O1.1 – Regarding water pollution risk relating to transfer of produced water

The EPA assessed that AGL was not competently managing the risk of water pollution associated with the transfer of produced water from tankers to the flare pit, in accordance with EPL Condition O1.1.

The non-compliance took place at the RPGP flare pit loading / unloading point. AGL has an Emergency Response Plan to manage spills and ensures the transfer of produced water to the flare pit is supervised.

Following the EPA Compliance Audit AGL has implemented a number of actions to manage the water pollution risk by implementing a corrective actions plan for the transfer of produced water to the flare pit, including preparation of Job Safety and Environmental

Analysis, Standard Operating Procedures, improved management of bunding and transfer hoses, and engaging a third party to prepare a civil engineering design for storage and transfer of produced water within a designated bunded area. AGL is now compliant with this condition.

Non-Compliance with EPL 12003 Conditions M1.3 (d) – Regarding Quarterly stack testing reports

This non-compliance was identified within the 2013 EPA Compliance Audit Report, and included in the 2013-14 Annual Return as the EPA Compliance Audit was not finalised until June 2014. It was found that quarterly stack testing reports prepared by AGL's specialist consultant did not include the name of the person who collected the sample. The EPA recognised this non-compliance as not having a direct environmental significance. To address this non-compliance AGL has instructed the consultant to include the same of person sampling in future stack testing reports.

This non-compliance occurred March 2013 to December 2013. Since January 2014, AGL has complied with this condition.

Non-Compliance with EPL 12003 Condition M3.2 – monitoring of water pollutants

This non-compliance was identified within the 2013 EPA Compliance Audit Report, and included in the 2013-14 Annual Return as the EPA Compliance Audit was not finalised until June 2014. The EPA found that monitoring for the concentration of pollutants was not conducted in accordance with the 'Approved Methods for the Sampling and Analysis of water pollutants in NSW' (Approved Methods). The non-compliance took place from 29 May 2013 to 5 September 2013.

The NATA accredited laboratory who analysed the water pollutants used 'in-house' methods that were developed from the Approved Methods.

The EPA varied EPL 12003, approving the NATA accredited laboratory 'in-house' methods on 19 September 2014. AGL is now compliant with this condition.

Non-Compliance with EPL 12003 Condition O2 – unintended release of gas at Spring Farm 05 (SF05) well site

On 31 August 2014, at approximately 7.05pm during the startup of the RPGP, a pressure safety valve on the gas/water separator at SF05 activated and natural gas was released to the atmosphere from the pressure safety valve vent line. The pressure safety valve on the SF05 gas/water separator is designed to relieve overpressure from the gas/water separator at the SF05 well facility.

The cause of the release of gas was the presence of coal fines in the SF05 infrastructure, including the SF05 well head pressure transmitter, which resulted in inaccurate pressure readings at the Rosalind Park Gas Plant control room.

In response to the incident AGL has taken a number of corrective actions to reduce the likelihood of this type of incident reoccurring, including:

- Installation and testing of new alarms in the RPGP control room to provide an early warning of high pressure events at all well sites.
- Revision and implementation of revised pre-start checklist standard operating procedures.
- Review of existing CGP standard operating procedures and maintenance plans (including critical function testing), and where appropriate, revise to take into account the potential impact of coal fines on infrastructure. Implement revised checklist standard operating procedures and maintenance plans.
- Further assessment of the design of wellhead facilities that have the potential to produce gas with coal fines will be undertaken and implementation of corrective actions (if required).

- Assessment of The Message Centre (1300 Emergency Response telephone number) procedures.

9.1.2. Penalty Infringement Notices (EPA)

During this reporting period AGL received one Penalty Infringement Notice (PIN) from the EPA in relation to an incidence of non-compliance with EPL12003 Condition O2. The PIN was issued to AGL on 05 March 2015 for failure to 'maintain plant and equipment', which resulted in a release of coal seam gas (methane) from SF05 on 31 August 2014.

The PIN resulted in a penalty payment by AGL to the EPA of $15,000.

9.1.3. Enforceable Undertaking (EU)

During the previous reporting period AGL and the EPA agreed to an Enforceable Undertaking (EU) in response to AGL's failure to comply with continuous emissions monitoring for air emissions at the RPGP. The EU was prepared by AGL and approved by the EPA on 8 August 2013. Further details on the EU are reported in the previous AEPR.

The EU contained a number of actions to be taken by AGL. During this reporting period, AGL completed the last of the EU corrective actions, as follows:

Condition 2.2 – Predictive Emissions Monitoring System (PEMS) Trial

- As required under EPL 12003, a report on the PEMS trial was submitted to the EPA on 29 August 2014.
- The EPA confirmed in an email dated 21 August 2014 that any further PEMS trial or other action will be regulated through the EPL instead of the EU.
- EPL12003 was varied in December 2014 to include the requirement for the Stage 2 PEMS Program, and to provide a Report on the results of the Program to the EPA.
- Hence, AGL has completed this requirement of the EU.

Condition 2.7 – Monthly Independent Air Monitoring

- This condition of the EU required AGL to continue its monthly independent air monitoring of compressor engines 1, 2 and 3 and publication of monthly results on AGL's website until otherwise agreed by the EPA.
- The EPA wrote to AGL on 15 April 2015, stating that the requirement to continue monthly air monitoring has been replaced by conditions of CGP's EPL 12003 as part of the PEMS Pollution Reduction Program 7.
- The EPA stated: "*EPA considers Condition 2.7 of the EU has been satisfied*."

Condition 2.8/2.9 – "Love Your Lagoons"

- Condition 2.8 of the EU required AGL to fund the University of Western Sydney's 'Love your Lagoons' Project. Condition 2.9 outlined details of the Project.
- In a letter to AGL dated 15 April 2015, the EPA stated: "*The EPA considers Condition 2.8 and 2.9 of the EU has* [sic] *been satisfied."*

As a result of fulfilling these requirements, AGL has fully complied with the EU.

9.1.4. Non-Compliances Identified During Independent Environmental Audit

2010 – 2012 Independent Environmental Audit

The previous AEPR identified the progress with corrective actions recommended in the 2010-2012 IEA. During the reporting period one additional corrective action had been completed, which related to monitoring potential subsidence impacts resulting from the CGP.

On 15 July 2014, AGL wrote to the Director-General of the DP&E requesting that the condition be excluded from the scope of the next independent environmental audit (i.e. the 2012-2014 IEA). AGL provided the DP&E a report titled *Assessment of Coal Seam Gas induced Land Subsidence Effects on Groundwater Resources* (11 July 2014), and a transcript of advice from the NSW Office of Water, which stated that there would be "*negligible land subsidence as a result of AGL's Camden Gas Project*".

The DP&E responded to AGL on 21 July 2014, stating that although the condition could not be removed from the scope of the 2012-2014 IEA, the information provided by AGL represented "*a program to monitor any potential land subsidence effects of long term extraction of gas (and water) on the groundwater resource in the PAL1 area*."

The DP&E concluded:

"*AGL may take this advice as evidence that the project will not be considered by the Department to be in non-compliance in not further implementing the requirements of condition 74, including for the purpose of independent environmental audits*."

Hence, the intent of this corrective action has been met. No further works are required.

A total of two corrective actions from the 2010-12 IEA have not yet been completed. Both of these corrective actions relate to seeking a modification of CGP's development consents to provide consistency with the conditions of EPL 12003. AGL has commenced consultation with the DP&E and EPA.

2012 – 2014 Independent Environmental Audit

An IEA was undertaken by Golder Associates Pty Ltd (Golder) for the period of 1 July 2012 to 30 June 2014. The audit assessed whether the CGP had complied with the relevant standards, performance measures, and statutory requirements, as outlined in the relevant CGP development consents.

The Golder IEA concluded:

"AGL has demonstrated substantial compliance with the relevant standards, performance measures and statutory requirements that apply to the development."

The Golder IEA identified a number of administrative non-compliances, but noted that they were unlikely to result in actual or potential harm to the environment or human health. The IEA report identified a total of 17 corrective actions. During this reporting period, 15 of these corrective actions had been completed. Of the two remaining corrective actions:

- The first corrective action related to undertake night time noise monitoring to verify compliance with noise limits for EM39 and GL17 well sites. At the time of writing, this action was in progress, awaiting EM39 and GL17 to be open and producing before AGL can conduct night time noise monitoring.
- The second corrective action related to meeting the EPL requirement for continuous emissions monitoring or develop an alternative monitoring solution to be approved by the EPA. At the time of writing, AGL is working to commence the Stage 2 PEMS program required under EPL Pollution Reduction Program 7. AGL is consulting with the EPA on a revised due date.

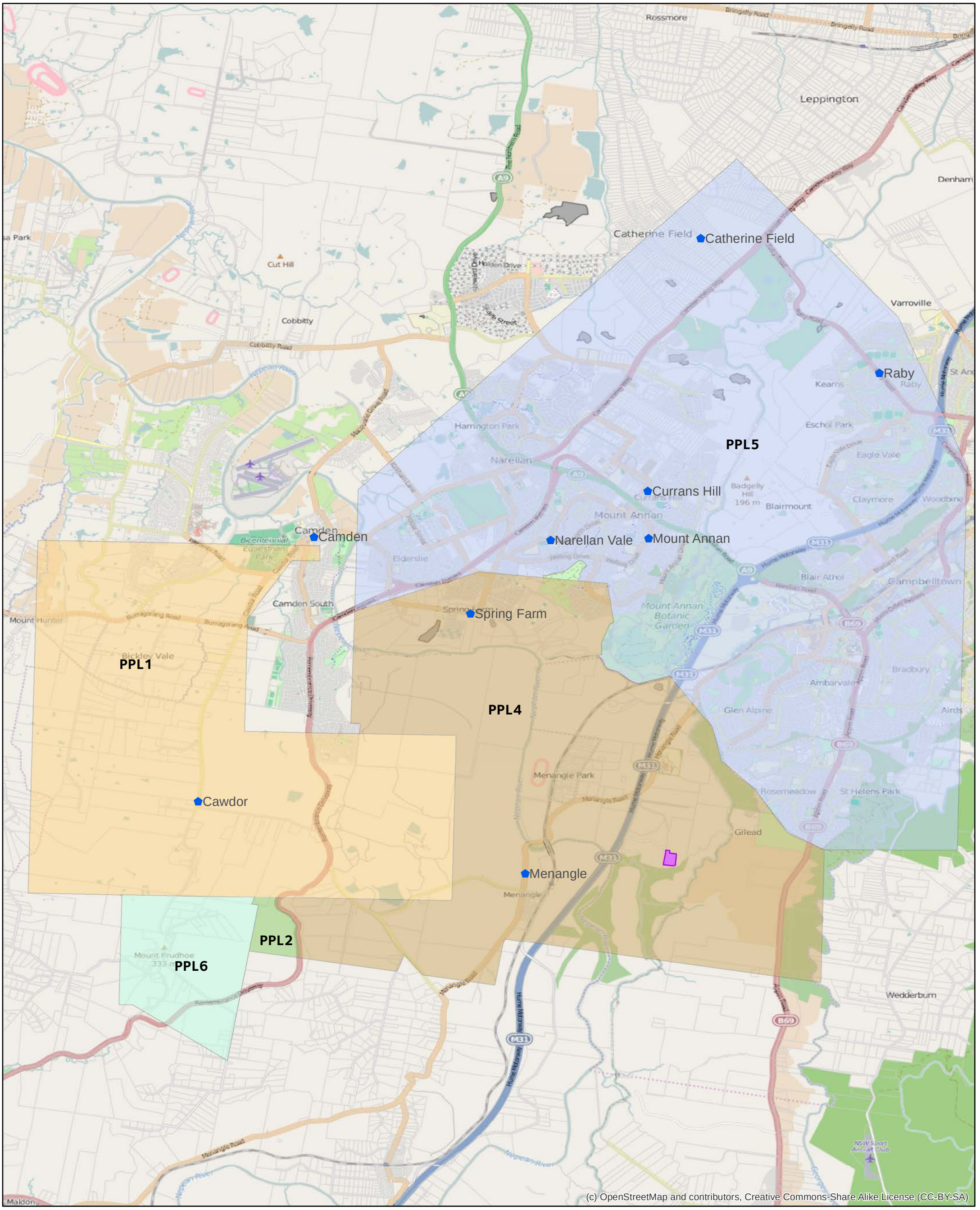
A summary the corrective actions from the 2012-2014 IEA, and their status at the time of writing, is provided at Appendix G.

9.1.5. EPA 2013 Compliance Audit

In the previous reporting period the EPA audited the CGP's compliance with its EPL requirements relating to environmental risks. The EPA issued its final audit report in June 2014. In response, during this reporting period AGL developed a Corrective Actions Register to identify, and track progress with, corrective actions. All corrective actions were completed within this reporting period. A summary of the corrective actions is provided at Appendix H.

Appendix A. Camden Gas Project Petroleum Production Lease (PPL) Locations

Camden Gas Project PPL Locations



Energy in action.™ AGL

Author: Upstream Gas

Date: 05/08/2015

Ref: 1652R4

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Legend

PPL 1 · PPL 2 · PPL 4 · PPL 5 · PPL 6 · Towns · RPGP · Property Boundaries

N W E S

Appendix B. Camden Gas Project Property Details

Area	Well Numbers	Property Lot Number	Deposited Plan No.	DA No.
Apap	AP 01	11	664430	15-1-2002i
	AP 02* & AP03*	11	664430	15-1-2002i (Mod 4 July 07)
Campbelltown Council – Menangle Park	Gas gathering system	3 7 1	236059 787284 249393	282-6-2003i (Mod 26 August 2004)
	Water storage tank	2	236059	282-6-2003i (Mod 26 August 2004)
Joe Stanley	JS 01, JS 03 & JS 04	2	14701	15-1-2002i
Johndilo	JD 01, JD 05, JD 08* & JD 11	64	785367	15-1-2002i
Lipsombe	LP 01	100	793384	15-1-2002i
Logan Brae	LB 05- LB 07 & LB 09 – LB 11	6	808569	15-1-2002i
Landcom	Gas gathering system	2 X D 2	790254 378264 19853 737485	282-6-2003i (Mod 26 August 2004)
Mahon	MH 01	5	773423	15-1-2002i
Kay Park	KP 01 – KP 03	2	594242	246-8-2002i
	KP05 & KP06	2	594242	246-8-2002i (Mod 4 July 2007 & Mod 20 April 2011)
EMAI	EM 01 - 08	11	658458	282-6-2003i (Mod 26 August 2004)
	EM 09, EM11, EM12, EM 14 - EM 17	PT1	168893	282-6-2003i (Mod 26 August 2004)
	EM 10 & EM 13	1	726446	282-6-2003i (Mod 26 August 2004)
	EM 18-EM 20	1	130288	282-6-2003i
	EM 21 (EM 1H), & EM 22 (EM 1V)	1	1067320	9-1-2005
	EM 24-26*, 27, 29*-32	1	130288	PA 06_0138
	EM 28	1	1067320	PA 06_0138
	EM 33-35*, 36*	2	1050479	PA 06_0138

Area	Well Numbers	Property Lot Number	Deposited Plan No.	DA No.
	EM 37	2	1050479	PA 06_0138 (Mod 6 August 2007)
	EM 38	1	130288	282-6-2003i (Mod 4 July 2007)
	EM 39	2	1050479	282-6-2003i (Mod 11 April 2008)
	Gas gathering system	1 1 11 PT1	130288 726446 658458 168893	282-6-2003i (Mod 26 August 2004)
Glenlee	GL 02, GL 04	501	869561	9-1-2005
	GL 05, GL 7-GL 9	1101	883495	282-6-2003i
	GL 06	2	1076817	9-1-2005
	GL 10	1102	883495	282-6-2003i
	GL 11	501	869561	9-1-2005
	GL 12, GL13	501	869561	9-1-2005
	GL14, GL15	1102	883495	282-6-2003 (Mod 16 May 2006)
	GL 16	1101	883495	282-6-2003 (Mod 16 May 2006)
	GL 17	1101	883495	282-6-2003 (Mod 11 April 2008)
	Gas gathering system	1102 & 1101	883495	282-6-2003i (Mod 26 August 2004)
Menangle Park	MP 13-MP 17	10	1022204	183-8-2004-i
	MP30	10	1022204	183-8-2004-i (Mod 4 July 2007)
Mt Taurus	MT 01-MT 10	1	954424	183-8-2004-i
Razorback	RB 03* & RB 04*	1	959711	PA 06_0137
	RB 05*	2	572954	PA 06_0137
	RB 07	81	588337	PA 06_0137
	RB 06, RB 08 & RB 09	124	809576	PA 06_0137
	RB 10	82	588337	PA 06_0137
	RB 11 & RB 12	123	809576	PA 06_0137
Rosalind Park	RP 01*- RP 03	3	622362	282-6-2003i
	RP 02	3	622362	282-6-2003i
	RP 04-RP 07	58	632328	282-6-2003i
	RP 08, RP 09	PT35	230946	282-6-2003i
	RP 10-RP 12	2	622362	282-6-2003i
	Rosalind Park Gas Plant	PT35	230946	282-6-2003i

Area	Well Numbers	Property Lot Number	Deposited Plan No.	DA No.
	Gas gathering system	2 & 3 PT35 58	622362 230946 632328	282-6-2003i (Mod 26 August 2004)
Sugarloaf	SL 01*, SL02, SL 03	2	842735	75-4-2005
	SL 04*, SL 06*, SL 07*	3	1007066	75-4-2005
	SL 05*	2	842735	75-4-2005
	SL 08* & SL 09	2	842735	75-4-2005 (Mod 4 July 2007)
Wandinong	WG 01 – WG06	1242	1121129	282-6-2003i (Mod 26 August 2004)
	Gas gathering system	1242	1121129	282-6-2003i (Mod 26 August 2004)
Wollondilly Shire Council – EMAI and Loganbrae	Gas gathering system	Road Reserve		282-6-2003i (Mod 26 August 2004)
El Bethel*	EB 5	21	581462	DA 171-7-2005
	EB 1	201	590247	DA 171-7-2005
	EB 2, EB 3, EB 4, EB 6, EB 9	202	590247	DA 171-7-2005
	EB 7, EB 8, EB 10	203	590247	DA 171-7-2005
Spring Farm	SF01 – 03 (SF17 site), SF04A*	13	1081753	PA 06_0291
	SF05, SF07 – 09 (SF 20 site), SF10*,	1	1007608	PA 06_0291
	Gas gathering system & access roads	13 1 4 11 2 54	1081753 1007608 1007608 1081753 1076817 864754	PA 06_0291
Menangle Park	MP01 – 03, 09, 10 (MP03 site)	7	253700	PA 06_0291
	MP06*	2 X	790254 378264	PA 06_0291
	MP11	2	737485	PA 06_0291
	MP19*, MP22	8	249530	PA 06_0291
	MP21*, MP12 & MP23 (MP23 site)	1	598067	PA 06_0291
	MP04*	31	1100981	PA 06_0291
	MP05, MP05A, MP07 & MP08	1	790254	PA 06_0291
	MP33*	1	249393	PA 06_0291

Area	Well Numbers	Property Lot Number	Deposited Plan No.	DA No.
	MP24*	2	236059	PA 06_0291
Menangle Park	Gas gathering system and access roads	7 2 X D 2 8 1 11 3 8 31 26 27 1 9 Book 70 Book 80 2 3 1 Menangle Road reserve 63 64 2 12 1001 1002	253700 790254 378264 19853 737485 249530 598067 584016 628052 253700 1100981 249530 249530 790254 253700 No.447 No. 475 236059 236059 249393 Between rail overpass and the Nepean River Bridge 1104486 1104486 842735 249530 734435 734436	PA 06_0291 (Mod 3 20 Apr 2011)

Note the above table does not include potential gathering line options and potential access options.

*Note these wells have been approved but not yet drilled.

Appendix C. Camden Infrastructure Map for FY2015

EM02 Plug & abandoned well

EM03 Plug & abandoned well

EM04 Plug & abandoned well

AP01 Plug & abandoned well

WG04 Gas gathering line

Camden Infrastructure Map
Construction Work completed 2014-15

Author: Upstream Gas

Date: 17/08/2015

Ref: 2790R4

Disclaimer: While AGL has taken great care and attention to ensure the accuracy of the data represented on this map, no liability shall be accepted for any errors or omissions. No part of this map may be reproduced without prior permission of AGL.

