



Annual Environmental Performance Report 2013 - 2014

Camden Gas Project

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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
DoPE	Department of Planning and Environment
DTIRIS	Department of Trade and Investment, Regional Infrastructure and Services (NSW Trade & Investment)
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
NSW T&I	New South Wales Trade & Investment
OCSG	Office of Coal Seam Gas
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
SEWPaC	Sustainability, Environment, Water, Populations and Communities
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 (DoPE) and Department of Trade and Investment, Regional Infrastructure and Services (NSW Trade and Investment) Office of Coal Seam Gas (OCSG) for the AGL Camden Gas Project (CGP) located in the Camden, Campbelltown and Wollondilly Local Government Areas (LGA's) for the period of July 2013 to June 2014.

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;
- > 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 and no new gas gathering lines were constructed. Two wells were plugged and abandoned during the reporting period, being EM23 and JD04.

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 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).

There was a non-compliance identified in relation to an exceedance of air concentration levels for nitrogen oxides on the Continuous Emissions Monitoring System on two occasions during the reporting period. Details of this non-compliance are provided within Section 9.1.1 of this report.

Non-compliance in relation to continuous monitoring 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 as continuous monitoring for the Continuous Emissions Monitoring System. Details of this non-compliance are provided within Section 9.1.1 of this report.

The National Pollutant Inventory for the 2012/13 financial year was submitted.

During the reporting period, there were no registered complaints regarding dust.

Erosion & Sediment Control

All 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 ground tanks for grey water and septic water. A combined total of 224.2 tonnes of grey water and septic water was transported off site by licensed contractors for disposal at a licensed facility.

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

Groundwater

The total volume of produced water generated has decreased from 4,586 KL last year to 3,464.34 KL this period, representing a decrease of 24.5%. This is a dramatic decrease from last year which experienced only a 3% decrease from the previous year.

The total volume of produced water reused for well workovers and drilling has slightly decreased for this period in comparison with last reporting period. Total volume of produced water that was reused this reporting year was 1,190.7 KL as opposed to 1,905.6 KL for the previous reporting period.

A combined total of 5,236.8KL of produced water from well sites and the RPGP was recycled during the 2013/14 reporting period at Worth Recycling.

During this reporting period AGL was compliant with its bore licence conditions. Non-compliances with EPL 12003 relating to transfer and analysis of produced water are outlined under Section 9.1.1 of this report.



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. It was reported in the bi-annual 2010-2012 Independent Environmental Audit Report that information on waste transporters is not currently provided to the EPA as required by DA 282-6-2003-I. It is noted that this condition is no longer included in the EPL 12003 following a variation of the licence by the EPA which removed this waste reporting requirement.

AGL has commenced consultation with the DoPE and EPA in order to seek a modification of the development consent for DA 282-6-2003-I to provide consistency with EPL 12003 so that conformance will be achieved.

Hazardous Materials and Land Contamination

All activities associated with hazardous materials management were compliant for the period with no reportable incidents recorded or community complaints received.

All 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. All incidents were all attended to promptly and in line with the Dangerous Goods and Hazardous Materials Sub Plan and the Emergency Response Plan.

Flora & Fauna

All activities associated with threatened or native flora and fauna were compliant for the period with no incidents or complaints recorded.

Noxious Weeds

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

Noise (Operational and Construction)

No exceedances and no noise complaints relating to operational noise from the RPGP were received during the 2013/14 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 its noise requirements during the reporting period.

Noise monitoring of newly operating gas wells and previously operating wells were assessed as compliant with the relevant noise criteria's.

One complaint was received on 24th October 2013 from a Glen Alpine resident in regards to noise coming from the MP03 location. AGL engaged a third party specialist noise consultant to conduct noise monitoring. The noise monitoring was undertaken on Friday, 25 October 2013, with the findings that work being conducted at MP03 exceeded noise criteria marginally by 2-3dB, largely due to the AGL air compressor being only partially screened by the onsite noise walls. Mitigation measures were implemented and further noise monitoring on Monday 28 October 2013 confirmed compliance with noise criteria.

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



Visual Amenity

The Landscape and Lighting Audit Report (March 2012) concluded that ground-truthing of landscape works identified that the majority of all aspects of 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.

The next biennial independent audit is to begin shortly with its result to be included in next years AEPR.