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Scale 1:40,000 @A3

Geocentric Datum of Australia 1994

Sources: AGL Energy Limited, Omnilink PSMA Data, SKM

Legend

- Plug & Abandoned Wells
- P&A Wells - Commenced Construction
- Wells
- WG04 Gas Gathering Line
- Gathering Line
- Public Roads
- Hume Highway
- Nepean River
- Railway
- Logan Brae Yard
- RPGP
- Property Boundaries

N

Appendix D. List of Bore Licences and Water Access Licences

Licence No.	WAL	Field	Well name	Licence No.	WAL	Field	Well name
10BL603867	24856	EMAI	EM02	10BL603953	24856	Logan Brae	LB09
10BL603868	24856	EMAI	EM03	10BL603954	24856	Logan Brae	LB11
10BL603869	24856	EMAI	EM04	10BL603955	24856	Mahon	MH01
10BL603870	24856	EMAI	EM05	10BL603956	24856	Menangle Park	MP05
10BL603871	24856	EMAI	EM06	10BL603957	24856	Menangle Park	MP07
10BL603872	24856	EMAI	EM07	10BL603958	24856	Menangle Park	MP08
10BL603873	24856	EMAI	EM08	10BL603959	24856	Menangle Park	MP13
10BL603874	24856	EMAI	EM09	10BL603960	24856	Menangle Park	MP14
10BL603875	24856	EMAI	EM10	10BL603961	24856	Menangle Park	MP15
10BL603876	24856	EMAI	EM11	10BL603962	24856	Menangle Park	MP16
10BL603877	24856	EMAI	EM12	10BL603963	24856	Menangle Park	MP17
10BL603878	24856	EMAI	EM13	10BL603964	24856	Menangle Park	MP30
10BL603881	24856	EMAI	EM14	10BL603965	24856	Mt Taurus	MT01
10BL603882	24856	EMAI	EM15	10BL603976	24856	Mt Taurus	MT02
10BL603883	24856	EMAI	EM16	10BL603978	24856	Mt Taurus	MT03
10BL603884	24856	EMAI	EM17	10BL603981	24856	Mt Taurus	MT04
10BL603885	24856	EMAI	EM18	10BL603989	24856	Mt Taurus	MT05
10BL603886	24856	EMAI	EM19	10BL603990	24856	Mt Taurus	MT06
10BL603887	24856	EMAI	EM20	10BL603991	24856	Mt Taurus	MT07
10BL603888	24856	EMAI	EM21	10BL603992	24856	Mt Taurus	MT08
10BL603889	24856	EMAI	EM22	10BL603993	24856	Mt Taurus	MT09
10BL603890	24856	EMAI	EM23	10BL603994	24856	Mt Taurus	MT10
10BL603891	24856	EMAI	EM24	10BL604007	24856	Razorback	RB06
10BL603892	24856	EMAI	EM25	10BL604008	24856	Razorback	RB07
10BL603893	24856	EMAI	EM27	10BL604009	24856	Razorback	RB08
10BL603897	24856	EMAI	EM28	10BL604010	24856	Razorback	RB09
10BL603898	24856	EMAI	EM30	10BL604011	24856	Razorback	RB10
10BL603899	24856	EMAI	EM31	10BL604012	24856	Razorback	RB11
10BL603900	24856	EMAI	EM32	10BL604013	24856	Razorback	RB12
10BL603901	24856	EMAI	EM33	10BL604014	24856	Rosalind Park	RP02

Licence No.	WAL	Field	Well name	Licence No.	WAL	Field	Well name
10BL603902	24856	EMAI	EM34	10BL604015	24856	Rosalind Park	RP07
10BL603903	24856	EMAI	EM37	10BL604016	24856	Rosalind Park	RP08
10BL603905	24856	EMAI	EM39	10BL604017	24856	Rosalind Park	RP09
10BL603906	24856	EMAI	EM40	10BL604031	24856	Rosalind Park	RP10
10BL603911	24856	Glenlee	GL02	10BL604032	24856	Rosalind Park	RP12
10BL603912	24856	Glenlee	GL04	10BL604033	24856	Spring Farm	SF01
10BL603913	24856	Glenlee	GL05	10BL604034	24856	Spring Farm	SF02
10BL603914	24856	Glenlee	GL06	10BL604035	24856	Spring Farm	SF03
10BL603915	24856	Glenlee	GL07	10BL604036	24856	Spring Farm	SF17 #
10BL603917	24856	Glenlee	GL08	10BL604037	24856	Sugarloaf	SL02
10BL603918	24856	Glenlee	GL09	10BL604038	24856	Sugarloaf	SL03
10BL603919	24856	Glenlee	GL10	10BL604039	24856	Sugarloaf	SL09
10BL603920	24856	Glenlee	GL11	10BL604040	24856	Wandinong	WG01
10BL603921	24856	Glenlee	GL12	10BL604041	24856	Wandinong	WG02
10BL603922	24856	Glenlee	GL13	10BL604042	24856	Wandinong	WG03
10BL603924	24856	Glenlee	GL14	10BL604043	24856	Wandinong	WG04
10BL603925	24856	Glenlee	GL15	10BL604044	24856	Wandinong	WG05
10BL603926	24856	Glenlee	GL16	10BL604045	24856	Wandinong	WG06
10BL603927	24856	Glenlee	GL17	10BL604131	24856	EMAI	EM38
10BL603928	24856	Johndilo	JD01	10BL604582	24856	Menangle Park	MP10
10BL603929	24856	Johndilo	JD04	10BL604597	24736	Kay Park	KP06
10BL603930	24856	Johndilo	JD05	10BL604623	24856	Menangle Park	MP01
10BL603931	24856	Johndilo	JD06	10BL604624	24856	Menangle Park	MP02
10BL603932	24856	Johndilo	JD07A	10BL604625	24856	Menangle Park	MP03
10BL159415	24965	Johndilo	JD10	10BL604626	24856	Menangle Park	MP09
10BL603933	24856	Johndilo	JD11	10BL604672	24856	Menangle Park	MP11
10BL603934	24856	Joe Stanley	JS01	10BL604673	24856	Menangle Park	MP22
10BL603935	24856	Joe Stanley	JS03	10BL604888		Menangle Park	MP25
10BL603936	24856	Joe Stanley	JS04	10BL604884		Spring Farm	SF05
10BL603937	24856	Kay Park	KP01	10BL604885		Spring Farm	SF07
10BL603938	24856	Kay Park	KP02	10BL604886		Spring Farm	SF08
10BL603939	24856	Kay Park	KP03	10BL604887		Spring Farm	SF09

Licence No.	WAL	Field	Well name	Licence No.	WAL	Field	Well name
10BL603940	24856	Kay Park	KP05	10BL604878		Menangle Park	MP05A
10BL603941	24856	Logan Brae	LB05	10BL604879		Menangle Park	MP12
10BL603942	25054	Logan Brae	LB06	10BL604880		Menangle Park	MP23
10BL603952	25054	Logan Brae	LB07				

Key	
	Plugged and abandoned well
#	Pad location only

Appendix E. Status of Well Operations FY2015

Changes from the previous reporting period are shaded in grey.

Current Status of Well Operations

Well Name	Date Completed	Status of Operation June 2014
AP01	2000	Commenced Plugged and Abandonment
EB01-10	Incomplete	Approved – Not Drilled (DA now expired)
EM01	Incomplete	Plugged and Abandoned
EM02 - 20	2005	Drilled
EM02	2005	Commenced Plugged and Abandonment
EM03	2005	Commenced Plugged and Abandonment
EM04	2005	Commenced Plugged and Abandonment
EM21 and 22	2002	Drilled
EM23	2007	Plugged and Abandoned
EM24, 25, 27, 28, 30, 31,32, 33, 34, 37, 38	2007	Drilled
EM26, 29, 35, 36	Incomplete	Approved – Not Drilled
EM39	2008	Drilled
EM40	2006	Drilled
GL01	Incomplete	Approved – Not Drilled.
GL02, 04, 05, 06, 07, 08, 09 and 10.	2003	Drilled
GL03	2003	Plugged and Abandoned
GL11	2005	Drilled
GL12, 13, 14, 15 and 16	2006	Drilled
GL17	2008	Drilled
JD01, 05, 07A and 11	1999	Drilled
JD02, 03, 06, 09 and 10	1999	Plugged and Abandoned
JD04	1999	Plugged and Abandoned
JD08	Incomplete	Approved under PEL 2 – Not Drilled
JS01, 03 and 04	1999	Drilled
JS02	2000	Plugged and Abandoned
KP01, 02 and 03	2002	Drilled
KP05	2008	Drilled
LB01, 02, 03, 04 and 08	Incomplete	Approved – Not Drilled
LB05, 06, 07, 09, 10	2001	Drilled

Well Name	Date Completed	Status of Operation June 2014
LB11	2007	Drilled
LP01	Incomplete	Not Completed
MH01	Incomplete	Not Completed
MP13, 14, 15, 16 and 17	2003	Drilled
MP30	2008	Drilled
MT01 02, 03, 04, 05, 06, 07, 08, 09 and 10	2004	Drilled
Ray Beddoe Treatment Plant	2001	Decommissioned and rehabilitated (2008)
RB03, 04 and 05	Incomplete	Approved – Not Drilled
RB06, 07, 08, 09, 10, 11 and 12	2007	Drilled
Rosalind Park Gas Plant	2004	Operating
RP01	Incomplete	Approved – Not Drilled
RP02 - 12	2003	Drilled
SL01, SL04, SL05, SL06, SL07, SL08	Incomplete	Approved – Not Drilled
SL02 and SL03	2006	Drilled
SL09	2008	Drilled
WG01 – 05	2003	Drilled
WG06	Incomplete	Not Completed
SF04A, 10	Incomplete	Approved – Not Drilled
MP05, 07, 08	2009	Drilled
MP04, 06, 19, 21, 24, 33	Incomplete	Approved – Not Drilled
SF 01, 02, 03	2009	Drilled
SF 05, 07, 08, 09	2010	Drilled
MP01, 05A, 12, 23	2010	Drilled
KP06	2011	Drilled
MP02, 03, 09, 10, 11, 22	2011	Drilled
MP25	2012	Drilled

Appendix F. Environmental Control Measures and Monitoring Requirements

Environmental Management Control Measures and Monitoring Requirements

This section provides an overview of the control measures and monitoring requirements that are required by the CGP's project approvals, development consents and licence conditions for the following environmental factors:

- Air Pollution;
- Erosion and Sediment;
- Surface Water and Groundwater;
- Waste Management;
- Hazardous Materials;
- Contaminated Land;
- Threatened Flora and Fauna;
- Noxious Weeds;
- Operational Noise;
- Construction Noise;
- Visual Amenity;
- Aboriginal Heritage;
- European Heritage;
- Bushfire;
- Safety and Risk Management; and
- Rehabilitation.

Air Pollution

Air pollution is managed through air quality control measures contained in the Air Quality Management Sub Plan (AQSMP). The key control measures employed to meet the objectives for air quality are summarised in Table F-1.

Table F - 1: Control measures - Air Pollution

Activity	Control Measure	Frequency	Responsibility
General	Undertake inductions for site personnel that includes (where relevant): • Overview of the AQSMP Objectives and key Responsibilities • Location of sensitive receptors for air emissions • Incident reporting for air quality related incidents (including Pollution Incident Response Management Plan and Emergency Response Plan)	CGP Employee and Contractor HSE Inductions	Environment and Safety Officer
Training	Train Operators in SOPs for the operation and maintenance of air emission monitoring equipment including: • CEMS *(DCS_CM_SOP_PT_041; DCS_CM_SOP_PT_042; DCS_CM_SOP_PT_058)* • PEMS *(DCS_CM_SOP_PT_043)* • LDAR *(DCS_GN_SOP_FO_014)*	When new operators commence Following changes to the AQSMP	Camden Superintendent
Operating Plant and Equipment	• Verification of CEMS data *(DCS_CM_SOP_PT_058)*	Daily	Ecotech (Compressor 1) Plant Operator (Compressor 2 and 3)
	• Review QA/QC process of Ecotech CEMS data for Compressor 1 *(DCS_CM_SOP_PT_058)*	Monthly	Environment Manager

Activity	Control Measure	Frequency	Responsibility
	• Undertake operations in accordance with SOPs • Undertake corrective actions when high level alarms are recorded on CEMs equipment • When identifying control measures for the management of air emissions, implement the hierarchy of controls (eliminate the source, substitute, engineering, administrative, PPE) • Operate plant and equipment (including compressors, reboilers, scrubbers, flares, ggl, air emission monitoring equipment, infrastructure and drilling /workover rigs) in an efficient manner to minimise air emissions • Operate plant and equipment in a manner that limits greenhouse gas emissions (e.g. optimise and schedule vehicle activities to reduce fuel consumption). • Minimise the volume of gas that is flared	Ongoing	Camden Superintendent
	• Undertake inspection of RPGP and assess for odour and air emissions (e.g. leaks) and implement corrective actions to eliminate or repair leaks.	Daily	Plant Operator
	• Undertake LDAR survey of well sites and implement corrective actions to eliminate or repair leaks *(DCS_GN_SOP_FO_014).*	Monthly	Production Supervisor
	• Undertake the annual LDAR program at well sites, gas gathering lines and the RPGP *(DCS_GN_PG_FO_001).*	Annually	Environment Manager
Emergency Response	• When EPL 12003 air emission concentration limits are met and/or exceeded (e.g. CEMs, monthly and quarterly monitoring results), the RPGP emergency response action for a regulatory breach are implemented.	Ongoing	Camden Superintendent
Maintenance of Plant and Equipment	• Implement a critical spares inventory management system which includes a listing of air monitoring equipment and corresponding maintenance schedule • Maintain plant and equipment (including air monitoring equipment) in an efficient condition • Undertake maintenance following report of leaks from LDAR monitoring to eliminate air emissions • Maintain vehicles and machinery to comply with emission standards and minimise emissions to air	Ongoing	Camden Superintendent

Activity	Control Measure	Frequency	Responsibility
Rehabilitation	• Prepare for rehabilitation activities to prevent and minimise dust by implementing the hierarchy of controls (eliminate the source, substitute, engineering, administrative, PPE) • Monitor rehabilitation activities to eliminate and/or minimise dust generation and emissions to air (e.g. odour). • Implement dust control measures, such as the use of water carts, in the event of dust generation. Vehicles shall remain on designated roads and access tracks and adhere to project vehicle speed limits. • Vehicles that carry a potentially dust generating load shall be covered at all times, except during loading and unloading.	Ongoing	Land & Compliance Officer
Construction	• Prepare for construction activities to prevent and minimise dust during construction by implementing the hierarchy of controls (eliminate the source, substitute, engineering, administrative, PPE) • Construction activities shall be monitored to identify excessive dust generation. Dust control measures such as the use of water carts shall be implemented in the event of dust generation. Vehicles shall remain on designated roads and access tracks and adhere to project vehicle speed limits. Vehicles that carry a potentially dust generating load will be covered at all times, except during loading and unloading.	Ongoing	Construction Project Manager

Rosalind Park Gas Plant – DA-282-6-2003-i

Development Consent DA-282-6-2003-i, Schedule 4 CoC 47, 48, and 58 specifies requirements to monitor air quality for the production area and air emission criteria (refer Table F-2).

Table F - 2: Air Quality Criteria and Monitoring Requirements - DA-282-6-2003 (Rosalind Park Gas Plant)

DA-282-6-2003 RPGP - Air Quality Criteria and Monitoring Requirements
Schedule 4. CoC 47 The applicant shall ensure air pollutant emissions do not exceed the following criteria at any privately owned residence: Nitrogen Dioxide: 246 µg/m3 (1 hour average) and 62 µg/m3 (annual average)

DA-282-6-2003 RPGP - Air Quality Criteria and Monitoring Requirements
Sulphur Dioxide: 570 µg/m3 (1 hour average) and 60 µg/m3 (annual average) Sulphuric acid mist: 33 µg/m3 (3 minute average) Methyl mercaptan: 0.84 µg/m3 (3 minute average)
Schedule 4. CoC 48 For each discharge point the applicant shall ensure the concentration of the pollutant discharged does not exceed the concentration limit specified for that pollutant in the table. POINTS 1,2,3: Oxides of Nitrogen (461 mg/m^3) Sulphur Dioxide (7 mg/m^3) Sulphuric acid mist and/or sulphur trioxide (5 mg/m^3) POINT 4: Oxides of Nitrogen (110 mg/m^3) Sulphur Dioxide (35 mg/m^3) Sulphuric acid mist and/or sulphur trioxide (3.5 mg/m^3) POINT 5: Oxides of Nitrogen (13 mg/m^3) Sulphur Dioxide (1042 mg/m^3) Sulphuric acid mist and/or sulphur trioxide (35 mg/m^3)
Schedule 4. CoC 58 For each monitoring/ discharge point or utilisation area specified in the tables below (by a point number), the Applicant must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The Applicant must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns. POINTS 1, 2, 3 - Oxides of Nitrogen, Temperature, Moisture, Volumetric flow rate, Oxygen (*continuous*). POINTS 1, 2, 3, 4, 5 – Velocity, Volumetric flow rate, Temperature, Moisture, Dry gas density, Molecular weight of stack gases, Oxygen, Carbon dioxide, Oxides of Nitrogen, Sulphuric Acid Mist/Sulphur Trioxide, Sulphur Dioxide, Selection of sampling positions (*quarterly*). POINT 6 – Velocity, Volumetric flow rate, Temperature, Moisture, Dry gas density, Molecular weight of stack gases, Oxygen, Carbon dioxide, Odour, Selection of sampling positions (*quarterly*).

DA 282-6-2003, Schedule 5, CoC 12 and EPL 12003 (L2) stipulate annual load limits for assessable pollutants that must not be exceeded during the reporting period from the RPGP. The load limits are reproduced in the Table F-3. AGL is required to report the calculated annual load amounts of the below pollutants within the Annual Return document each year.

Table F - 3: EPL Load Limits for Assessable Pollutants – RPGP (Sch. 5 CoC 12 and EPL. Condition L2)

Assessable Pollutant	Load Limit (kg)
Benzene	47
Benzo(a) pyrene	0.27
Fine Particulates	460
Hydrogen Sulphide	1.6
Nitrogen Oxides	103,000

Assessable Pollutant	Load Limit (kg)
Nitrogen Oxides – summer	No limit stipulated
Sulphur Oxides	3,000
Volatile Organic Compounds	33,000
Volatile Organic Compounds - summer	No limit stipulated

Construction and Field Operations – Dust Requirements

A number of development consents stipulate requirements relating to dust management. These are summarised in the Table F-4.

Table F - 4: Dust Minimisation Requirements

Condition	Requirement
EPL 12003, Operating Condition 6. DA 15-1-2002, CoC 58; DA 246-8-2002, CoC 25 to 27; DA 282-6-2003, CoC 4-51 to 53; DA 75-4-2005, CoC 23; DA 171-7-2005, CoC 3-9; Petroleum Production Lease (PPL) No.2, Condition 7 and PPL No.1, Condition 7. Project Approval 06-137, CoC 3-7, Project Approval 06-138, CoC 3-7 and Project Approval 06_0291 CoC 3-8.	AGL should ensure that activities are carried out in a manner that will minimise or prevent the emission of dust, including traffic generated dust.

Erosion and Sediment

Erosion and sediment control measures are contained in the Soil and Water Management Sub Plan. The key control measures employed to meet the objectives for erosion and sediment are summarised in the below table.

Table F - 5: Control measures – Erosion and Sediment Control

Activity	Action	Area		Responsibility
		RPGP	Field	
1. General Control Measures				
Construction, Operation, Rehabilitation	Undertake all works in accordance with the requirements set out in Section 120 of the *Protection of the Environment Operations Act 1997*, except as may be expressly provided for by a licence under the *Protection of the Environment Operations Act 1997* in relation to the development.	✓	✓	Environment Manager
Construction, Operation, Rehabilitation	Prevent siltation of any stream or watercourse or catchment area.	✓	✓	Environment Manager
Construction, Operation	Use diversion drains, silt fences and check dams where practicable to divert surface water around disturbed areas and control runoff velocity.	✓	✓	Environment Manager
Construction	Ensure the route of gas gathering and water transport systems and access roads follow previously or currently disturbed areas wherever possible.		✓	Land and Compliance Officer and Operations Manager
Construction, Operation	Only undertake works within 20 metres of watercourses during dry weather conditions.		✓	Environment Manager
Construction	Ensure the pipeline crossings of Remembrance Drive and Finns Road are located at a depth of at least 1.2 metres below the road surface. (Note: this work is complete)		✓	Operations Manager

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation	Store and manage the use and disposal of water in accordance with EPA's Waste Classification Guidelines (DECC, 2009).	✓	✓	Environment Manager
Construction, Operation, Rehabilitation	Undertake the works in a way that minimises the potential surface water impacts of the development.	✓	✓	Environment Manager
Construction, Operation, Rehabilitation	Ensure that the disturbance to the bed and banks of all watercourses are kept at an absolute minimum during the construction procedure and reinstatement of the site.		✓	Environment Manager
Construction, Operation, Rehabilitation	Prevent or otherwise minimise the amount of dirty water leaving site.	✓	✓	Environment Manager
Construction, Operation, Rehabilitation	Undertake regular testing of waste water quality for compounds, nutrients and metals, as outlined in Table 7.8 of the EIS where waste water is applied to land.		✓	Environment Manager
Construction, Operation, Rehabilitation	Undertake monitoring of land and receiving waters to determine the impact of waste water application, if applicable.	✓	✓	Environment Manager
Construction, Operation	Ensure that waste water from the construction, installation and operation of wells and associated infrastructure is only applied to the following areas: a) Dust suppression on any unsealed roads within PAL 1; b) Irrigated onto pastures within PAL 1; c) Evaporation dam (now backfilled and remediated); and d) Reinjection into gas wells.		✓	Environment Manager

Activity	Action	Area		Responsibility
		RPGP	Field	
Pre-Activity	Prepare a detailed feasibility study of reinjection of waste water into a gas well if this method of disposal of waste water is proposed, and obtain the approval of the Director-General for reinjection of waste water into a gas well.		✓	Operations Manager
Construction, Operation, Rehabilitation	Do not allow spray from waste water application to drift beyond the boundary of the waste water utilisation area to which it is applied.		✓	Environment Manager
Construction, Operation, Rehabilitation	Ensure all waste water that is used for dust suppression and / or irrigation has a salinity of less than 800 µS/cm.		✓	Environment Manager
Construction, Operation	Ensure there are no adverse effects to the structural integrity of the Upper Canal and associated structures nor impact the quality of water in the Upper Canal under the construction and operation of the development, and ensure all persons involved in the works are informed of this requirement.		✓	Operations Manager
Construction	Ensure compliance with all requirements in Sydney Water's Guidelines on Precautions when Building Over or Adjacent to Sydney Water Assets.		✓	Operations Manager
2. Water Quality				
Operation, Rehabilitation	All saline groundwater which would exceed the ANZECC guidelines for the protection of aquatic ecosystems and irrigation application purposes is contained in lined holding ponds and is diluted with fresh water prior to any application of the water to the land surface.		✓	Environment Manager
3. General Erosion				

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation, Rehabilitation	Document the decommissioning of all sediment and erosion control works to the satisfaction of the Director-General and in accordance with the NSW Department of Housing's (now Landcom)'s publication 'Managing Urban Stormwater: Soils and Construction'	✓	✓	Environment & Safety Officer
Construction, Operation, Rehabilitation	Implement all erosion and sediment control measures consistent with the requirements of Managing Urban Stormwater: Soils and Construction manual (Landcom, 2004, or its latest version).	✓	✓	Environment Manager
Construction, Operation, Rehabilitation	Take all practicable measures to minimise soil erosion and the discharge of sediments and water pollutants, and to maintain soil quality, integrity and structure.	✓	✓	Environment Manager
Construction, Operation, Rehabilitation	Implement site drainage and sediment and erosion control works and measures and any other pollution controls as required by the relevant conditions, prior to the commencement of any other works at the site.	✓	✓	Environment Manager
Construction, Operation, Rehabilitation	Conduct operations in such a manner as not to cause or aggravate soil erosion, and observe and perform any written instructions given or which may be given by the Minister with a view to minimising or preventing soil erosion.	✓	✓	Environment Manager
Construction, Operation, Rehabilitation	Ensure all material used to control erosion at the gas gathering system and access roads consists of biodegradable materials. No plastic netting is to be used for any purpose unless such netting is of a rapidly biodegradable variety.		✓	Environment Manager
4. Diversion Drains				

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction	Construct diversion drains as necessary to divert surface water drainage away from soil stockpiles, drill pits and other disturbed areas in accordance with this plan. Do not leave any area (requiring diversion drains) overnight without diversion drains unless approved by the Environment Manager (or delegate).		✓	Environment Manager
5. Silt Fences and Hay Bale Filters				
Construction, Operation, Rehabilitation	Install silt fences and/or hay bale filters when required around the downslope perimeter of disturbed areas where potential for significant sediment migration is identified by the Environment Manager.		✓	Environment Manager
6. Watercourse Crossings				
Construction	Ensure construction activities do not interfere with the flow of water in any stream or watercourse, particularly lateral water flows.		✓	Land & Compliance Officer
Pre-Activity	Where required, obtain a Controlled Activity Approval prior to the commencement of construction of any watercourse crossing.		✓	Land & Approvals Manager
Construction, Operation, Rehabilitation	Install a filter fence either side of the area of works when crossing drainage channels/water courses (including gas gathering lines and access tracks), to provide sufficient space between the filter fences for the works to be undertaken.		✓	Environment Manager
Construction, Operation, Rehabilitation	Do not stockpile soil within 5 metres of the bed of the drainage channel/ water course, unless the drainage channel/ water course is more than 20 metres wide.		✓	Land & Compliance Officer

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation, Rehabilitation	Construct temporary waterway crossings where roads traverse natural drainage lines in accordance with the documents list in Appendix A. Where appropriate, install barrier mesh (upslope) and sediment fencing (downslope) or similar materials.		✓	Land and Compliance Officer
Construction, Operation, Rehabilitation	In relation to temporary waterway crossings, unrestricted vehicular plant access to undisturbed areas is not permitted.		✓	Land and Compliance Officer
Construction, Operation, Rehabilitation	Ensure the design and construction of all watercourse crossings is undertaken by a suitably qualified person in accordance with the Guidelines for Watercourse Crossings (NOW, 2010).		✓	Land and Compliance Officer
Pre-Activity, Construction, Operation, Rehabilitation	Design and locate temporary waterway crossings in a way to minimise the design and construction footprint and extent of proposed disturbances within the watercourse and riparian corridor, and avoid impacts to the natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse.		✓	Environment Manager
Pre-Activity, Construction, Operation, Rehabilitation	Only undertake trench stream crossings where permitted (refer to DA 282-6-2003i 74 Sch 4).		✓	Environment Manager
Pre-Activity, Construction, Operation, Rehabilitation	In areas where trench crossing is permitted, ensure a representative trenched crossing design is prepared and implemented by a person(s) with relevant knowledge, qualifications and experience, in consultation with the Director-General. Refer to DA 282-6-2003i 74 Sch 4 (Section 1.5.2) for further detail of what is required in the design.		✓	Environment Manager

Activity	Action	Area		Responsibility
		RPGP	Field	
Pre-Activity, Construction, Operation, Rehabilitation	Advise the Director-General of the proposed stream crossing methods located on EMAI, which are to be assessed and approved by the DWE prior to the issue of the Part 3A Permit. (Note: this work is complete)		✓	Land and Approvals Manager
Pre-Activity, Construction	DA 282-6-2003i: 75 (Sch 4) - Stream crossing I as shown on plan Camden Gas Project Stage 2 – RFI Act 3A Permit Areas by Sydney Gas is strapped to the Menangle Bridge. (Note: this work is complete)		✓	Operations Manager
7. Soil Stockpiles				
Pre-Activity, Construction, Operation, Rehabilitation	Construct soil stockpiles in accordance with details in Chapter 4.3 of Managing Urban Stormwater – Soils and Construction (Landcom, 2004).		✓	Land and Compliance Officer
Construction, Operation, Rehabilitation	Ensure stockpiles have a maximum height of 3 metres and are battered to a maximum slope of 2(H):1(V).		✓	Land and Compliance Officer
Construction, Operation, Rehabilitation	Minimise stockpile heights and volumes, where practical.		✓	Land and Compliance Officer
Construction, Operation, Rehabilitation	Implement additional containment measures for the stockpile in the event of likely significant movement of material from the stockpile due to rainfall or wind, as directed by the Environment Manager.		✓	Land and Compliance Officer
Construction, Operation, Rehabilitation	Vegetate stockpiles that are to remain on-site for a long period of time.		✓	Land and Compliance Officer

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation, Rehabilitation	Moisten stockpiles if the material is being transported by wind.		✓	Land and Compliance Officer
8. Batters				
Construction, Operation, Rehabilitation	Ensure batters of completed embankments are less than 3(H):1(V), and ensure batters are stabilised and disturbed areas are revegetated immediately following completion of earthworks, in accordance with Chapter 7 of Managing Urban Stormwater – Soils and Construction (Landcom, 2004).		✓	Land and Compliance Officer
9. Rehabilitation				
Rehabilitation	Maintain and monitor all rehabilitated riparian zones for a period of at least two years after final planting. Maintenance must include sediment and erosion control, watering, weed control, replacement of plant losses, disease and insect control, mulching and any other requirements for achieving successful vegetation establishment.		✓	Environment Manager
Rehabilitation	Ensure the prompt and effective rehabilitation of all disturbed areas of the site following the completion of construction, operations and associated activities and/or the decommissioning of plant, to minimise the generation of wind erosion dust.	✓	✓	Environment Manager
Operation, Rehabilitation	For well sites, drain the gas reservoir (as determined in line with technical and commercial analysis) remove the surface equipment, plug and abandon the well in accordance with the Division of Resources and Energy within the DTI-DRE Guidelines, and rehabilitate the site to its previous state or better.		✓	Operations Manager

Activity	Action	Area		Responsibility
		RPGP	Field	
Operation, Rehabilitation	Ensure backfilling, compacting, replacement of topsoil, contouring and revegetation along the pipeline route is undertaken to rehabilitate the gas gathering system.		✓	Environment Manager
Operation, Rehabilitation	For water crossings, ensure topsoiling, revegetation, mulching, weed control and maintenance are undertaken in order to adequately restore the integrity of the riparian corridor.		✓	Environment Manager
Rehabilitation	For all trenched water crossings, ensure the natural bed and bank profiles are restored to their original condition, with smooth and even surfaces following installation of the gas pipe.		✓	Environment Manager
Rehabilitation	Ensure trenches/routes of gas gathering and water transport lines are rehabilitated and reseeded with local grass seeds on completion of the work/pipe laying.		✓	Environment Manager
10. Construction Pads				
Pre-Activity, Construction	Progressively strip topsoil from areas to be disturbed and stockpile separately from other excavated material.		✓	Land and Compliance Officer
Pre-Activity, Construction	For permanent construction pads, ensure berms or benches are used on batters with a vertical height greater than 5m.		✓	Land and Compliance Officer
Pre-Activity, Construction	Use grass filter strips (of minimum 300 mm width) on small steep embankments to control sheet flow and sediment run-off (for permanent construction pads).		✓	Land and Compliance Officer
11. Drilling				
Construction	Provide a polyethylene membrane lined drill pit to retain drilling debris and associated water for the drilling process, prior to drilling works.		✓	Environment Manager

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation	Ensure the drill pit is bunded on the upslope side, the downslope side, and at least one other side.		✓	Environment Manager
Operation	Ensure regular inspections of the levels in pits are undertaken to manage drill cuttings, including coal fines, to ensure each pit does not exceed approximately 80% of its holding capacity.		✓	Drilling Engineer
Operation	Ensure drilling debris and associated water from the drilling process are captured by the drill pit.		✓	Drilling Engineer
Operation	Transport any produced water from the site and reuse on future drill sites if possible or dispose at licensed disposal facilities.		✓	Environment Manager
Operation	Dispose of any collected drilling fluids and groundwater (that are not reused) at an authorised wastewater treatment facility.		✓	Environment Manager
12. Access Roads / Tracks				
Pre-Activity, Construction, Operation	Keep access tracks to a minimum and position them so that they do not cause any unnecessary damage to the land.		✓	Land and Compliance Officer
Construction, Operation	Ensure temporary access tracks are ripped, topsoiled and revegetated as soon as possible after they are no longer required.		✓	Environment Manager
Operation	Restrict the use of any road or track during wet weather to prevent damage.		✓	Operations Manager
Construction, Operation	Restrict access to formed tracks, either via existing tracks where possible, or construct new tracks.		✓	Land and Compliance Officer
Construction, Operation	Undertake construction of new tracks or upgrades of existing tracks in accordance with the relevant measures outlined in Appendix A.		✓	Land and Compliance Officer

Activity	Action	Area		Responsibility
		RPGP	Field	
13. Bed Level Crossings				
Construction	Ensure the design and construction of all bed level crossings are undertaken by a suitably qualified person in accordance with the Guidelines for Watercourse Crossings (NOW 2010).		✓	Land and Compliance Officer
Construction	Ensure the finished surface of the crossing is to be at the same height as the existing bed level of the creek.		✓	Land and Compliance Officer
Construction	Do not obstruct water flow or fish passage along the creek as a result of the construction of the crossing.		✓	Land and Compliance Officer
Construction	Ensure the crossing is evenly aligned with the adjoining bank and floodplain profile and that it does not reduce the capacity of protected waters in any way.		✓	Land and Compliance Officer
14. Trenching (Gathering Lines)				
Pre-Activity, Construction	Design, construct and operate the pipeline in accordance with the Australian Standard for the Installation and Maintenance of Plastic Pipe Systems for Gas AS 3723-1989 (or its latest version).		✓	Operations Manager
Construction	Install the gas pipe at least 2 metres below the bed of a watercourse where nominated, and ensure the bed and the banks of the watercourse are not disturbed.		✓	Operations Manager
Construction, Operation	Ensure spoil from trenching is temporarily stockpiled adjacent to the trench on the upslope side of the trench where possible. Where a chain trencher is used, spoil may be stockpiled on both sides of the trench.		✓	Land and Compliance Officer
Construction, Operation	Stockpile topsoil separately to the underlying soils. This means that there will be two windrows of material adjacent to the trench.		✓	Land and Compliance Officer

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation, Rehabilitation	Backfill the trench as soon as practical using the excavated spoil.		✓	Land and Compliance Officer
Construction, Operation, Rehabilitation	If the trench is not backfilled on the day of excavation, cut off drains or silt fencing will be installed upslope of the spoil to divert surface water.		✓	Land and Compliance Officer
Construction	Construct the gas gathering system so as not to impede lateral water flows.		✓	Land and Compliance Officer
Construction, Operation, Rehabilitation	Do not discharge stormwater, including that collected within a trench, to existing waterways.		✓	Land and Compliance Officer
Construction, Operation, Rehabilitation	Ensure that no crown or camber remains along the gas gathering systems, following construction and rehabilitation.		✓	Land and Compliance Officer
Construction, Operation	Notify the DP&E on the completion of any trenching works		✓	Operations Manager
15. Infrastructure Underboring				
Construction, Operation	Follow the same requirements for underboring sites as well head locations with respect to controls around the perimeter of the work area.		✓	Land and Compliance Officer
Construction, Operation	Use suitably sized pits to capture underbore drill cuttings and drilling water.		✓	Land and Compliance Officer
Construction, Operation	Undertake all underboring (and monitoring of underboring) of the Upper Canal to the satisfaction of the Sydney Catchment Authority.		✓	Operations Manager
Construction, Operation	Undertake underboring of the Upper Canal at a reduced force or load if vibration levels exceed 2.4 millimetres per second (mm/s)		✓	Operations Manager

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation	Cease any underboring of Upper Canal if vibration levels exceed 3 mm/s, except with the prior agreement of the Sydney Catchment Authority.		✓	Operations Manager
16. Site Specific Management Measures				
All sites				
Construction, Operation	Ensure a documented layout of the erosion and sediment controls are prepared for each well surface location prior to construction commencing.		✓	Environment Manager
Construction, Operation	Wells are to be constructed and operated in accordance with the Code of Practice for Coal Seam Gas – Fracture Stimulation Activities and Code of Practice for Coal Seam Gas – Well Integrity.		✓	Operations Manager
MP25				
Construction	Undertake regular on-site monitoring during construction of MP25 to ensure that the updated Soil and Water Management Plan is being implemented to prevent run-off from disturbed areas from entering the Nepean River. (Note: this work is complete)		✓	Environment & Safety Officer
Construction, Operation	Prepare a contingency plan to address any groundwater brought to the surface that exceeds the capacity of onsite detention structures, and would avoid discharges from the site (otherwise than in accordance with an environment protection licence).		✓	Operations Manager
Construction	Ensure that no drilling fluids are discharged to land. (Note: this work is complete)		✓	Drilling Engineer

Activity	Action	Area		Responsibility
		RPGP	Field	
Operation	Use above ground baffle tanks for the storage of drilling debris and associated water for MP25, in place of, or in parallel with lined drill pits for MP25. (Note: this work is complete)		✓	Drilling Engineer
Operation	Ensure all drilling fluids and groundwater collected that are not reused are disposed of at an authorised wastewater treatment facility.		✓	Environment Manager
Operation	Install appropriate control measures at the downslope perimeter of disturbed areas on the MP25 drill site, to be used when water ponding for settling of sediments and energy loss is the objective. (Note: this work is complete)		✓	Land & Compliance Officer
Construction, Operation	Implement all reasonable and feasible measures to ensure that there will be no discharge of polluted waters to either surface waters or groundwater from the site activities during the construction and operation.		✓	Environment Manager
Construction, Operation	Keep the on-site storage of fuel, lubricants and any chemicals used to a minimum, and ensure these items are stored in bunded containment areas.		✓	Environment Manager
Construction, Operation	Do not use evaporation ponds in connection with this well.		✓	Environment Manager
Construction	Keep spill response equipment (including absorbent materials, shovels, and sand bag sacks) on site during drilling, and replace any work over of MP25 as required. (Note: this work is complete)		✓	Environment Manager
Post - Construction	Undertake water quality sampling of completed MP25 well and monitor produced water volumes. If MP25 produces more than 50 KL/year, a flow meter will be installed and water volumes monitored monthly.		✓	Environment Manager

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction	Do not impede lateral water flows when undertaking construction activities associated with MP25 and the twinning of the GGL between MP16 and MP30. (Note: this work is complete)		✓	Land & Compliance Officer
EB01				
Construction, Operation	Undertake well EB01 and associated works at least 40 metres (measured horizontally and at right angles) from the top of the bank of the Nepean River.		✓	Environment Manager
EB02				
Construction, Operation	Undertake well EB02 and associated works at least 20 metres (measured horizontally and at right angles) from the top of the bank of the unnamed tributary of the Nepean River.		✓	Environment Manager

Surface Water and Groundwater Management

Water Control Measures

Water control measures are contained in the Soil and Water Management Sub Plan and Groundwater Management Plan (GMP). The key control measures to meet the objectives of surface and groundwater management are the same as those included in Table F-5 above.

The GMP's objectives are as follows:

- To describe the water level and water quality monitoring network across the different groundwater systems located beneath the CGP area;
- To build a database of baseline information (both water levels and water quality for shallow beneficial use aquifers) located beneath the Camden North extension area;
- To identify water level and water quality trends that may suggest connectivity or contamination of aquifers due to dewatering activities;
- To provide a monitoring (and an action response) framework for water users and regulators on the groundwater monitoring program at Camden; and
- To outline the reporting and review requirements for the monitoring program.

A summary of the individual roles and responsibilities in relation to groundwater management and compliance with the GMP are provided in Table F-6 below.

Table F - 6: Control measures and Monitoring Requirements – Groundwater

Role	Responsibility	Frequency
Preparation and review of GMP	AGL Upstream Gas - Project Hydrogeologist	Annually, commencing in June each year
Peer Review of the GMP	External consultant – Senior/Principal Hydrogeologist	Every time a major change and the GMP is resubmitted to NOW/EPA
CSG Wells		
Water level monitoring within the CGP	AGL Upstream Gas (Camden) – Production Operations Manager	See Note 1
Water quality monitoring within the CGP	AGL Upstream Gas (Camden) – Environment Team	Quarterly

Role	Responsibility	Frequency
Dewatering volumes within the CGP	AGL Upstream Gas (Camden) – Production Operations Manager	Monthly
Groundwater monitoring bores		
Water level monitoring within the CGP	External consultant	Continuous (dataloggers) 6 monthly (manual dips)
Water quality monitoring within the CGP	External consultant	6 monthly
Seepage monitoring bores at RPGP		
Water quality monitoring	AGL Upstream Gas (Camden) – Environment Team	Monthly (field parameters only)
Water level monitoring	AGL Upstream Gas (Camden) – Environment Team	Monthly (manual dips)
Compliance matters		
Annual (NOW) Bore Licence Compliance Report	AGL Upstream Gas - Project Hydrogeologist	Annual report by 30 September each year
Response triggers and actions	AGL Upstream Gas - Project Hydrogeologist	As required
Audits and actions regarding compliance	NOW – Regional Hydrogeologist/Licensing Manager – Parramatta Office EPA – Regional Operations Officer, Wollongong Office	As required As required

Notes: (1) water level monitoring is not possible within operational gas wells but levels are generally within the perforated interval of each well when operational.

Surface Water and Groundwater Quality Monitoring Requirements

Water monitoring requirements as specified in the relevant licences and development approvals are included in the below tables.