One full field flare events occurred during this reporting period for a duration of 125 minutes. This is a decrease from the previous AEPR reporting period where two full field flare events occurred at the RPGP which lasted a combined 627 minutes.

Cultural Heritage

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

Bushfire

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

Hydrocarbons

All activities associated with hydrocarbon contamination control were compliant for the period with no reportable incidents or community complaints recorded.

Some minor spills occurred during the reporting period such as a small amount of diesel fuel from a diesel tank and small amount of oil from a fork lift feed line. All spill events were managed in line with the Dangerous Goods and Hazardous Materials Management Sub Plan.

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.

Some minor environmental incidents occurred during the reporting period which were all recorded with either a low or moderate risk rating. These incidents included things such as minor spills, a noise complaint, exceedance of air emissions, and release of foam from farm tank. All incidents were minor in nature and dealt with in line with the appropriate procedures.

Rehabilitation

Rehabilitation during this reporting period consisted of:

- › EM23 and JD04 were plugged and abandoned by AGL in March 2014 in accordance with the 'NSW Code of Practice for Coal Seam Gas Well Integrity'. Final rehabilitation works were completed in consultation with the NSW Office of Coal Seam Gas. AGL will continue to monitor site rehabilitation until the land is returned to the landowner.

Environmental Complaints

One community complaint regarding operational noise at MP03 was received during this reporting period.

The number of complaints received in 2013/14 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 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;
- > Participating in community events;
- > Volunteering with local initiatives;
- > Ensuring the AGL Camden Website is regularly updated; and
- > Distributing community consultation material to the 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.

Community Consultation Committee (CCC) meetings were undertaken on the following dates:

- > No. 37: 12 September 2013;
- > No. 38: 21 November 2013; and
- > No. 39: 7 May 2014.

The following consultation processes have also been undertaken for the CGP:

- > AGL volunteering with Wollondilly Shire Council, (July 2013)
- > Community consultation group on the expanded ground water and air monitoring programs view of the emissions monitoring equipment at Sugar Loaf 02 well, (August, 2013)
- > Community Information marquee at the Campbelltown Show (September 2013)
- > Briefing of the Environmental Health Impact Assessment to the three local LGA's- Camden, Campbelltown and Wollondilly Councils by EnriskS who conducted the study, (October 2013)
- > The Environmental Health Impact Assessment for the Northern Expansion was released, (October 30, 2013)
- > Major supporter of Christmas in Narellan, (November, 2013)
- > Official opening of the AGL Lakeside Pavilion, Mount Annan (November, 2013)
- > Sharing the findings of the Camden Fugitive Methane Emissions Monitoring Report with the community consultation group (February 2014)
- > Sharing the findings of the Camden Fugitive Methane Emissions Monitoring Report with NSW Government agencies (February 2014)
- > Sharing the findings of the Camden Fugitive Methane Emissions Monitoring Report with AGL's Climate Change Council (February 2014)
- > Community Information marquee at the Camden Show (March 2014)
- > Primary Industries Ministerial Advisory Council (April, 2014)
- > AGL volunteering with Tahmoor Men's Shed, (June 2014)
- > External presentations to Narellan Chamber of Commerce (June 2014)
- > Email updates to General Managers and Mayors of Camden, Wollondilly and Campbelltown Local Governments
- > Email Updates to local Members of Parliament in the Camden, Campbelltown and Wollondilly Councils



- > 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>
- > Advertorials placed in the Macarthur Chronicle and Camden/ Campbelltown Advertisers to update the community on the project, water monitoring and general operations update.

Environmental Non Compliance Issues and Incidents

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

There were 14 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;
- > EPL 12003 Condition O2 in relation to L3.4;
- > Protection of the Environment Operations Act 1997 - Section 66(6);
- > EPL 12003 Condition O1.1 (underground storage tanks);
- > EPL 12003 Condition O1.1 (Transfer of produced water);
- > EPL 12003 Condition M1.3 (d);
- > EPL 12003 Condition M2.1 and M2.2;
- > EPL 12003 Condition M2.3;
- > EPL 12003 Condition M2.5;
- > EPL 12003 Condition M2.7;
- > EPL 12003 Condition M3.1 in relation to M2.2 and M2.3;
- > EPL 12003 Condition M3.2;
- > EPL 12003 Condition M5.2 (a) and (c); and
- > EPL 12003 Condition R1.10.