Table F - 7: DA 282-6-2003-I Sch. 4 CoC 69 and EPL 12003 Conditions M2.5 & 2.6 – Surface Water and Groundwater Monitoring Requirements (RPGP)

Monitoring Requirements
DA-282-6-2003-I Schedule 4. CoC 69 (RPGP Flare Pond)
For each monitoring/discharge point or utilisation area specified (by point number) in the table below *(refer to DA 282-6-2003)*, the Applicant must monitor (by sampling and obtaining results by analysis) each parameter specified in Column 1. The Applicant must use the sampling method, units of measure and sample at the frequency specified in the respective columns. POINT 8 - Total suspended solids, Biochemical oxygen demand, Oil & Grease, Total polycyclic aromatic hydrocarbons, Phenols, Total organic carbon, Total petroleum hydrocarbons, Electrical conductivity, Water level in storage (monthly).
EPL 12003 Condition M2.5 and M2.6 Groundwater Quality Monitoring Requirements
For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1 (Listed Below). *The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:* *M2.5 Water and/ or Land Monitoring Requirements* *Quarterly Samples will be collected (mg/L) for: Aluminium, Arsenic, Barium, Beryllium, Bicarbonate, Boron, Bromide, Cadmium, Calcium, Carbonate, Chloride, Chromium, Cobalt, Copper, Electrical conductivity (micro siemens per centimetre), Fluoride, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium* *Yearly Samples will be collected (mg/L) for: Ammonia, Benzene, Ethyl benzene, Methane, Nitrate, Nitrite, Phenols, Polycyclic aromatic hydrocarbons.* *M2.6 For the purposes of the table above for points 8, 9, 10, 11, 12, 13, 14, and 15 the monitoring results are required to be submitted annually as a Groundwater Monitoring Report with the Annual Return.*

Table F - 8: Water Bore Licence Groundwater Monitoring Requirements

Ground Water Licence	Condition Requirements
Water Licence Conditions for Existing and Proposed Gas Production Wells. Issued Bore Licence No: 10BL603867 to 10BL603878 10BL603881 to 10BL603893 10BL603897 to 10BL603903 10BL603905 to 10BL603906 10BL603911 to 10BL603915	**Condition 10** (for Existing bore licences) and **Condition 12** (for Proposed bore licences) generally state: The licensee must maintain records of the results of water quality testing of sampled from any extraction or monitoring locations and provide this information to the NSW Office of Water on an agreed basis, at the completion of the project, or upon request from the NSW Office of Water.
10BL603917 to 10BL603922 10BL603924 to 10BL603942 10BL603952 to 10BL603965 10BL603976 10BL603978 10BL603981 10BL603989 to 10BL603994 10BL604007 to 10BL604017 10BL604031 10BL604032 to 10BL604045 10BL604131 10BL604582 10BL604597 10BL604623 to 10BL604626 10BL604672 and 10BL604673 10BL604874 10BL604876 to 10BL604888	**Condition 11** (for Existing bore licences) or **Condition 13** (for Proposed bore licences) generally state: The license holder must install, if and when called upon to do so monitoring bores to the satisfaction of the NSW Office of Water in respect to location and depth. The installation of monitoring bores is to be carried out within three years of the commencement of this license. The license holder must maintain the records of the groundwater levels as measures in the monitoring bores Measurements of groundwater levels are to be taken and recorded as a minimum throughout the duration of the project and quarterly for a five year period thereafter as required by the NSW Office of Water. Groundwater level records are to be maintained for all aquifers and any additional water bearing zone(s) or stratigraphic horizon(s) is required by the NSW Office of Water overlying the coal seam(s) from which gas is to be extracted, Records of groundwater levels from the monitoring bores are to be provided to the NSW Office of Water on an annual basis after the monitoring period has expired, or upon request from the NSW Office of Water.

Waste Management

Waste control measures are contained in the Waste Management Sub Plan. The key control measures employed to meet the objectives for waste management are summarised in the below table.

Table F - 9: Control measures – Waste Management

Activity	Action	Area		Responsibility
		RPGP	Field	
General	The employee and contractor induction shall inform all site personnel about correct waste management procedures based on the principles of reduce, reuse and recycle and appropriate disposal.	✓	✓	Environment & Safety Officer
	Waste containers shall be provided at all work sites.	✓	✓	All (Employees & Contractors)
	All work areas shall be maintained in a neat and tidy condition, litter bins will be used at all times and regular emptying shall prevent the accumulation of litter onsite.	✓	✓	All (Employees and Contractors)
	Activities will be carried out to minimise waste where possible, and any waste generated is disposed in a correct manner.		✓	All (Employees & Contractors)
	Movement of waste from the site must be conducted in accordance with the EPA waste tracking procedure.	✓	✓	Environment Manager
Storage	No waste generated outside the facility is to be received or processed on the premises.	✓		Environment Manager
	Wastes must be assessed and classified in accordance with EPA Guidelines	✓		Environment Manager
	Recycling must be stored separately from other waste and labelled accordingly.	✓		All (Employees & Contractors)
	All wastes should be stored in accordance with the DECC (now EPA) environmental guidelines "*Assessment Classification and Management of Liquid and Non-Liquid Wastes*".	✓		All (Employees & Contractors)

Activity	Action	Area		Responsibility
		RPGP	Field	
	Only the quantity of material required for a specific task shall be brought into the field.		✓	All (Employees & Contractors)
	Waste materials resulting from construction works will be source-separated on site and stored temporarily in the field or at the RPGP either for reuse on-site or removal by a licensed contractor for reuse, recycling or safe disposal off-site.	✓	✓	All (Employees & Contractors)
Spills	Spills of waste materials shall be dealt with in a prompt and thorough manner, and reported to the Environment Manager.	✓	✓	All (Employees & Contractors)
Disposal	All waste shall be collected and transported to an appropriately licensed recycling or disposal sites.	✓	✓	Environment Manager / Environment and Safety Officer
	Onsite waste disposal is prohibited.		✓	All (Employees & Contractors)

Dangerous Goods Management

Control measures employed to meet the objectives for purchasing, storage, transport, handling and disposal of Dangerous Goods and Hazardous Materials during construction, operation and maintenance activities to minimise the risk of impact to the environment are outlined in the Dangerous Goods and Hazardous Materials Sub Plan. A summary of the control measures is presented in the following table.

Table F – 10: Control Measures - Dangerous Goods/Hazardous Materials

Activity	Action	Area		Responsibility
		RPGP	Field	
1. General	a) All activities under the existing EPL licence shall be undertaken in a competent manner, including handling, movement and storage or materials and substances.	✓	✓	Environment Manager, Operations Manager
	b) A Hazard Audit shall be undertaken in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 5, "Hazard Audit Guidelines" (by a suitably qualified independent person) 12 months after the commencement of operations of the proposed development and every 3 years thereafter. Within one month of the audit being undertaken, a report shall be submitted to the Director-General.	✓	✓	Health & Safety Business Partner
	c) All required plans/studies/systems shall be undertaken or prepared to the relevant Hazardous Industry Planning Advisory Panel.	✓	✓	Health & Safety Business Partner
	d) Construction and operation of MP25 shall be undertaken in accordance with the Camden Gas Project Environmental Management Plan.		✓	Environment Manager, Operations Manager
2. Purchasing	a) All Dangerous Goods and Hazardous Materials stored in the on-site chemical storage shed shall be entered on the CGP Chemical Manifest (including a register, risk assessments and safety data sheets - SDS).	✓	✓	Health & Safety Business Partner

Activity	Action	Area		Responsibility
		RPGP	Field	
	b) New Dangerous Goods and Hazardous Materials shall be purchased in accordance with the AGL Purchasing Procedure, risk assessment undertaken and SDS obtained.	✓	✓	All employees
3. Storage, use and transport	a) All Dangerous Goods and Hazardous Materials shall be stored and where practicable handled within containment facilities (for example, bunded areas, leak proof trays) designed to prevent the release of spilt substances to the environment.	✓	✓	All employees
	b) On-site storage of fuel, lubricants and any chemicals used will be kept to a minimum and these items will be stored in bunded containment areas.	✓	✓	All employees
	c) The storage, handling and transport of Dangerous Goods and Hazardous Materials shall comply with legislation and Australian standards (and the Dangerous Goods Code and explosives in accordance with the requirements of the DMR (now DRE)), including but not limited to containment, placarding and segregation from incompatible materials.	✓	✓	Health & Safety Business Partner
	d) All vehicles and equipment shall be adequately maintained so as to minimise drips/ leaks of Dangerous Goods and Hazardous Materials.	✓	✓	All employees
	e) Due to its stenchant characteristics, Mercaptan (odorant) shall be handled in accordance with the strictest of protocols (refer to Emergency Response Plan).	✓		Plant Supervisor
	f) All storage and handling equipment (including transfer hoses) shall be kept in a well maintained condition.	✓	✓	All employees
	g) Transport of Dangerous Goods to be undertaken under appropriate licence.	✓	✓	Operations Manager
4. Risk Assessment	a) Job Safety and Environment Analysis (JSEAs) shall incorporate storage and handling of Dangerous Goods and Hazardous Materials and reference the relevant Safety Data Sheets (SDS).	✓	✓	All employees
	b) Prior to commencing construction, operations or maintenance, the planned arrangement of all Dangerous Goods and Hazardous Materials storage areas should be reviewed to eliminate potentially hazardous conditions.	✓	✓	All employees

Activity	Action	Area		Responsibility
		RPGP	Field	
5. Labelling	a) All Dangerous Goods and Hazardous Materials should be stored in approved containers and properly labelled.	✓	✓	All employees
	b) All packaged dangerous goods must be labelled in accordance with the Australian Dangerous Goods code.	✓	✓	All employees
	c) If unmarked drums arrive on location or if in doubt as to the constituents of a chemical substance, treat as a hazardous, toxic substance until found otherwise.	✓	✓	All employees
6. Training	a) The workforce induction program shall inform site personnel of the required chemical storage and handling procedures and the required spill prevention and response procedures.	✓	✓	Environment & Safety Officer
	b) The SDS must be read prior to using any substance and available during storage and use of Dangerous Goods and Hazardous Materials.	✓	✓	All employees
	c) Training records are to be maintained by AGL.	✓		Health & Safety Business Partner
7. Decanting	Any Dangerous Goods and Hazardous Materials decanted into a second container must be clearly labelled with name and safety risk phrases (for example flammable or toxic).	✓	✓	All employees
8. Disposal	a) Waste Dangerous Goods and Hazardous Materials, including empty drums and containers, must be stored in assigned storage areas until they are disposed of in accordance with the SDS.	✓	✓	All employees
	b) Waste Dangerous Goods and Hazardous Materials shall be managed and disposed in accordance with the requirements of relevant legislation and industry standards.	✓	✓	Environment Manager, Environment & Safety Officer
9. Spill Response	a) In the event of a spill or leak of Dangerous Goods and Hazardous Materials the safety of personnel and third parties shall be protected as the first priority.	✓	✓	All employees
	b) All spills of Dangerous Goods and Hazardous Materials shall be addressed promptly and stopped at source as soon as practicable and contained to the smallest possible area.	✓	✓	All employees

Activity	Action	Area		Responsibility
		RPGP	Field	
	c) During operations, project/construction activities appropriate strategies and equipment shall be in place to deal with a spill of all types and volumes of Dangerous Goods and Hazardous Materials to be used on-site.	✓	✓	Health & Safety Business Partner, Environment Manager
	d) Containment and recovery equipment shall include, but not be limited to absorbent materials (for example, pads and straw bales), shovels and sand bag sacks and protective clothing (for example, gloves, overalls, and boots).	✓	✓	Environment & Safety Officer
	e) In the event of a pollution incident the **Person-In-Charge** will immediately contact the **Camden Environment Manager**. If the **Environment Manager** cannot be reached the **Person-In-Charge** will contact the **Camden Operations Manager**. The **Environment Manager** and/or **Camden Operations Manager** will determine based on the information provided if the incident is has or is likely to result in material harm. Section 6 of the PIRMP is to be followed to determine if there has been material harm, and the necessary notification protocol to be followed.	✓	✓	Environment Manager, Operations Manager
	f) Spilt material shall be recovered as soon as possible, using appropriate equipment.	✓	✓	All employees
	g) Contaminated soil, or spill recovery materials (such as sawdust and absorbent pads) shall be disposed of to appropriately licensed facilities.	✓	✓	Environment & Safety Officer
	h) Spill response equipment shall be maintained onsite and replaced as required.	✓	✓	All employees
	i) All spillages involving Dangerous Goods and Hazardous Materials from any part of the CGP are to be treated as toxic substances.	✓	✓	All employees

There are no specific monitoring requirements for management of dangerous goods or hazardous materials covered under the relevant project approvals, development consent or licences that applied during this reporting period.

Contaminated Land

Control measures employed to meet the objectives for preventing contamination or pollution are outlined in the Soil and Water Management Sub Plan and the Dangerous Goods and Hazardous Materials Sub Plan. A summary of some of the strategies is presented in the following table.

Table F - 11: Control measures - Contaminated / Polluted Land

Activity	Control measures	Responsibility
Planning	A chemical manifest shall be prepared and detailed procedures for chemical storage and handling, waste management and spill response shall be in place. The workforce induction program shall inform site personnel of the general requirements for chemical storage and handling.	Environment Manager/ Health and Safety Business Partner
Operations	All dangerous goods and hazardous materials stored in the on-site chemical storage shed shall be entered on the CGP Chemical Manifest (including a register, risk assessments and safety data sheets – SDS) Due to its stenchant characteristics, Mercaptan (odorant) shall be handled in accordance with the strictest of protocols (refer to Emergency Response Plan). On-site storage of fuel, lubricants and any chemicals used will be kept to a minimum and these items will be stored in bunded containment areas. All storage and handling equipment (including transfer hoses) shall be kept in a well maintained condition. All vehicles and equipment shall be adequately maintained so as to minimise drips/leaks of Dangerous Goods and Hazardous Materials. Spilt material shall be recovered as soon as possible, using appropriate equipment.	Environment and Safety Officer/ All employees
	The storage, handling and transport of Dangerous Goods and Hazardous Materials shall comply with legislation and Australian standards (and the Dangerous Goods Code and explosives in accordance with the requirements of the DMR (now DRE)), including but not limited to containment, placarding and segregation from incompatible materials.	Health & Safety Business Partner

There are no specific monitoring requirements for contaminated land covered under the relevant project approvals, development consent or licences that applied during this reporting period.

Threatened Flora and Fauna

Flora and Fauna control measures are contained in the Flora and Fauna Management Sub Plan. The key control measures employed to meet the objectives for Flora and Fauna are summarised in the below table.

Table F - 10: Control measures - Flora and Fauna

Activity	Action	Responsibility
General	The AGL Employee and Contractor Induction shall inform all site personnel about flora and fauna management measures and the designated work areas and access routes.	Environment and Safety Officer
	The construction footprint is to be kept to a minimum and areas of significant flora and fauna, particularly Endangered Ecological Communities (EEC) and riparian vegetation will be avoided where possible through the site design and layout process.	Environment Manager (Primary), Land and Compliance Officer (secondary)
	The gas gathering line routes will be selected to use previously or currently disturbed areas of land wherever possible.	Land and Compliance Officer (primary), Operations Manager (secondary)
Access	All construction and maintenance activities shall be restricted to the well compound area or designated gathering line construction corridor and designated access routes. All vehicles shall obey speed limits and remain on designated vehicle tracks and in designated work areas.	Operations Manager
Construction	The site design and layout process will determine which trees / vegetation to clear to minimise disturbance. Temporarily fence off or clearly mark out significant habitat (e.g. mature trees) if present at well surface locations, along access roads and gas gathering lines, so that they are clearly visible as no-go areas to construction staff and vehicles. All open trenches shall be checked daily for trapped animals, and those found shall be removed, recorded and relocated to appropriate areas away from construction activities by qualified personnel. Trenches shall generally not be left open overnight on public land. Where this is necessary, bunting shall be installed. Mature trees will not be removed as part of this development unless otherwise agreed by the Director-General.	Land and Compliance Officer (primary)/ Environment Manager (secondary), Contractors (tertiary)
Stockpiles	Cleared vegetation shall be stockpiled so as not to impede vehicles, stock or wildlife, surface drainage or water flows and to avoid damage to adjacent live vegetation. Cleared vegetation shall be stockpiled separately for subsequent re-spreading within the compound during site rehabilitation.	Land & Compliance Officer (primary)/ Environment and Safety Officer (secondary)

There are no specific monitoring requirements for threatened flora and fauna covered under the project approvals, development consent or licences that applied during this reporting period.

Noxious Weeds

Control measures employed to meet the objectives for weed control are included within the Rehabilitation and Landscape Management Sub Plan. The key measures are summarized in the table below.

Table F - 11: Control measures - Noxious Weeds

Activity	Action	Responsibility
General	The induction program shall inform all employees and contractors about rehabilitation management measures, control procedures for weeds, pathogens and pest species and the designated work areas and access routes and procedures.	Environment Manager
Weed and Pathogen control and monitoring	a) A weed management plan shall be prepared, submitted to the Director-General within one month of the date of consent, and implemented for the life of the development. b) The well site, restored access tracks and gathering line routes shall be inspected for 12 months following the completion of rehabilitation, for evidence of soil settlement, weeds and pest animals. c) Active weed control shall be required at sites identified as infested for at least one year after construction. Additional appropriate control measures shall be utilised after this time, on the basis of monitoring results. d) Herbicides are to be used to kill noxious weeds. Drift, drip or run-off to surface waters or non-target species is to be avoided. Personnel using herbicides are to be appropriately trained and qualified. e) All instructions provided by any responsible authority (with respect to the eradication of noxious weeds) shall be observed, and all reasonable efforts shall be made to implement measures to prevent the introduction and establishment of noxious weeds. f) On first (and subsequent) entry to the District and prior to entering the construction area all vehicles, equipment and portable infrastructure shall be washed by air or water or demonstrated they are clean (namely, certificate/or other document to show they have been cleaned down), prior to coming to site. This shall be done prior to mobilisation to site. g) Cleaning shall be thorough so as to remove all soil or organic matter from the surfaces of vehicles, equipment and portable infrastructure, including the undercarriage. h) Topsoil and vegetation material shall be re-spread in the immediate vicinity of the area of origin to limit the potential spread of weeds and pathogens. i) All plant and equipment shall be inspected and be free of invertebrates and pest species prior to coming on site. j) Waste management shall be implemented to avoid attracting vertebrate pests (see Waste Management Sub Plan).	Environment Manager (primary)/ Land & Compliance Officer (secondary)

There are no specific monitoring requirements for weed management covered under the relevant project approvals, development consent or licences that applied during this reporting period.

Operational Noise

Control measures employed to meet the objectives for operational noise are outlined in the Noise Management Sub Plan. The key measures are outlined in the table below.

Table F - 12: Operational Noise Control measures

Activity	Control measures	Responsibility
Induction	The employee and contractor induction shall inform all site personnel about noise management measures, construction hours and nearest sensitive receivers. All employees are responsible for managing noise from their work activities and working in a manner to minimise noise.	Environment and Safety Officer/All Personnel
Operations	With the exception of emergency situations, operational hours are: Monday to Friday 7.00am-6.00pm, Saturday 8.00am-1.00pm Drilling activities may be undertaken 24 hours per day, 7 days per week, where approved. Noise generated from the Gas plant shall comply with noise limits set out in the Environmental Protection License (No. 12003) and Conditions of Approval (DA 282-6-2003). Ensure that plant and equipment is well maintained and operated, and carry out maintenance as required.	Operations Manager/ All personnel
	Notice of works will be provided to relevant affected residents at least 14 days prior to commencing construction activities and at least 14 days prior to workover activities	Land & Compliance Officer/ Community Relations Manager
	Carry out environmental noise monitoring at the RPGP and well sites in accordance with the monitoring requirements specified in Appendix A of the Noise Management Sub Plan.	Environment Manager

The noise limits and monitoring requirements detailed in the Development Applications for Operational Noise Monitoring approved for the CGP are summarised in the table below.

Table F - 13: CoC's Operational Noise Monitoring Requirements

Operational Noise Monitoring Requirements
DA 15-1-2002
Schedule 3. CoC 38 The Applicant shall comply with the following noise criteria ($L_{Aeq\ 15\ minute}$): RECEIVER A: 40 dBA (Day, Evening and Night) RECEIVER B, C and F: 37 dBA (Day, Evening and Night) RECEIVER D, E and G to M: 37 dBA (Day and Evening), 35 dBA (Night) Any other residential receiver: 35 dBA (Day, Evening and Night) *Note: This development refers to the RBTP, which has been decommissioned and rehabilitated*
DA 282-6-2003
Schedule 4. CoCe 29 The Applicant shall ensure that noise from the normal operation of the premises, excluding flaring events, must not exceed the noise limits ($L_{Aeq\ 15\ minute}$) as set out below: R1 Medhurst Rd, Gilead: 35dBA (Day, Evening and Night) R7 Mt Gilead, Gilead: 37dBA (Day), 36dBA (Evening and Night) *Note: This Development refers to the operation of the RPGP*
Schedule 4. CoC 40 The Applicant must submit a noise compliance report to the EPA and the Department within one month of commissioning of the Gas Treatment Plant and on an annual basis with the Annual Return required by the EPA's licence to assess the project's compliance with the noise limits in Conditions 29 and 31. The noise monitoring must be conducted in accordance with Condition 42
Schedule 4. CoC 41 Following the first 12 months of continuous noise monitoring, during the life of the Development or as otherwise agreed by the Director-General, the Applicant shall undertake quarterly attended monitoring at the Mt Gilead Homestead to the satisfaction of the Director-General, in accordance with the NSW Industrial Noise Policy and AS 1055: "Acoustics – Description and Measurement of Environmental Noise".
DA 75-4-2005
Schedule 2. CoC 18. Noise from the operation of the Sugarloaf wells shall not exceed 35dBA ($L_{Aeq\ 15\ minute}$) at any residential premises during the day and evening. The $L_{A1\ (1\ minute)}$ shall not exceed 45 dBA at any residential premises during the night.
PA 06_0137

Operational Noise Monitoring Requirements
Schedule 3. CoC 4 Noise from the operation of the wells must not exceed 39 dBA during the day and evening and 35 dBA at night at any residential receiver ($L_{Aeq\ 15\ minute}$). The $L_{A1(1\ minute)}$ shall not exceed 45 dBA at night at any residential receiver. Refer to DA for notes relating to this condition. *Note: This development refers to the operation of wells RB03, RB05-RB07, RB09-RB11*
PA 06_0138
Schedule 3. CoC 4 Noise from the operation of the wells must not exceed 39 dBA during the day and evening and 35 dBA at night at any residential receiver ($L_{Aeq\ 15\ minute}$). The $L_{A1(1\ minute)}$ shall not exceed 45 dBA at night at any residential receiver. Refer to DA for notes relating to this condition. *Note: This development refers to the operation of wells EM23-EM37*
PA 06_0291
Schedule 3 CoC 5 The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria (dB(A)$L_{Aeq\ (15\ minute)}$ in the table below: SF10: Day (43), Evening (42), Night (37) SF04A, SF17, SF20: Day (43), Evening (41), Night (36) MP05, MP06, MP11: Day (40), Evening (40), Night (40) MP19, MP21, MP24, MP33 Day (42), Evening (42), Night (40) MP02, MP03, MP04, MP22, MP23 Day (49), Evening (45), Night (40) *Note: This development refers to the operation of wells in the Spring Farm and Menangle Park areas.*
EPL 12003, Condition L5.1 and R1.10
Condition L5.1 Noise from the premises must not exceed the noise limits in the table below: Receiver Location: R1 MEDHURST RD, Mt. GILEAD: Day (35 $L_{Aeq\ (15\ minute)}$), Evening (35), Night (35), Flaring (night) (45) R7 Mt. Gilead, Gilead: Day (37), Evening (36), Night (35),Flaring (night) (45) *Note: Pressure safety valve (discharge) and pressure safety valve (suction) flaring events are exempted from the limits in condition L5.1* Condition R1.9

Operational Noise Monitoring Requirements
The licensee must submit a noise compliance monitoring report on 16 April 2004 and on an annual basis with the annual return required in condition R1.1 thereafter, to assess compliance with the noise limits provided in condition L6.1. The noise monitoring must be undertaken in accordance with the NSW *Industrial Noise Policy August 2000*.

Construction Noise

Control measures employed to meet the objectives for construction noise are outlined in the Noise Management Sub Plan. The key measures are provided in the following table.

Table F - 16: Construction Noise Control measures

Activity	Control measures	Responsibility
Planning	The employee and contractor induction shall inform all site personnel about noise management measures, construction hours and nearest sensitive receivers. All employees are responsible for managing noise from their work activities and working in a manner to minimise noise.	Environment and Safety Officer/ All Personnel
Construction	Under normal operating conditions, field operations shall be limited to the hours between 7:00am to 6:00pm, Monday to Friday; from 8:00am to 1:00pm Saturday and no work on Sundays or Public Holidays. Surface to Inseam wells are an exception to these hours, requiring 24 hour/ 7 day drilling.	Operations Manager/ All personnel
	Maximise offset distance between noisy plant items and nearby noise sensitive receivers and orient equipment away from sensitive areas where practical (i.e. drilling rig).	Environment Manager and Operations Manager
	Implement site specific recommendations arising from the Noise Assessment.	Operations Manager
	Carry out environmental noise monitoring in accordance with the monitoring requirements specified in Appendix A of the Noise Management Sub Plan.	Environment and Safety Officer
	Notice of works will be provided to relevant affected residents at least 14 days prior to commencing construction activities and at least 14 days prior to workover activities.	Land and Compliance Officer

The construction noise limits and monitoring requirements detailed in the Development Applications, Project Approvals and Modifications approved for the CGP are summarised in the following table.

Table F - 17: Construction Noise Limits and Monitoring Requirements

Approval Criteria for Construction Noise	Activities undertaken during the reporting period
PA 06_0137	
Schedule 3. Clause 2 – Construction noise Criteria The proponent shall use its best endeavours to undertake construction activities to comply with Day time noise goal of 54 dBA at any residential receiver. *Note: This development refers to the drilling of wells RB 03- RB 12.*	No construction or drilling activities were undertaken at these wells sites during the reporting period.
PA 06_0138	
Schedule 3. Clause 2 – Construction Noise Criteria The Proponent shall use its best endeavours to undertake construction activities to comply with the construction Day, Evening and Night goals of 54 dBA, 39 dBA and 35 dBA respectively at any residential receiver. *Note: This development refers to the drilling of wells EM23-36*	No construction or drilling activities were undertaken at these wells sites during the reporting period.
PA 06_0291	
Schedule 3 Clause 3 – Construction Noise Goals The Proponent shall use its best endeavours to undertake construction activities to comply with the construction noise goals dB(A)$L_{Aeq(15\ minute)}$ specified below at the nearest residential dwelling: MP02, MP03, MP04: Day (49), Evening (47), Night (41), Sat & Sun (47) MP05, MP06: Day (40), Evening (40), Night (40), Sat & Sun (40) MP11, MP24, MP33: Day (42), Evening (42), Night (40), Sat & Sun (42) MP19 R3: Day (40), Evening (40), Night (40), Sat & Sun (40) MP19 R25: Day (49), Evening (47), Night (41), Sat & Sun (47) MP21, MP22, MP23: Day (49), Evening (47), Night (41), Sat & Sun (47) SF04A: Day (43), Evening (42), Night (37), Sat & Sun (42) SF10, SF17, SF20: Day (43), Evening (41), Night (36), Sat & Sun (43)	No construction or drilling activities were undertaken at these wells sites during the reporting period.
DA 75-4-2005 (Mod 4 July 2007)	
Schedule 2, Clause 18A Noise from the drilling and construction of SL08 and SL09 shall not exceed the following noise limits at the nearest sensitive receiver: Weekday (7am to 6pm) and Sat (7am-1pm): 54 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at these wells sites during the reporting period.

Approval Criteria for Construction Noise	Activities undertaken during the reporting period
Saturday (1pm to 6pm) and Sunday (7am to 6pm): 44 dB(A)L_{Aeq} Evening: 47 dB(A)L_{Aeq} Night: 41 dB(A)L_{Aeq}	
DA 15-1-2002 (Mod 4 July 2007)	
Schedule 3 Clause 47A Noise from the drilling and construction of AP02 and AP03 shall not exceed the following limits at receivers A1, A2, A3 and A4: Weekday (7am to 6pm) and Sat (7am-1pm): 45 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 40 dB(A)L_{Aeq} Evening: 40 dB(A)L_{Aeq} Night: 30 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at the above wells sites during the reporting period.
DA 246-8-2002-I (Mod 20 April 2011)	
Schedule 3, Clause 19B Noise from the drilling and construction of KP05 and KP06 shall not exceed the following noise limits at the nearest receiver: Weekday (7am to 6pm) and Sat (7am-1pm): 53 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 48 dB(A)L_{Aeq} Evening: 41 dB(A)L_{Aeq} Night: 35 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at the above wells sites during the reporting period.
DA 282-6-2003i (Mod 4 July 2007)	
Schedule 4, Clause 34B Noise from the drilling and construction of EM38 shall not exceed the following noise limits at the nearest sensitive receiver: Weekday (7am to 6pm) and Sat (7am-1pm): 54 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 39 dB(A)L_{Aeq} Evening: 39 dB(A)L_{Aeq} Night: 35 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at this location during the reporting period.
DA 282-6-2003i (Mod 11 April 2008)	

Approval Criteria for Construction Noise	Activities undertaken during the reporting period
Schedule 4, Clause 34C Noise from the drilling and construction of EM39 and GL17 shall not exceed the following noise limits at receivers EM39-R3 and GL17 – R3: Weekday (7am to 6pm) and Sat (7am-1pm): 40 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 40 dB(A)L_{Aeq} Evening: 40 dB(A)L_{Aeq} Night: 38 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at the above wells sites during the reporting period.
DA 183-8-2004 (Mod 4 July 2007)	
Schedule 2, Clause 13B Noise from the drilling and construction of MP30 shall not exceed the following noise limits at the nearest sensitive receiver: Weekday (7am to 6pm) and Sat (7am-1pm): 57 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 42 dB(A)L_{Aeq} Evening: 42 dB(A)L_{Aeq} Night: 40 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at the above well site during the reporting period.
DA 183-8-2004 (Mod 9 July 2012)	
Schedule 2, Clause 13C Noise from the drilling and construction of MP25 shall not exceed the sound pressure level (noise) limits at the nearest sensitive receiver locations: Weekday (7am to 6pm) and Sat (7am-1pm): 47 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 42 dB(A)L_{Aeq} Evening: 42 dB(A)L_{Aeq} Night: 40 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at the above well site during the reporting period.

No drilling or other construction activities were undertaken during the reporting period.

Visual Amenity

The key control measures implemented to manage visual amenity are included within the Rehabilitation and Landscape Management Sub Plan, and summarised in the table below.

Table F - 14: Control Measures - Visual Amenity

Activity / Site	Action	Responsibility
Construction	For well surface locations where residents may be exposed to extended periods of uninterrupted views during construction, green mesh or other appropriate fencing is to be erected around the construction compound in accordance with the recommendations of the relevant EA or Site Plan.	Environment and Safety Officer (primary)/ Land & Compliance Officer (secondary)
	The Vegetation and Landscape Management Plan for the Gas Treatment Plant site and the gas well sites shall include details of the visual appearance of all new buildings. New buildings will be constructed in a way that is to be of neat and orderly appearance and blend with surrounding landscape. It will also include measures to minimise visual impacts on Mount Gilead Homestead including monitoring of the Annual Environmental Performance Report and remedial measures will be identified.	
Initial Rehabilitation	Native screen trees may be planted around the well site using appropriate species in consultation with the landowner.	Environment Manager (primary)/ Land & Compliance Officer (secondary)
	Areas to be rehabilitated shall be graded to reinstate pre-existing surface contours and natural drainage patterns.	
	Selection of fencing and other materials used for landscaping shall be undertaken in consultation with the landowner to the satisfaction of the Director-General (where required).	
Final Rehabilitation	All areas associated with the construction and operation of the gas gathering system shall be rehabilitated to the pre-existing site conditions unless otherwise agreed by the landowner.	Environment Manager (primary)/ Land & Compliance Officer (secondary)
	Re-vegetating would include but not be limited to broadcast of seed and ongoing maintenance and monitoring activities for 12 months minimum.	

Activity / Site	Action	Responsibility
Rosalind Park Gas Plant / Access Road	A Landscape Planting Plan shall be prepared and implemented for the relocated Rosalind Park access road, to be submitted to the Director-General prior to the commencement of construction. It shall be prepared in accordance with the requirements detailed in DA-282-6-2003i: 19A, B (Sch 4) (refer to Table 2-1). Note: This Action is complete.	Environment Manager
	All visual mitigation measures regarding screening intended to hide infrastructure from views from the Mt Gilead Homestead (e.g. through planting) shall be undertaken.	
	The right to implement any necessary mitigation or screening measures proposed for the Gas Treatment Plant as part of the Vegetation and Landscape Management Plan on land outside the Gas Treatment Plant site (for the life of the development) shall be secured prior to construction. Note: This Action is complete.	
	Existing trees shown on the Landscape Design adjacent to the southern boundary of the Gas Treatment Plant site, shall be retained (in a healthy condition) and will not be lopped or trimmed unless advised by an independent arborist and approved by the Director-General for safety reasons.	Environment and Safety Officer (primary)/ Land & Compliance Officer (secondary)
	An independent audit of the mitigation measures (implemented to prevent and minimise visual impacts of the proposal including landscaping, preservation of existing trees, effectiveness of mitigation measures in screening from the Mount Gilead Homestead, and night-lighting effects) shall be undertaken within 6 months of the commissioning of the proposed development and every 2 years thereafter, unless the Director-General directs otherwise.	Environment Manager
	All external lighting associated with the development shall be mounted, screened and directed in such a manner so as to not create a nuisance to surrounding land uses. The lighting will also be the minimum level of illumination necessary, and in general accordance with the Australian Standard 4282 – 1997 Control of the Obtrusive Effects of Outdoor Lighting.	
	All practicable measures will be undertaken to minimise any off-site lighting impacts from the development.	
	Where possible, the scheduled use of flares shall be restricted to daylight hours.	Plant Supervisor
	The frequency of the operation of the flare will be recorded and this information shall be made available for inspection by the Director-General on request. The records will be undertaken in accordance with the necessary requirements detailed in DA 282-6-2003i: 4, 8, 11 (Sch 4) (refer to Table 2-1).	

In addition to the control measures there are a number of monitoring requirements for visual amenity required by the project and development approvals. The relevant monitoring conditions required of DA 282-6-2003-i are outlined in the following table.

Table F - 19: Visual Amenity Monitoring Requirements

Visual Amenity Monitoring Requirements
DA 282-6-2003-i
Schedule 4. CoC 10. The applicant shall report on the effectiveness of the lighting controls in the AEPR.
Schedule 4. CoC 11. The Applicant shall record the frequency of the operation of the flare and shall make this information available for inspection by the DG on request. The records shall include but not be limited to the following: (a) date and time of each flare event; (b) duration of each flare event; (c) whether the flare operated during daylight or night-time hours; (d) the cause for the operation of the flare; (e) the number of compressor engines that have been commissioned and operating during the period; and (f) comparison of the frequency, night-time frequency, duration and estimated light level of each type of flare event with the flare events predicted in Table 2 of the following report: URS (2003) "*SGL Proposal Stage 2 Coal Seam Methane Project Visual Assessment of Lighting and Flare" prepared by URS for SGL dated 6 November 2003.*"
Schedule 4. CoC 14. As part of an independent audit required under condition 18, the Vegetation and Landscape Management Plan must make provision for ensuring that landscaping of the Gas Treatment Plant site and surrounds is maintained in an adequate condition by providing details of a monitoring program. Monitoring must be carried out pursuant to the monitoring program every 6 months for the first two years from the commencement of planting and thereafter every 2 years by an independent and suitably qualified and experienced arborist whose appointment has been approved for the purposes of this condition by the Director-General. The monitoring program must include the following features: (a) Identification of mature trees surrounding the site which afford screening of the Gas Treatment Plant from Mt Gilead Homestead; (b) Provision for assessing and regularly monitoring the health of landscaping on the site and the trees in the Menangle Creek riparian zone adjacent to the Gas Treatment Plant site. The objective of the monitoring is to determine the health of the trees and to recommend measures (if required) to improve the health of the trees; (c) Description of the health of each tree identified under condition (a); (d) Recommendation of reasonable measures to ensure that mature trees within the riparian corridor along Menangle Creek are retained and protected, including trees that lie within the transmission line easement to the East of the site; (e) Recommendation of any watering or fertilising that needs to be implemented to maintain the landscaping and surrounding trees; (f) Recommendation of how to manage the landscaping to promote the maximisation of growth to maturity.

Visual Amenity Monitoring Requirements
The results and recommendations of the monitoring program must be submitted to the Director-General at the conclusion of each stage of monitoring.
Schedule 4, CoC 18 The Applicant shall commission and pay the full cost of an Independent Audit of the performance of the mitigation measures implemented to prevent and minimise visual impacts of the proposal including landscaping, preservation of existing trees, and night-lighting effects. The audit must be conducted within 6 months of the commissioning of the proposed development and every 2 years thereafter, unless the Director-General directs otherwise. This audit must: (a) Be conducted by an independent landscape expert who is suitably qualified and experienced and whose appointment has been approved by the Director-General; (b) Assess the performance of the visual mitigation measures with specific reference to the effectiveness of mitigation measures in screening the development and lighting from the development from the Mount Gilead Homestead; (c) Review the adequacy of the Vegetation and Landscape Management Plan; (d) Recommend actions or measures to improve the performance of the visual mitigation measures and the adequacy of the Vegetation and Landscape Management Plan (if required); and (e) Be submitted to the Director-General; and (f) Be implemented to the satisfaction of the Director-General.
Schedule 4, CoC 125 The applicant shall maintain and monitor all rehabilitated riparian zones for a period of at least two years after final planting. Maintenance must include sediment and erosion control, watering, weed control, replacement of plant losses, disease and insect control, mulching and any other requirements for achieving successful vegetation establishment.
Modification to DA 282-6-2003-I dated 2 May 2007 (access road construction)
Schedule 4, CoC 19B Within 6 months of completion of the landscaping and every two years thereafter, unless otherwise directed by the DG, the Applicant shall commission and pay the full cost of an independent audit of the performance of the mitigation measures. The audit shall: (a) be conducted by a suitably qualified, experienced and independent person(s) whose appointment has been approved by the DG; (b) assess the performance of the visual mitigation measures with specific reference to the effectiveness of mitigation measures in screening the road from the Mount Gilead homestead; (c) review the adequacy of the Landscape Planting Plan; (d) recommend actions of measures to improve performance of the visual mitigation measures and the adequacy of the Landscape Planting Plan (if required); and (e) be submitted and implemented to the satisfaction of the DG Note: the Applicant may include this audit in the Independent Audit required under Schedule 4 Clause 18 of DA 282-6-2003-i. The due date for a combined audit shall be the earlier of the due dates for the separate audits.

Aboriginal Heritage

Control measures employed to meet the objectives for aboriginal heritage are outlined in the Aboriginal Cultural Heritage Management Sub Plan. The key measures are summarised in the below table.

Table F - 20: Control measures - Aboriginal Heritage

Activity	Control measures	Responsibility
Planning	The workforce induction program shall inform site personnel of the required requirements for protection of cultural heritage. Flagging and fencing shall be place around known sites in the vicinity of the proposed areas of disturbance prior to construction commencing. The proposed works should remain on existing, previously disturbed tracks and consultation with the landowner is required.	Environment Manager
Operations	Cultural heritage and archaeological site management often involves mitigation through the salvage of features or artefacts and retrieval of information through excavation or collection, and interpretation. There are three basic levels of management options are available for the Aboriginal archaeological sites that will be impacted. In order of preference these are: 1. Conservation through avoidance; 2. Preservation through ongoing management such as relocation; and 3. Destruction mitigated by salvage and interpretation Avoidance of sites through design changes, such as relocation of well surface locations and alignment changes to gas gathering lines should be undertaken where sites can be avoided, and where there is no risk of impact to other cultural material from the infrastructure relocation. Implementation of appropriate mitigation measures if required, including procedures for detailed site recording, collection of cultural material, excavation of cultural deposits, monitoring of initial ground disturbance works, relocation of cultural material and detailed documentation of sites prior to the commencement of any proposed impacts are described in Appendix 1 of the Aboriginal Cultural Heritage Management Sub Plan. This work would be undertaken in conjunction with an archaeologist and the relevant Aboriginal stakeholder groups.	Environment Manager All personnel

During the reporting period there were no monitoring requirements triggered under the project approvals or development consents which related to aboriginal heritage.

European Heritage

Control measures employed to meet the objectives for cultural heritage are outlined in the European Heritage Management Sub Plan and summarised in the below table.

Table F -21: Control measures - European Heritage

Activity	Action	Area		Responsibility
		RPGP	Field	
Pre-Activity	Obtain approval from the NSW Heritage Council prior to commencing construction works.		✓	Head of Land and Approvals
Pre-Activity	Select locations of wells, access roads and gas gathering lines to avoid items of heritage significance (particularly State Heritage Register listed items) where possible by redesign or relocation of proposed infrastructure and/ or activities.		✓	Land & Compliance Officer
Pre-Activity	Prior to commencing further activities on site, consult the Heritage Council's website (http://www.environment.nsw.gov.au/Heritage/listings/index.htm) to assess if items of heritage significance are listed.		✓	Environment Manager
Pre-Activity	Prepare and implement a Vegetation and Landscape Management Plan for the Gas Treatment Plant site and gas well sites, to include impacts on the cultural heritage landscape of the EMAI. Note: This Action has been previously completed.	✓	✓	Environment Manager
Construction	Retain a heritage expert/architect to supervise works that are in close proximity to the Nepean River underbridge Menangle – rail ref: 64.8 km, and Menangle Station (old building).		✓	Environment Manager
Construction, Operation, Rehabilitation	Brief personnel/ contractors prior to excavation during the site specific induction on heritage issues and on the appropriate course of action if any historic relics are discovered.	✓	✓	Environment and Safety Officer

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation, Rehabilitation	Maintain existing vegetation which provides screening of works and minimise removal of vegetation where possible.		✓	Environment and Safety Officer
Construction (EMAI)	Do not modify the old estate road by widening, changing the alignment or substantially adding to the existing shale surface. Retain existing width, alignment and low key character of access roads as traditional farm roads.		✓	Land & Compliance Officer
Construction, Operation, Rehabilitation (EMAI)	Supervise vehicular access throughout the EMAI land in conjunction with NSW Agriculture or superintendent. Control and limit impact of heavy vehicles by using temporary fencing at each well site.		✓	Land & Compliance Officer
Construction, Operation, Rehabilitation (EMAI)	Reduce the potential for visual obtrusion by backing signs with Masonite, consider the use of grey signs (or some other less contrasting colour than white), colouring fencing and gas production hardware to blend with the surrounds.		✓	Land & Compliance Officer
Construction, Operation, Rehabilitation	Implement the recommendations of heritage assessments, where relevant. (Note: a list of relevant documents is provided in Section 4.1 of this EHMSP)	✓	✓	Environment and Safety Officer
Construction, Operation, Rehabilitation	Do not undertake works in the rail corridor or it's easements before appropriate approval/licence is granted by the Australian Rail Track Corporation.		✓	Land & Compliance Officer
Construction, Operation, Rehabilitation	If any historic relics, as defined by the Heritage Act 1977 are identified in the course of activities, then works in the vicinity of the finds are to cease immediately, report the discovery of an unknown relic to the Heritage Council of NSW (within a reasonable time of its discovery), and an archaeologist from the NSW Heritage Office is to be contacted, and an appropriate course of action implemented.	✓	✓	Environment Manager

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation, Rehabilitation	Maintain records of the identified items of heritage significance within a site land dossier.		✓	Environment Manager
Construction, Operation, Rehabilitation	Upon completion of construction works at Sugarloaf Farm, commission an independent environmental auditor to monitor the performance and effect of drilling and fraccing of gas wells and construction activities on the site in accordance with the requirements of DA-75-4-2005: 8-57 (Sch 2). Within one month of the audit, submit a copy of the audit report to the Director-General, the NSW Heritage Office and NSW Agriculture. Note: This Action has been completed.		✓	Environment Manager
Construction, Operation, Rehabilitation	Within one month of an independent environmental audit undertaken for the construction at EMAI, submit a copy of the audit report to the Director-General, the NSW Heritage Office and NSW Agriculture. Note: This Action has been completed.		✓	Environment Manager
Construction, Operation, Rehabilitation	Ensure roadside plantings for sites EM16, EM18, EM19 and EM20 are strengthened using the species outline provided in the report titled "Statement of Heritage Impact for Land within the Elizabeth Macarthur Agricultural Institute NSW Agriculture, Menangle" by Geoffrey Britton dated September 2003. Note: This Action has been completed.		✓	Environment Manager
Construction, Operation, Rehabilitation	Within six months of DA 75-4-2005 being approved, prepare and execute an Interpretation Study to the satisfaction of the Director General, Heritage Office. Note: This Action has been completed.		✓	Environment Manager

Activity	Action	Area		Responsibility
		RPGP	Field	
Construction, Operation, Rehabilitation	If excavation activities are likely to result in a relic being discovered/exposed/moved/ damage or destroyed, obtain an excavation permit from the NSW Heritage Office. Additionally, if, during the site preparation and/or drilling phases of the development, an unexpected archaeological relic is uncovered (as defined under the *Heritage Act 1977*), cease all excavation and obtain an excavation permit under the *Heritage Act 1977*, from the NSW Heritage Office.	✓	✓	Environment Manager
Construction, Operation, Rehabilitation (EMAI)	Include effective screen planting and Sites 5 and 7 of lower to middle storey endemic Cumberland Plain species. Ensure the mature height of screening vegetation at Site 5 will not obstruct the vista between the mansion and Mount Annan. Ensure gas well area fences and production hardware are painted an appropriate colour at Sites 5 and 7 to minimise visual intrusion. Ensure temporary site fencing is provided to protect the Cumberland Plain woodland vegetation, especially, the large grey box (*Eucalyptus moluccana*) at Site 5. Fence off endemic vegetation in the vicinity of Sites 1 and 8. Leave unused silage trenches as evidence of continuing agricultural practice at Site 9. Only fill one as required by site rehabilitation practice. Ensure the planting out at Site 10 with endemic Cumberland Plain species in order to screen the well site from the mansion-Mount Gilead vista but not obscure the vista. Where possible screen the gas production hardware at Site 17 to minimise its visual intrusion in relation to the nearby transport routes. Consider a line of screen tress along Menangle Road such as Lemon, Carob or Irish Strawberry tress.		✓	Land & Compliance Officer

Activity	Action	Area		Responsibility
		RPGP	Field	
Rehabilitation (EMAI)	Ensure rehabilitation objectives are clearly stated and these include the need to return high quality agricultural ground or equal or higher productivity back to EMAI. Ensure soil and water management plans are devised and applied. Protect all Cumberland Plain woodland vegetation. Include two Defects Liability Periods – one following completion of main site works for up to two years each as well as access roads and gathering lines, and one following the decommissioning of each well site up to one year each.		✓	Environment Manager

During the reporting period there were no monitoring requirements triggered under the project approvals or development consents which related to European Heritage.

Bushfire

Measures for bushfire prevention and response, employed to meet the objectives for bushfire control, are outlined in the Emergency Response Plan and are reproduced in the table below.

Table F - 22: Control measures – Bushfire

Activity	Control measures	Responsibility
Planning	The induction program shall inform personnel of the required bushfire management procedures. AGL shall maintain regular liaison with local emergency services organisations. Regular liaison with landholders shall be conducted regarding the nature and schedule of operational activities.	Environment & Safety Officer/ Health and Safety Business Partner/ Land and Compliance Officer
Operations	A sign indicating the banning of hot works during Total Fire Ban periods shall be placed at the entry to the RPGP. Breathing apparatus (P1 & P2 Respirators) shall be available in the Plant area and office Dedicated fire pump, hose and sprinkler system connected to fire water dam Dedicated Fire Trailer equipped with emergency response equipment located at RPGP Designated emergency water tank with a capacity of 22,500 Litres. The Camden well head facilities are configured with a remote and automatic actuated shutdown valve (SDV) to rapidly isolate the well under defined emergency or abnormal operation conditions and a fire detection (fusible loop) linked to the emergency isolation valve. All well sites are monitored via the remote telemetry link to the RPGP control room on a 24/7 basis. In the event of an emergency like fire, all wells can be remotely shut-in from the control room. The Camden gas gathering pipelines are designed, constructed and operated in accordance with the requirements of Australian Standard AS 4130-2009. The gathering pipelines are typically buried to a minimum depth of 750mm and up to 1000mm in some areas and therefore are unaffected by surface fires.	Environment & Safety Officer/ Health and Safety Business Partner All personnel

Activity	Control measures	Responsibility
Bushfire Prevention	**Ban on Hot Works** Hot work shall not be permitted on site during Total Fire Ban periods. This shall be shown on the "No Hot Works" sign at the entrance to RPGP. **Monitoring of Bushfires** During bush fire season, mostly between September and March, the Emergency Response Coordinator must check the Fire Rating, Fire Bans warning and for any fires within 20km radius of AGL assets on a regular basis. In the event that there is a bush fire within 20km radius of AGL assets or when the Fire Danger Alert is Severe, the monitoring of the proximity of the fire shall be conducted by the Emergency Response Coordinator or their delegate, every 30 minutes. The proximity of the fire and wind direction shall be communicated to all Camden employees. The following websites are to be accessed; - NSW Rural Fire Service: http://www.rfs.nsw.gov.au/dsp_content.cfm?cat_id=1109 - Fires Near Me Website: http://www.firesnearme.com/ - Fires Near Me NSW Mobile App - Bureau of Meteorology: http://www.bom.gov.au/nsw/warnings/index.shtml Local Radio: Employees will have the following radio stations tuned into their vehicles to obtain regular updates of fires in the region; - 100.3FM Macarthur community radio. Broadcast 24 hours a day, 7 days a week - C91.3FM Macarthur Local Radio During bush fire threats all field employees are encouraged to listen to either radio stations for example when travelling between sites in their vehicles.	Health and Safety Business Partner All personnel
Communications	During the event of local bush fires or Extreme, Catastrophic and Total Fire Ban periods, communications to the Camden employees of emergency details will be by SMS or other means of communications such as email or phone.	Camden Operations Manager Health and Safety Business Partner All personnel

Activity	Control measures	Responsibility
Plant and Gas Well Shut Down	Consideration will be given by the Emergency Response Team in consultation with the Operations Manager, Gas Plant Supervisor and Front Line Leaders during the following circumstances as to whether the Plant or Gas Wells require shut down; - When the bush fire is under 20kms from the site, refer to Appendix 2 (Bush Fire Monitoring Map) - The alert level assigned by the NSW RFS as below **ADVICE** – This notifies the public that a fire has started – no immediate danger – communicate with all Camden employees and continue monitoring the NSW RFS website **WATCH & ACT** – There is a heightened level of threat – begin taking action – communicate with all Camden employees and prepare for evacuation **EMERGENCY WARNING** – This is the highest level of alert – take action immediately – communicate with all Camden employees, ensure all employees are away from affected areas and decide further action such as evacuation and well shut down.	
Evacuation of Site	A full evacuation of site shall be considered when there is an Emergency Warning Bush Fire Alert within the 20km radius of the RPGP. The evacuation point shall be appointed by the Emergency Response Chief.	Emergency Response Chief

There are no specific monitoring requirements for bushfire covered under the project approvals or development consents that applied during this reporting period.

Safety and Risk Management

Public safety is assured through compliance with:

- Operational Protocols;
- AGL Health, Safety and Environment Policy;
- Implementation of management sub plans within the EMP; and
- Site and Infrastructure Security.

AGL's control measures relating to environmental risk are covered under the respective items included within the EMP and its sub-plans. Incident reporting and monitoring requirements with regard to safety and risk management are included in the below table for the relevant project approvals, development consents and licence conditions.

Table F - 23: Incident Reporting Monitoring Requirements

Incident Reporting Monitoring Requirements
DA 15-1-2002-i
EPL Requirement The Licensee or its employees must notify the EPA of incidents causing or threatening material harm to the environment as soon as practicable after the person becomes aware of the incident.
DA 282-6-2003-i
Schedule 4. CoC 94 The Applicant is required within 24 hours of any incident or potential incident with actual or potential significant off-site impacts on people or the biophysical environment, to supply a report to the Department outlining the basic facts. A further detailed report shall be prepared and submitted following investigations of the causes and identification of necessary additional preventive measures. That report must be submitted to the Director-General no later than 14 days after the incident or potential incident. The Applicant shall maintain a register of accidents, incidents and potential incidents. The register shall be made available for inspection at any time by the independent hazard auditor and the Director-General.
DA 246-8-2002-i
Schedule 3. CoC 13 The Applicant shall notify the OEH (now EPA), DPI and the Director-General of any incident with significant off-site impacts on people or the biosphere environment as soon as practicable after the occurrence of the incident. The Applicant shall provide written details of the incident to the Director-General, the OEH (now EPA), DPI, and Wollondilly Council within seven days of the date on which the incident occurred. **Schedule 3. CoC 14**

Incident Reporting Monitoring Requirements
The Applicant shall meet the requirements of the Director-General to address the cause or impact of any incident, as it relates to this consent, reported in accordance with Condition 13 of this consent, within such period as the Director-General may agree.
PA 06_0137, PA 06_0138 & PA 06_0291
Schedule 4. COC 2 Within 7 days of detecting an exceedance of the goals/limits/performance criteria in this approval or an incident causing (or threatening to cause) material harm to the environment; the Proponent shall report the exceedance/incident to the Department (and any relevant agency). The report shall: (a) describe the date, time, and nature of the exceedance/incident; (b) identify the cause (or likely cause) of the exceedance/incident; (c) describe what action has been taken to date; and (d) Describe the proposed measures to address the exceedance/incident.
EPL 12003, Condition R2 - Notification of environmental harm
R2.1 Notifications must be made by telephoning the Environment Line service on 131 555. R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred. Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the POEO Act.

Rehabilitation

Control measures employed to meet the objectives for rehabilitation are outlined in the Rehabilitation and Landscape Management Sub Plan. Some of these measures are summarised in the below table.

Table F - 24: Control measures – Rehabilitation

Activity	Action	Responsibility
General	The induction program shall inform all employees and contractors about rehabilitation management measures, control procedures for weeds, pathogens and pest species and the designated work areas and access routes and procedures.	Environment and Safety Officer
	All operations activities including rehabilitation and maintenance shall be restricted to the compound area or designated gathering line corridor and designated access routes (where possible).	Operations Manager
Construction	For well surface locations where residents may be exposed to extended periods of uninterrupted views during construction, green mesh or other appropriate fencing is to be erected around the construction compound in accordance with the recommendations of the relevant EA or Site Plan.	Environment and Safety Officer (primary)/ Land & Compliance Officer (secondary)
Stockpiles	Cleared vegetation shall be stockpiled separately for subsequent re-spreading within the compound during site rehabilitation. Disturbed areas shall be progressively rehabilitated as soon as practicable.	Environment Manager (primary)/ Land & Compliance Officer (secondary)

Activity	Action	Responsibility
Initial Rehabilitation	Stabilisation and rehabilitation shall be undertaken as soon as works are complete, in consultation with the landowner, using sterile exotic crops and local native grasses. No kikuyu and other invasive grass species will be used. All rehabilitation works would be undertaken with maximum regard to environmental protection and rehabilitation, vegetation, subsoil and topsoil management, weed control, erosion and sedimentation management and re-vegetation in accordance with the requirements of the Office of Coal Seam Gas, the EMP and this Sub Plan. Earthworks, vegetation clearing and soil disturbance would be limited to the construction and operational footprint as appropriate. Existing vegetation will be maintained wherever possible. Native screen trees may be planted around the well site using appropriate species in consultation with the landowner. All waste materials and equipment shall be removed from the area once backfilling and tie-ins are completed. Sediment control measures shall be implemented where necessary to prevent erosion and water contamination. (See Soil and Water Management Sub Plan). Areas to be rehabilitated shall be graded to reinstate pre-existing surface contours and natural drainage patterns. All fences which were cut and replaced by gates during operations shall be repaired to at least the equivalent pre-operations condition, unless permanent gates or other arrangements are agreed with the landholder. Selection of fencing and other materials used for landscaping shall be undertaken in consultation with the landowner to the satisfaction of the Director-General (where required). Initial rehabilitation of the well construction compound and gas gathering lines is to be consistent with the established character of surrounding land. All flagging and bunting installed for environmental or safety reasons shall be removed.	Environment Manager (primary)/ Land & Compliance Officer (secondary)

Activity	Action	Responsibility
Weed and Pathogen control and monitoring	The well site, restored access tracks and gathering line routes shall be inspected for 12 months following the completion of rehabilitation, for evidence of soil settlement, weeds and pest animals. Active weed control shall be required at sites identified as infested for at least one year after construction. Additional appropriate control measures shall be utilised after this time, on the basis of monitoring results. Herbicides are to be used to kill noxious weeds. Drift, drip or run-off to surface waters or non-target species is to be avoided. Personnel using herbicides are to be appropriately trained and qualified. All instructions provided by any responsible authority (with respect to the eradication of noxious weeds) shall be observed, and all reasonable efforts shall be made to implement measures to prevent the introduction and establishment of noxious weeds. On first (and subsequent) entry to the District and prior to entering the construction area all vehicles, equipment and portable infrastructure shall be washed by air or water or demonstrated they are clean (namely, certificate/or other document to show they have been cleaned down), prior to coming to site. This shall be done prior to mobilisation to site. Cleaning shall be thorough so as to remove all soil or organic matter from the surfaces of vehicles, equipment and portable infrastructure, including the undercarriage. Topsoil and vegetation material shall be re-spread in the immediate vicinity of the area of origin to limit the potential spread of weeds and pathogens. All plant and equipment shall be inspected and be free of invertebrates and pest species prior to coming on site.	Environment Manager (primary)/ Land & Compliance Officer (secondary)

Activity	Action	Responsibility
Final Rehabilitation	All rehabilitation works would be undertaken with maximum regard to environmental protection and rehabilitation, vegetation, subsoil and topsoil management, weed control, erosion and sedimentation management and re-vegetation in accordance with the EMP and this Sub Plan. Earthworks, vegetation clearing and soil disturbance would be limited to the construction and operational footprint as appropriate. Existing vegetation will be maintained wherever possible. If removal of the gas gathering system is required, the excavated trench would be backfilled and rehabilitated, including contouring and re-vegetation. All areas associated with the construction and operation of the gas gathering system shall be rehabilitated to the pre-existing site conditions unless otherwise agreed by the landowner. Final rehabilitation is to be completed to the satisfaction of the Director-General and DRE, in consultation with the landowner, and in a manner that is generally consistent with the landform of the surrounding land. Re-vegetating would include but not be limited to broadcast of seed and ongoing maintenance and monitoring activities for 12 months minimum. For all trench crossings, the natural bed and bank profiles shall be restored to their original condition with smooth and even surfaces following installation of the gas pipe. Stabilisation and rehabilitation shall be undertaken as soon as works are complete, using sterile exotic crops and local native grasses. No kikuyu and other invasive grass species will be used. All private tracks used during operations will be returned to their pre-operations state, or to a condition agreed by the landholder. Site rehabilitation shall protect any remnant local native riparian vegetation and restore riparian zones affected by the work in accordance with the conditions and plans. Rehabilitated riparian zones shall be monitored and maintained for at least two years after final planting. Maintenance shall include watering, weed control, replacement of plant losses, disease and insect control, mulching etc. No crown or camber shall remain along any gas gathering system line following rehabilitation.	Environment Manager (primary)/ Land & Compliance Officer (secondary)

There are no specific monitoring requirements for rehabilitation in addition to visual amenity monitoring requirements as specified in Table F-18 above that applied during this reporting period.

Appendix G. 2012-2014 Independent Audit Report – Non-Conformances Corrective Actions Register

AGL Corrective Actions Register: 2012-2014 Independent Environmental Audit.

AGL Camden Gas Project
7 July 2015

Development Consent and Condition Number	Action	Finding	Status / Target Action Date	Action Taken By AGL
DA 15-1-2002i Schedule 3 Condition 1, Condition 11 DA 246-8-2002i Schedule 3 Condition 1, Condition 8 DA 282-6-2003i Schedule 3 Condition 1 DA 183-8-2004i Schedule 2 Condition 1 DA 9-1-2005 Schedule 2 Condition 1 DA 75-4-2005 Schedule 2 Condition 1	Assess if CMO has: a. relevant supporting documentation is referenced b. each condition as a word for word representation of the consent condition	Compliance – Improvement Opportunity	Complete	CMO-Compliance has been assessed and, where required updated, to include relevant supporting documentation, and each consent condition is a 'word for word' representation of the consent condition. All corrective actions within this Corrective Actions Register are tracked within CMO.
DA 15-1-2002i Schedule 3 Condition 15	Provide latest version of the *Environmental Management Plan* to government agencies for review and comment.	Compliance – Improvement Opportunity	Complete	The *Environmental Management Plan* has been issued to the respective government agencies for review and comment.
DA 15-1-2002i Schedule 3 Condition 22(d)	Update *Traffic Management Sub Plan* to include this condition.	Non Compliance – Level 2	Complete	The *Traffic Management Sub Plan* has been revised to address this Action.

AGL Corrective Actions Register: 2012-2014 Independent Environmental Audit.

Development Consent and Condition Number	Action	Finding	Status / Target Action Date	Action Taken By AGL
DA 15-1-2002i Schedule 4 DA 282-6-2003i Schedule 6 DA 75-4-2005 Schedule 2 Condition 17	Review the nature and significance of outstanding tasks in the planning maintenance system (MEX) and implement corrective actions where appropriate.	Compliance – Improvement Opportunity	Complete	The Head of Engineering has a performance target for overdue MEX work orders and the status of overdue MEX work orders is assessed at the monthly Upstream Gas Leadership Team meeting.
DA 282-6-2003i Schedule 4 Condition 14	*Rosalind Park Gas Plant Landscape and Lighting Audit Report, September 2014* to be amended to provide clarity on how it addresses sub sections of Condition 14.	Compliance – Improvement Opportunity	Complete	The *Rosalind Park Gas Plant Landscape and Lighting Audit Report, September 2014* was amended to provide clarity on how it addresses the growth and health of screen trees in accordance with sub sections of Condition 14. This improvement opportunity will also be incorporated in future audit reports.
DA 282-6-2003i Schedule 4 Condition 29A	Undertake night time noise monitoring to verify compliance with noise limits for EM39 and GL17 well sites.	Compliance – Improvement Opportunity	Pending EM39 and GL17 producing	In progress: When GL17 and EM39 are open and producing night time noise monitoring will be undertaken.
DA 282-6-2003i Schedule 4 Condition 33	RPGP quarterly noise monitoring reports to quantify wind conditions relative to the wind criteria.	Compliance – Improvement Opportunity	Complete	The scope of work for RPGP noise monitoring reports has been revised to include quantification and documentation of wind conditions relative to the wind criteria.
DA 282-6-2003i Schedule 4 Condition 38	Update *Noise Management Sub Plan* to state that the Annual Environmental Performance Report is submitted to the Director General.	Compliance – Improvement Opportunity	Complete	The *Noise Management Sub Plan* has been revised to include that the Annual Environmental Performance Report is submitted to the Director General.
DA 282-6-2003i Schedule 4 Condition 47	Document the processes for assessing Rosalind Park Gas Plant stack testing emissions concentrations at nearest residence.	Compliance – Improvement Opportunity	Complete	The *Air Quality Management Sub Plan* has been revised to identify how the stack testing emission concentrations from the Rosalind Park Gas Plant are assessed against emission criteria at the nearest residence.
DA 282-6-2003i Schedule 4 Condition 58	Meet the Continuous Emission Monitoring requirements specified in Environment Protection Licence 12003 for moisture and volumetric flow measurement or develop an alternative emission monitoring solution for approval by the EPA.	Non Compliance – Level 2	16 December 2015	In progress: The Environment Protection Licence 12003 includes a condition for Pollution Reduction Program for a Predictive Emission Monitoring System which is required to be completed by 16 December 2015. The results of the program will inform how this non-compliance will be addressed.

AGL Corrective Actions Register: 2012-2014 Independent Environmental Audit.

Development Consent and Condition Number	Action	Finding	Status / Target Action Date	Action Taken By AGL
DA 282-6-2003i Schedule 4 Condition 119 (b)	Annually notify the Campbelltown Fire Management Committee of the information in the *Annual Environmental Performance Report* regarding bushfire management.	Compliance – Improvement Opportunity	Complete	The Campbelltown Fire Management Committee was issued with a copy of the *2013-14 Annual Environmental Performance Report* which describes the bushfire management activities for 2013-14.
DA 282-6-2003i Schedule 4 Condition 119(c)	*Emergency Response Plan* to state that it incorporates the relevant bushfire hazard measures and policies of the three councils.	Compliance – Improvement Opportunity	Complete	The *Emergency Response Plan* has been updated to state that it incorporates the relevant bushfire hazard measures and policies of the Camden, Campbelltown and Wollondilly Shire Councils.
DA 282-6-2003i Schedule 5 Condition 2 (d)	For the *2014-15 Annual Environmental Performance Report*, improve the linkage between the Environmental Management Plan objectives/ targets and performance.	Compliance – Improvement Opportunity	Complete	The *2014-15 Annual Environmental Performance Report* scope has been prepared and includes the requirement to assess the Camden Gas Project performance against the *Environmental Management Plan* objectives/ targets. The EMP has also been revised to track performance of the EMP targets on a monthly basis.
DA 282-6-2003i Schedule 5 Condition 4 DA 183-8-2004i Schedule 2 Condition 23	Update the EMP annually.	Non Compliance – Level 2	Complete	The *Environmental Management Plan* has been reviewed and updated.
DA 282-6-2003i Schedule 5 Condition 20	Update the *Pollution Incident Response Management Plan* to include notification as soon as practicable.	Compliance – Improvement Opportunity	Complete	The *Pollution Incident Response Management Plan* has been updated to include notification as soon as practicable.
DA 75-4-2005 Schedule 2 Condition 28	Provide a final copy of the *Assessment of Sugarloaf Well design Against Locational Guidelines* to the Department of Planning and Environment.	Non Compliance – Level 2	Complete	*Assessment of Sugarloaf Well design Against Locational Guidelines* has been submitted to the Department of Planning and Environment.
DA 75-4-2005 Schedule 2 Condition 44	Consult with Council and the Rural Fire Service on the *Bushfire Management Plan.*	Non Compliance – Level 2	Complete	AGL has consulted with the Camden, Campbelltown and Wollondilly Shire Councils and the Rural Fire Service prior to updating the *Bushfire Management Plan.*

Note: Non compliances have been excluded from this register where no further action is required.

Appendix H. AGL Corrective Actions Register – EPA 2013 Compliance Audit

AGL Corrective Actions Register – EPA 2013 Compliance Audit

AGL Camden Gas Project
2 July 2015

Condition Number	Action Required by the EPA in the Audit Report	Non Compliance Code*	Target/ Action Date	Action Taken By AGL
L3.1	The licensee must comply with the concentration limits specified for pollutants discharged from Point 1 for NOx emissions.	Code Yellow	Immediately/ Ongoing	**Complete (ongoing):** AGL notified the EPA about this non-compliance in December 2012 and the EPA issued a penalty notice. > AGL will continue to operate Compressor Engine 1 to comply with the concentration limits specified for pollutants discharged from Point 1 for NOx emissions.
L3.1	The licensee must comply with the concentration limits specified for pollutants discharged from Point 2 for NOx emissions.	Code Yellow	Immediately/ Ongoing	**Complete (ongoing):** AGL notified the EPA about this non-compliance in December 2012 and the EPA issued a penalty notice. AGL will continue to operate Compressor Engine 2 to comply with the concentration limits specified for pollutants discharged from Point 2 for NOx emissions.
O1.1	The licensee must ensure that the storage of oily water in underground tanks is managed to reduce the risk of water pollution.	Code Yellow	Licensee to report to the EPA on compliance by 30 June 2014.	**Complete:** In early 2014, AGL reviewed the process for monitoring the integrity of the two underground storage tanks. A corrective action plan has been developed with controls implemented to further reduce the likelihood of a water pollution event. Works completed include: Short Term:

AGL Corrective Actions Register – EPA 2013 Compliance Audit

Condition Number	Action Required by the EPA in the Audit Report	Non Compliance Code*	Target/ Action Date	Action Taken By AGL
				> **Complete:** preparation and implementation of a Standard Operating Procedure (SOP) and Job Safety and Environmental Analysis (JSEA) for visual inspection and recording of tank volumes up to 6 times per day and annual hold tests; > **Complete:** developing a scope of works to install groundwater monitoring bores around the external perimeter of the underground tanks; > **Complete:** selecting a preferred contractor to drill and install the groundwater monitoring bores; > **Complete:** obtaining a Monitoring Bore Licence from the NSW Office of Water; > **Complete:** preparation of an SOP and JSEA for sampling and analysis of water within the groundwater monitoring bores and underground tanks; and > **Complete:** AGL's preferred contractor has drilled and installed 3 groundwater monitoring bores around the external perimeter of each of the two underground tanks in July 2014. <u>Longer Term</u> > **Complete:** An assessment has commenced of longer term produced oily water handling and storage solutions designed to reduce the risk to water pollution, based on Australian Standards, at RPGP.
O1.1	The licensee must ensure that the transfer of produced water from tankers to the flare pond is managed to reduce the risk of water pollution.	Code Yellow	Licensee to report to the EPA on compliance by 30 June 2014.	**Complete:** In early 2014, AGL reviewed the process for transferring produced water from tankers to the flare pond. A corrective action plan has been developed with controls implemented to further reduce the likelihood of a water pollution event. Works completed include: <u>Short Term:</u> > **Complete:** isolation of the tanker unloading point into the flare pond; > **Complete:** preparation and implementation of a SOP and JSEA for transferring water from tankers to the flare pond via the hydraulic fracturing tanks; > **Complete:** preparation and implementation of a SOP and JSEA for removal of produced water from the flare pond; > **Complete:** communication of new SOP and JSEA requirements to water transport contractors;

AGL Corrective Actions Register – EPA 2013 Compliance Audit

Condition Number	Action Required by the EPA in the Audit Report	Non Compliance Code*	Target/ Action Date	Action Taken By AGL
				> **Complete:** preparation of a concept flow diagram for long term options to load to and unload from the flare pond; > **Complete:** installation of portable bunds to store water transfer pumps with daily inspection and maintenance program for portable bunds; > **Complete:** placement of 20L air bleedline drum on portable bund; > **Complete:** installation of isolation valves and end caps on designated water transfer hoses; > **Complete:** use of mobile bunds to place under tanker transfer pumps during loading and unloading of produced water; > **Complete:** improved placement of transfer pump to reduce the total length of transfer hose required; and > **Complete:** replacement of flare pond suction hose with above ground poly pipeline. <u>Longer Term:</u> > **Complete:** An assessment has commenced of longer term produced water handling and storage solutions designed to reduce the risk to water pollution, based on Australian Standards, at RPGP.
O2.1b	The licensee must operate plant and equipment associated with the Continuous Emissions Monitoring equipment on Compressor engine 3 in a proper and efficient manner. The licensee must comply with the requirements set out in the 'Enforceable Undertaking' dated 8 August 2013.	Code Yellow	Refer to requirements outlined in 'Enforceable undertaking' dated 8 August 2013 and EPL 12003 Condition U1.	**Complete:** In compliance with the Enforceable Undertaking Clause 2.2 and EPL 12003 Condition U1, AGL has completed a Predictive Emissions Monitoring System (**PEMS**) trial as an alternative to CEMS on Compressor Engine 2 and Compressor Engine 3.
M1.3	Air monitoring The licensee must keep records in respect of samples required to be collected by the licence which show the name of the person who collected the sample.	Code Blue	When sampling is next required.	**Complete:** Air emissions monitoring reports prepared by AGL's specialist consultants now include the name of the person who collected the sample.

AGL Corrective Actions Register – EPA 2013 Compliance Audit

Condition Number	Action Required by the EPA in the Audit Report	Non Compliance Code*	Target/ Action Date	Action Taken By AGL
M2.1/M2.2	Quarterly air monitoring The licensee must use the sampling method specified in the licence condition for sulphur dioxide, dry gas density and the molecular weight of stack gases. In exceptional circumstances, the EPA may approve the use of an alternative method. To obtain approval to use an alternative method the licensee must apply in writing to the EPA – see details on p.1 of the Approved Methods **http://www.epa.nsw.gov.au/air/appmethods.htm**	Code Blue	When sampling is next required or apply for approval of alternative method.	**Complete:** On 10 June 2014, AGL submitted an EPL Variation Application to the EPA for approval to use an alternative method to sample for sulphur dioxide. AGL also informed the EPA that AGL would no longer be seeking approval to use an alternative sampling method for dry gas density and the molecular weight of stack gases. As these conditions are also reflected in DA 282-6-2003i issued under the Environmental Planning and Assessment Act 1979 (NSW), AGL wrote to the EPA that it will seek to obtain a modification of this planning approval at the appropriate time.
M2.3	Continuous air monitoring – pollutants monitored Point 1: The licensee must monitor the pollutants specified in the licence condition. Points 2 and 3: The licensee must comply with the requirements set out in the 'Enforceable Undertaking' dated 8 August 2013.	Code Blue	Point 1 – Immediately/ Ongoing Points 2 and 3 – refer to 'Enforceable undertaking' and EPL 12003 Condition U1.	Point 1 **Complete:** Pollutants are now monitored as specified in the licence conditions. Points 2 and 3 **Complete:** In compliance with the Enforceable Undertaking Clause 2.2 and EPL 12003 Condition U1, AGL has completed a PEMS trial as an alternative to CEMS on Compressor Engine 2 and Compressor Engine 3.
M2.3	Continuous air monitoring – sampling method at Point 1 The licensee must use the sampling method specified in the licence condition for all pollutants. In exceptional circumstances, the EPA may approve the use of an alternative method. To obtain approval to use an alternative method the licensee must apply in writing to the EPA – see details on p.1 of the Approved Methods **http://www.epa.nsw.gov.au/air/appmethods.htm**.	Code Blue	Immediately	Point 1 **Complete:** Pollutants are now monitored as specified in the licence conditions.

AGL Corrective Actions Register – EPA 2013 Compliance Audit

Condition Number	Action Required by the EPA in the Audit Report	Non Compliance Code*	Target/ Action Date	Action Taken By AGL
M2.3	Continuous air monitoring - sampling frequency The licensee must sample at the frequency specified in the licence condition.	Code Blue	Point 1 - Ongoing Points 2 and 3 - refer to 'Enforceable undertaking' and EPL 12003 Condition U1.	Point 1 **Complete:** Sampling is undertaken at the frequency specified in the licence conditions. Point 2 **Complete:** In compliance with the Enforceable Undertaking Clause 2.2 and EPL 12003 Condition U1, AGL has completed a PEMS trial as an alternative to CEMS on Compressor Engine 2.
M2.4	The licensee must select sampling positions for quarterly monitoring at points 1, 4 and 5 in accordance with TM-1.	Code Blue	Points 1 and 4 - Ongoing. Point 5 – as required by licence condition.	**Complete:** Sampling positions for quarterly monitoring at points 1, 4 and 5 are now in accordance with TM-1 unless otherwise specified within the EPL.
M2.5	The licensee must monitor for the pollutant bromide rather than bromine.	Code Blue	When sampling is conducted.	**Complete:** Produced water monitoring samples have been analysed for bromide each quarter from March 2014.
M3.1	Air monitoring The licensee must monitor in accordance with the Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (the Approved Methods).	Code Blue	When sampling is conducted.	**Complete:** AGL has included this information in stack testing reports since March 2014.
M3.2	Water monitoring The licensee must use the sampling method specified in the EPA Approved Methods Publication. Or The licensee must apply in writing to the EPA for approval to use an alternative method.	Code Blue	When sampling is next required or apply for approval of alternative method.	**Complete:** On 10 June 2014, AGL submitted an EPL Variation Application to the EPA for approval to use an alternative method for analysis of methane.
M5.2 (a) and (c)	All records of complaint must include the time that each complaint was made and the personal details of the complainant.	Code Blue	When next complaint is received.	**Complete:** AGL's complaints management system (Consultation Manager) will be used to record this information.

AGL Corrective Actions Register – EPA 2013 Compliance Audit

Condition Number	Action Required by the EPA in the Audit Report	Non Compliance Code*	Target/ Action Date	Action Taken By AGL
	If no such details are provided then a note must be made to that effect.			
R1.5	The licensee must submit the Annual Return no later than 60 days after the end of each reporting period.	Code Blue	When next Annual Return is due.	**Complete:** AGL's Annual Return for 2012-2013 was submitted to the EPA within the 60 day reporting period.
R1.10	The licensee must undertake noise monitoring in accordance with the NSW Industrial Noise Policy August 2000.	Code Blue	Ongoing	**Complete:** Noise monitoring reports prepared by AGL's specialist consultants now include details of instrumentation used to determine meteorological conditions.

***Non Compliance Codes**

Code Red = non-compliance is of considerable environmental significance and therefore must be dealt with as a matter of priority.

Code Orange = non-compliance is still a significant risk of harm to the environment however can be given a lower priority than a red risk assessment.

Code Yellow = non-compliance could receive a lower priority but must be addressed.

Code Blue = do not have a direct environmental significance, but are still important to the integrity of the regulatory system. These conditions relate to administrative, monitoring and reporting requirements.

Appendix I. Air Quality Monitoring Results Reported in 2013/14 Annual Return

EPA Monitoring Point 1							
Pollutant	**Unit of measure**	**No. of Samples Required by license**	**No. of Samples Collected and Analysed**	**Lowest Sample value**	**Mean of Sample**	**Highest Sample**	**License Limit**
Carbon dioxide	%	4	0	N/A	N/A	N/A	N/A
Dry gas density	Kg/m^3	4	0	N/A	N/A	N/A	N/A
Moisture	%	4/CEMS	0	N/A	N/A	N/A	N/A
Molecular weight of stack gases	g/g-mole	4	0	N/A	N/A	N/A	N/A
Nitrogen Oxides	mg/m^3	4/CEMS	0	N/A	N/A	N/A	461
Oxygen (0_2)	%	4+CEMS	0	N/A	N/A	N/A	N/A
Sulfuric acid mist and sulphur trioxide (as SO3)	mg/m^3	4	0	N/A	N/A	N/A	5.0
Sulphur dioxide	mg/m^3	4	0	N/A	N/A	N/A	7
Temperature	Degrees Celsius	4/CEMS	0	N/A	N/A	N/A	N/A
Velocity	m/s	4	0	N/A	N/A	N/A	N/A
Volumetric flowrate	m^3/s	4/CEMS	0	N/A	N/A	N/A	N/A

*BLD: Below Limit of Detection

Note: Monitoring point 1 was not sampled during the 2013/14 Annual Return reporting period as compressor engine 1 was shut down due to mechanical issues.

EPA Monitoring Point 2							
Pollutant	**Unit of measure**	**No. of Samples Required by license**	**No. of Samples Collected and Analysed**	**Lowest Sample value**	**Mean of Sample**	**Highest Sample**	**License Limit**
Carbon dioxide	%	4	4	11.60	12.03	12.40	N/A
Dry gas density	Kg/m^3	4	4	1.30	1.30	1.30	N/A
Moisture	%	4/CEMS	4	16.00	18.50	21.00	N/A
Molecular weight of stack gases	g/g-mole	4	4	30.00	30.00	30.00	N/A
Nitrogen Oxides	mg/m^3	4/CEMS	4/CEMS	81.00/ 59.87	93.75/ 94.34	120.00/ 127.96	461
Oxygen (0_2)	%	4/CEMS	4/CEMS	0.43/ 0.40	0.51/ 0.47	0.68/ 0.54	N/A
Sulfuric acid mist and sulphur trioxide (as SO3)	mg/m^3	4	4	BLD	BLD	BLD	5.0
Sulphur dioxide	mg/m^3	4	4	BLD	BLD	BLD	7
Temperature	Degrees Celsius	4/CEMS	4/CEMS	489.00/ 496.77	497.82/ 503.10	503.00/ 507.29	N/A
Velocity	m/s	4	4	27.00	29.75	31.00	N/A
Volumetric flowrate	m^3/s	4/CEMS	4	0.93	0.98	1.00	N/A

*BLD: Below Limit of Detection

EPA Monitoring Point 3							
Pollutant	**Unit of measure**	**No. of Samples Required by license**	**No. of Samples Collected and Analysed**	**Lowest Sample value**	**Mean of Sample**	**Highest Sample**	**License Limit**
Carbon dioxide	%	4	4	11.70	11.95	12.20	N/A
Dry gas density	Kg/m^3	4	4	1.30	1.30	1.30	N/A
Moisture	%	4/CEMS	4	17.00	18.50	20.00	N/A
Molecular weight of stack gases	g/g-mole	4	4	30.00	30.00	30.00	N/A
Nitrogen Oxides	mg/m^3	4/CEMS	4/CEMS	91.00/ 76	125.25/ 119.06	190.00/ 220.1	461
Oxygen (0_2)	%	4/CEMS	4/CEMS	0.54/ 0.59	0.64/ 0.66	0.77/ 0.81	N/A
Sulfuric acid mist and sulphur trioxide (as SO3)	mg/m^3	4	4	*BLD	*BLD	*BLD	5.0
Sulphur dioxide	mg/m^3	4	4	*BLD	*BLD	*BLD	7
Temperature	Degrees Celsius	4/CEMS	4/CEMS	466/ 509.66	496.38/ 514.92	504.00/ 519.45	N/A
Velocity	m/s	4	4	28.00	29.50	31.00	N/A
Volumetric flowrate	m^3/s	4/CEMS	4	0.98	1.02	1.10	N/A

*BLD: Below Limit of Detection

EPA Monitoring Point 4							
Pollutant	**Unit of measure**	**No. of Samples Required by license**	**No. of Samples Collected and Analysed**	**Lowest Sample value**	**Mean of Sample**	**Highest Sample**	**License Limit**
Carbon dioxide	%	4	4	3.90	4.25	4.60	N/A
Dry gas density	Kg/m^3	4	4	1.30	1.30	1.30	N/A
Moisture	%	4	4	7.80	8.55	9.70	N/A
Molecular weight of stack gases	g/g-mole	4	4	29.00	29.00	29.00	N/A
Nitrogen Oxides	mg/m^3	4	4	29.00	87.3	110.00	110
Oxygen (0_2)	%	4	4	13.40	13.70	14.00	N/A
Sulfuric acid mist and sulphur trioxide (as SO3)	mg/m^3	4	4	*BLD	*BLD	*BLD	3.5
Sulphur dioxide	mg/m^3	4	4	*BLD	*BLD	*BLD	35
Temperature	Degrees Celsius	4	4	247.00	272.75	283.00	N/A
Velocity	m/s	4	4	2.10	3.00	3.50	N/A
Volumetric flowrate	m^3/s	4	4	0.05	0.07	0.09	N/A

*BLD: Below Limit of Detection

EPA Monitoring Point 5							
Pollutant	**Unit of measure**	**No. of Samples Required by license**	**No. of Samples Collected and Analysed**	**Lowest Sample value**	**Mean of Sample**	**Highest Sample**	**License Limit**
Carbon dioxide	%	4	4	9.80	12.38	14.50	N/A
Dry gas density	Kg/m^3	4	4	1.30	1.30	1.30	N/A
Moisture	%	4	4	66.00	71.50	77.00	N/A
Molecular weight of stack gases	g/g-mole	4	4	30.00	30.00	30.00	N/A
Nitrogen Oxides	mg/m^3	4	4	*BLD	*BLD	*BLD	13
Oxygen (0_2)	%	4	4	*BLD	*BLD	*BLD	N/A
Sulfuric acid mist and sulphur trioxide (as SO3)	mg/m^3	4	4	*BLD	*BLD	*BLD	35
Sulphur dioxide	mg/m^3	4	4	*BLD	*BLD	*BLD	1042
Temperature	Degrees Celsius	4	4	89.00	90.25	92.00	N/A
Velocity	m/s	4	4	*BLD	*BLD	*BLD	N/A
Volumetric flowrate	m^3/s	4	4	*BLD	*BLD	*BLD	N/A

*BLD: Below Limit of Detection

EPA Monitoring Point 6						
Pollutant	**Unit of measure**	**No. of Samples Required by license**	**No. of Samples Collected and Analysed**	**Lowest Sample value**	**Mean of Sample**	**Highest Sample**
Carbon dioxide	%	4	4	*BLD	*BLD	*BLD
Dry gas density	Kg/m^3	4	4	1.30	1.30	1.30
Moisture	%	4	4	1.90	2.15	2.30
Molecular weight of stack gases	g/g-mole	4	4	29.00	29.00	29.00
Odour	Odour units	4	4	59	71.25	85
Oxygen (0_2)	%	4	4	20.90	20.90	20.90
Temperature	Degrees Celsius	4	4	22.00	28.00	39.00
Velocity	m/s	4	4	4.90	5.48	5.90
Volumetric flowrate	m^3/s	4	4	0.12	0.14	0.15

*BLD: Below Limit of Detection

Appendix J. Assessable Pollutant Results – RPGP

Assessable Pollutant	Assessable Load (Kg)	Load Limit (Kg)
Benzene	4.93	47
Benzo(a) pyrene	0.0	0.27
Fine Particulates	223.61	460
Hydrogen Sulphide	0.0	1.60
Nitrogen Oxides	6,920.66	103,000.00
Nitrogen Oxides – Summer	1,489.56	No limit stipulated
Sulphur Oxides	0.0	3000.00
Volatile Organic Compounds	12.18	33,000.00
Volatile Organic Compounds-Summer	3.05	No limit stipulated

Appendix K. Rosalind Park Gas Plant Quarterly and Annual Noise Monitoring Results

Noise Monitoring Undertaken	Summary of Results
Attended noise monitoring 29 October 2014	Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time periods. At R1 noise from the RPGP was inaudible at all times (day, evening and night). Noise sources noted included ongoing highway traffic, birds and insects. At R7 noise from RPGP was occasionally audible during day, evening and night. Day, evening and night time noise levels were recorded as L_{Aeq} of 32dBA, 32dBA, and 34dBA, respectively. Other noise sources recorded included ongoing traffic noise, aeroplanes, bird, insects and frogs.
Attended noise monitoring 15 December 2014	Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time periods. At R1 noise from the RPGP was inaudible at all times (day, evening and night). Noise sources identified were highway traffic, birds, frogs, insects and aeroplanes. At R7 noise from RPGP was inaudible at all times during day time but was occasionally audible at evening and night. Evening and night noise levels were recorded as L_{Aeq} of 34dBA and 33dBA, respectively. Other noise sources recorded included ongoing traffic, birds, insects and aeroplanes.
Attended noise monitoring 26 March 2015	Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time period. At R1 noise from the RPGP was inaudible at all times (day, evening and night). Noise sources noted included ongoing highway traffic and insects. At R7 noise from RPGP was inaudible at all times during day time but was occasionally audible at evening and night. Evening and night noise levels were recorded as L_{Aeq} of 35dBA and 34dBA, respectively. Other noise sources recorded included ongoing traffic, insects and aeroplanes.
Attended noise monitoring 23 June 2015	Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time period. At R1 noise from the RPGP was inaudible at all times (day, evening and night). Noise sources noted were highway traffic, insects and aeroplanes. At R7 noise from the RPGP was inaudible at all times (day, evening and night). Noise sources noted were highway traffic and aeroplanes.
Annual Noise Report Summary (From 2014 Annual Noise Compliance Monitoring Report)	All monitoring showed the RPGP to be compliant with the relevant operational noise limits set by the EPL and Development Consent No. 282-6-2003-I at both R1 and R7 receiver locations for day, evening and night under typical operating conditions.

Appendix L. Flare Event Monitoring

The RPGP flare log is provided in this Appendix from July 2014 to June 2015.

Date	Time	Duration (minutes)	Light (Day, Dusk, Night, Dawn)	No. Compressor on line	Cause of Flare Occurrence
31/08/2014	1937 hrs to 1939 hrs And 1943hrs to 1945 hrs	4 (total)	Night	None	Plant restart

Appendix M. Groundwater Monitoring Results

2014/15 Electrical conductivity (specific) results from dedicated monitoring bores [note: logarithmic scale used on the y-axis]

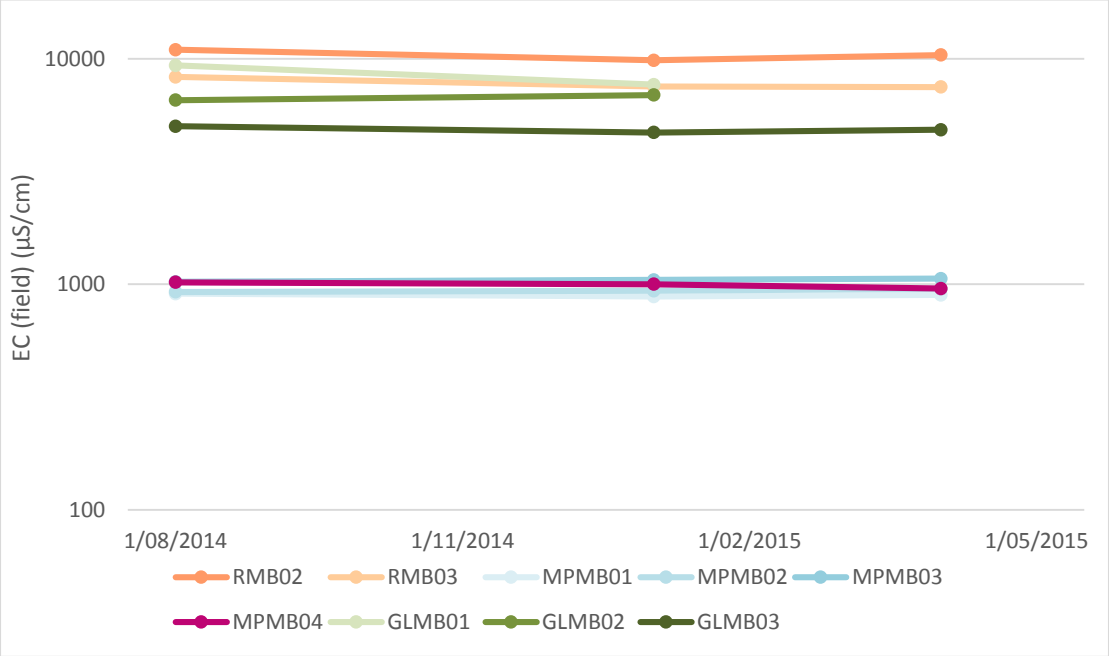

Table M-1 Groundwater Monitoring Results
Results from water monitoring at monitoring points 8, 9, 10, 11, 12, 13, 14 and 15 between December 22, 2013 and December 21, 2014

			Q3 FY14 - January - March 2014								Q4 FY14 - April-June 2014								Q1 FY15 - July-September 2014								Q2 FY15- October-December 2014								Average*		
	Report period																																			
	Monitoring point		8	9	10	11	12	13	14	15	8	9	10	11	12	13	14	15	8	9	10	11	12	13	14	15	8	9	10	11	12	13	14	15			
	Location		EM40	SF08	RB10	MT05	MP12	MP30	RP12	SL03	EM40	SF08	RB10	MT05	MP12	MP30	RP12	SL03	EM40	SF08	RB10	MT05	MP12	MP30	RP12	SL03	EM40	SF08	RB10	MT05	MP12	MP30	RP12	SL03			
	Sampled Date		Not enough water to sample - 27/2/2014	Not enough water to sample - 27/2/2014	27/02/2014	Not enough water to sample - 27/2/2014	Not enough water to sample - 27/2/2014	Not enough water to sample - 27/2/2014	Not enough water to sample - 27/2/2014	Not enough water to sample - 27/2/2014	Not enough water to sample - 26/5/2014	Not enough water to sample - 27/5/2014	26/05/2014	Not enough water to sample - 26/5/2014	Not enough water to sample - 26/5/2014	Not enough water to sample - 26/5/2014	Not enough water to sample - 26/5/2014	Not enough water to sample - 27/5/2014	Not enough water to sample - 13/8/2014	Not enough water to sample - 13/8/2014	13/08/2014	Not enough water to sample - 13/8/2014	Not enough water to sample - 13/8/2014	Not enough water to sample - 13/8/2014	Not enough water to sample - 13/8/2014	Not enough water to sample - 14/8/2014	Not enough water to sample - 18/11/2014	Not enough water to sample - 18/11/2014	19/11/2014	Not enough water to sample - 18/11/2014	Not enough water to sample - 18/11/2014	Not enough water to sample - 18/11/2014	Not enough water to sample - 18/11/2014	Not enough water to sample - 19/11/2014		(from 4 samples)	
	Data obtained		na	na	7/03/2014	na	na	na	na	na	na	na	4/06/2014	na	na	na	na	na	na	na	22/08/2014	na	na	na	na	na	na	na	27/11/2014	na	na	na	na	na			
	Report published		21/03/2014	21/03/2014	21/03/2014	21/03/2014	21/03/2014	21/03/2014	21/03/2014	21/03/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	9/09/2014	9/09/2014	9/09/2014	9/09/2014	9/09/2014	9/09/2014	9/09/2014	9/09/2014	17/12/2014	17/12/2014	17/12/2014	17/12/2014	17/12/2014	17/12/2014	17/12/2014	17/12/2014			
	Analyte	Units	Limit of reporting																																	Units	Analyte
Physical	Electrical Conductivity @ 25°C	µS/cm	1	-	-	11100	-	-	-	-	-	-	-	10300	-	-	-	-	-	-	-	11700	-	-	-	-	-	-	-	11200	-	-	-	-	-	**11075**	µS/cm	**Electrical Conductivity @ 25°C**
	Total Dissolved Solids @180°C	mg/L	10	-	-	7810	-	-	-	-	-	-	-	7380	-	-	-	-	-	-	-	7580	-	-	-	-	-	-	-	7980	-	-	-	-	-	**7688**	mg/L	**Total Dissolved Solids @180°C**
Major Cations	Calcium	mg/L	1	-	-	8	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	7	-	-	-	-	-	-	-	17	-	-	-	-	-	**9**	mg/L	**Calcium**
	Magnesium	mg/L	1	-	-	8	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	9	-	-	-	-	-	**8**	mg/L	**Magnesium**
	Potassium	mg/L	1	-	-	28	-	-	-	-	-	-	-	23	-	-	-	-	-	-	-	29	-	-	-	-	-	-	-	25	-	-	-	-	-	**26**	mg/L	**Potassium**
	Sodium	mg/L	1	-	-	3990	-	-	-	-	-	-	-	2920	-	-	-	-	-	-	-	2940	-	-	-	-	-	-	-	3640	-	-	-	-	-	**3373**	mg/L	**Sodium**
Major Anions	Bicarbonate	mg/L	1	-	-	6750	-	-	-	-	-	-	-	6230	-	-	-	-	-	-	-	6550	-	-	-	-	-	-	-	6620	-	-	-	-	-	**6538**	mg/L	**Bicarbonate**
	Carbonate	mg/L	1	-	-	<1	-	-	-	-	-	-	194	-	-	-	-	-	-	-	300	-	-	-	-	-	-	-	800	-	-	-	-	-	**324**	mg/L	**Carbonate**
	Hydroxide	mg/L	1	-	-	<1	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	-	-	-	-	-	**<1**	mg/L	**Hydroxide**
	Chloride	mg/L	1	-	-	137	-	-	-	-	-	-	124	-	-	-	-	-	-	-	128	-	-	-	-	-	-	-	126	-	-	-	-	-	**129**	mg/L	**Chloride**
Metals (dissolved)	Aluminium	mg/L	0.01	-	-	<0.01	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	0.03	-	-	-	-	-	-	-	0.01	-	-	-	-	-	**0.01**	mg/L	**Aluminium**
	Arsenic	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	0.006	-	-	-	-	-	-	-	0.004	-	-	-	-	-	-	-	0.002	-	-	-	-	-	**0.003**	mg/L	**Arsenic**
	Barium	mg/L	0.001	-	-	0.005	-	-	-	-	-	-	14.1	-	-	-	-	-	-	-	9.96	-	-	-	-	-	-	-	11.4	-	-	-	-	-	**8.866**	mg/L	**Barium**
	Beryllium	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	**<0.001**	mg/L	**Beryllium**
	Boron	mg/L	0.05	-	-	<0.05	-	-	-	-	-	-	0.13	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	**0.05**	mg/L	**Boron**
	Cadmium	mg/L	0.0001	-	-	<0.0001	-	-	-	-	-	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	-	-	-	-	**<0.0001**	mg/L	**Cadmium**
	Chromium	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	<0.010	-	-	-	-	-	-	-	0.014	-	-	-	-	-	-	-	0.002	-	-	-	-	-	**0.004**	mg/L	**Chromium**
	Cobalt	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	**<0.001**	mg/L	**Cobalt**
	Copper	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	**<0.001**	mg/L	**Copper**
	Iron	mg/L	0.05	-	-	<0.05	-	-	-	-	-	-	0.68	-	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	0.5	-	-	-	-	-	**1**	mg/L	**Iron**
	Lead	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	**<0.001**	mg/L	**Lead**
	Manganese	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	0.009	-	-	-	-	-	-	-	0.005	-	-	-	-	-	-	-	0.001	-	-	-	-	-	**0.004**	mg/L	**Manganese**
	Mercury	mg/L	0.0001	-	-	<0.0001	-	-	-	-	-	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	-	-	-	-	**<0.0001**	mg/L	**Mercury**
	Molybdenum	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	0.005	-	-	-	-	-	-	-	0.005	-	-	-	-	-	-	-	0.003	-	-	-	-	-	**0.003**	mg/L	**Molybdenum**
	Nickel	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	0.002	-	-	-	-	-	-	-	0.002	-	-	-	-	-	-	-	0.001	-	-	-	-	-	**0.001**	mg/L	**Nickel**
	Selenium	mg/L	0.01	-	-	<0.01	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	**<0.01**	mg/L	**Selenium**
	Strontium	mg/L	0.001	-	-	0.002	-	-	-	-	-	-	4.22	-	-	-	-	-	-	-	3.37	-	-	-	-	-	-	-	3.10	-	-	-	-	-	**2.673**	mg/L	**Strontium**
	Uranium	mg/L	0.001	-	-	<0.001	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	**<0.001**	mg/L	**Uranium**
	Vanadium	mg/L	0.01	-	-	<0.01	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	**<0.01**	mg/L	**Vanadium**
	Zinc	mg/L	0.005	-	-	<0.005	-	-	-	-	-	-	0.008	-	-	-	-	-	-	-	0.018	-	-	-	-	-	-	-	<0.005	-	-	-	-	-	**0.007**	mg/L	**Zinc**
Other	Bromide	mg/L	0.1	-	-	0.279	-	-	-	-	-	-	0.62	-	-	-	-	-	-	-	0.714	-	-	-	-	-	-	-	0.616	-	-	-	-	-	**0.557**	mg/L	**Bromide**
	Fluoride	mg/L	0.1 or 0.01	-	-	1.3	-	-	-	-	-	-	1.2	-	-	-	-	-	-	-	0.176	-	-	-	-	-	-	-	1.2	-	-	-	-	-	**0.969**	mg/L	**Fluoride**
	Sulfate	mg/L	1, 10 or 0.1000	-	-	<1	-	-	-	-	-	-	<10	-	-	-	-	-	-	-	0.111	-	-	-	-	-	-	-	15	-	-	-	-	-	**4**	mg/L	**Sulfate**
	Silicon as SiO2	mg/L	0.1	-	-	15.9	-	-	-	-	-	-	14.5	-	-	-	-	-	-	-	14.7	-	-	-	-	-	-	-	14.9	-	-	-	-	-	**15.0**	mg/L	**Silicon as SiO2**
	Methane	mg/L	0.01	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	2.1	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**2.1**	mg/L	**Methane**
Nutrients	Ammonia as N	mg/L	0.01	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	4.57	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**4.57**	mg/L	**Ammonia as N**
	Nitrate as N	mg/L	0.01	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	0.02	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**0.02**	mg/L	**Nitrate as N**
	Nitrite as N	mg/L	0.01	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.01	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.01**	mg/L	**Nitrite as N**
	Reactive Phosphorus as P	mg/L	0.01	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	0.15	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**0.15**	mg/L	**Reactive Phosphorus as P**
Phenols	Phenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Phenol**
	2-Chlorophenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**2-Chlorophenol**
	2-Methylphenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**2-Methylphenol**
	3- & 4-Methylphenol	mg/L	0.002	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.002	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.002**	mg/L	**3- & 4-Methylphenol**
	2-Nitrophenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**2-Nitrophenol**
	2.4-Dimethylphenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**2.4-Dimethylphenol**
	2.4-Dichlorophenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**2.4-Dichlorophenol**
	2.6-Dichlorophenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**2.6-Dichlorophenol**
	4-Chloro-3-methylphenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**4-Chloro-3-methylphenol**
	2.4.6-Trichlorophenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**2.4.6-Trichlorophenol**
	2.4.5-Trichlorophenol	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**2.4.5-Trichlorophenol**
	Pentachlorophenol	mg/L	0.002	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.002	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.002**	mg/L	**Pentachlorophenol**
PAH	Naphthalene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Naphthalene**
	Acenaphthylene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Acenaphthylene**
	Acenaphthene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Acenaphthene**
	Fluorene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Fluorene**
	Phenanthrene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Phenanthrene**
	Anthracene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Anthracene**
	Fluoranthene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Fluoranthene**
	Pyrene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Pyrene**
	Benz(a)anthracene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Benz(a)anthracene**
	Chrysene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Chrysene**
	Benzo(b+j)fluoranthene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Benzo(b+j)fluoranthene**
	Benzo(k)fluoranthene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Benzo(k)fluoranthene**
	Benzo(a)pyrene	mg/L	0.0005	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.0005	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.0005**	mg/L	**Benzo(a)pyrene**
	Indeno(1.2.3.cd)pyrene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Indeno(1.2.3.cd)pyrene**
	Dibenz(a.h)anthracene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Dibenz(a.h)anthracene**
	Benzo(g.h.i)perylene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Benzo(g.h.i)perylene**
	Sum of polycyclic aromatic hydrocarbons	mg/L	0.0005	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.0005	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.0005**	mg/L	**Sum of polycyclic aromatic hydrocarbons**
	Benzo(a)pyrene TEQ (zero)	mg/L	0.0005	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.0005	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.0005**	mg/L	**Benzo(a)pyrene TEQ (zero)**
BTEX	Benzene	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Benzene**
	Toluene	mg/L	0.002	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.002	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.002**	mg/L	**Toluene**
	Ethylbenzene	mg/L	0.002	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.002	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.002**	mg/L	**Ethylbenzene**
	meta- & para-Xylene	mg/L	0.002	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.002	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.002**	mg/L	**meta- & para-Xylene**
	ortho-Xylene	mg/L	0.002	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.002	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.002**	mg/L	**ortho-Xylene**
	Total Xylenes	mg/L	0.002	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.002	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.002**	mg/L	**Total Xylenes**
	Sum of BTEX	mg/L	0.001	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.001	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.001**	mg/L	**Sum of BTEX**
TPH	C6 - C9 Fraction	mg/L	0.02	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.020	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.020**	mg/L	**C6 - C9 Fraction**
	C10 - C14 Fraction	mg/L	0.05	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	<0.050	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**<0.050**	mg/L	**C10 - C14 Fraction**
	C15 - C28 Fraction	mg/L	0.1	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	0.66	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**0.66**	mg/L	**C15 - C28 Fraction**
	C29 - C36 Fraction	mg/L	0.05	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	0.14	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**0.14**	mg/L	**C29 - C36 Fraction**
	C10 - C36 Fraction (sum)	mg/L	0.05	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	0.8	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**0.8**	mg/L	**C10 - C36 Fraction (sum)**
	Total Petroleum Hydrocarbons C6-C36 (sum) (calculated)	mg/L	0.02	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	1.6	-	-	-	-	-	nr	nr	nr	nr	nr	nr	nr	nr	**1.6**	mg/L	**Total Petroleum Hydrocarbons C6-C36 (sum) (calculated)**

nr not required to be monitored
- no sample collected
+ note, where a sample recorded less than the limit of recording, a value of 0 was given in order to calculate average