During this reporting period AGL received two Penalty Infringement Notices from the EPA in relation to incidence of non-compliance.



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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 2013 to 30 June 2014 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.

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

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 5 and PPL 6.

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

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 and procedures for the CGP. The 2012 EMP was approved by the Director General in July 2013 and implemented. The EMP and numerous Sub-Plans were updated again during this reporting period, 2013-2014.

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.

Last reporting period the construction and continued connection into the GGL networks within Menangle Park occurred along with drilling being completed for gas well MP25. Construction activities also included the connection of five gas wells into the GGL network.

In February 2013 AGL requested that the then NSW Department of Planning & Environment (DoPE) 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 or gas gathering lines were constructed. Two wells (EM23 & JD04) were plugged and abandoned during this 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;
- > Continued implementation of the prepared Pollution Incident Response Management Plan (PIRMP);
- > 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 DoPE, EPA and OCSG;
- > 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;
- > The completion of the Environmental Health Impact Assessment for the Northern Expansion was released 30 October 2013;
- > A fugitive methane emissions monitoring program was designed to measure methane concentrations within the Camden Gas Project and background locations. The field monitoring was undertaken at 25 sites for a 15 minute period over two weekdays each week from 29 April 2013 until 17 July 2013, covering a period of twelve weeks. Pacific Environment Limited produced the AGL Fugitive Methane Emissions Monitoring Program Technical Report (5 February 2014);
- > Further to an enforceable undertaking with the EPA, support of the University of Western Sydney's Love Your Lagoons project through payment of \$150,000;
- > Completion of corrective actions from the 2010-2012 Independent Environmental Audit, enforceable undertaking, and EPA Compliance Audit;
- > On 30 June 2014, AGL rolled out a new compliance tracking database, CMO, as the replacement for Mipela to manage AGL's ongoing commitment to compliance and regulatory requirements; 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 DoPE 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 2013 to June 2014.

The requirements of the DoPE and the NSW Trade and Investment are provided in Section 1.2.1 and 1.2.2 below.



1.2.1. Requirements of the NSW Department of Planning and Environment (DoPE)

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 DoPE 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 Community Consultative Committee (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 2013 to 30 June 2014, pursuant to the above listed Development Application Approvals and Project Approvals.



1.2.2. Requirements of Department of Trade and Investment, Regional Infrastructure and Services NSW (NSW Trade and Investment)

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.

The PPLs require the preparation of an AEMR in accordance with the NSW Trade and Investment (T&I) guidelines.

During this reporting period DTIRIS released 'ESG3: Mining Operations Plan (MOP) Guidelines', September 2013 (ESG3) which details a new process for monitoring and managing progression towards successful rehabilitation outcomes. While ESG3 supersedes the previous 'EDG03 Guidelines to the mining, rehabilitation and environmental management process' (January, 2006) (EDG03) it has not included a section on guidelines and format for the preparation of an AEMR therefore this section of the original EDG03 is still relevant.

This AEPR has been prepared in accordance with the T&I guideline EDG03 'Guidelines to the Mining, Rehabilitation and Environmental Management Process' and to meet the requirement for an AEMR under Clause 3 of PPL 1, 2, 4, 5, and 6. Where information required under a heading in EDG03 is not applicable to the CGP, the heading has been kept and the applicability stated.

The plans required by T&I' EDG03 and ESG3 guidelines are not relevant to the operation of the CGP or its annual reporting. 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 Camden Gas Project;
- > **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 Camden Gas Project 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	Dennis Chia
Position	Operations Manager
Contact Address	AGL Rosalind Park Gas Plant Lot 35, Medhurst Road, Menangle NSW 2568
Telephone	02 4633 5200
Facsimile	02 4633 5201
Email	dchia@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 or 02 9963 1318
POP and AEMR Reporting Periods	
POP Commencement Date	19 November 2013
POP Period End Date	19 November 2014
AEMR Commencement Date	July 2013
AEMR Period End Date	June 2014



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). 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
<p>DA No. 15-1-2002i, dated 23 July 2002</p>	<p>The Minister for Planning (DoPE) determined the development application for Stage 1 in accordance with Section 76A, Section 80, and Section 91 of the <i>Environmental Planning and Assessment Act 1979</i> 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:</p> <ul style="list-style-type: none"> - "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." <p>A modification to this DA, dated 16 May 2006, was issued for the following:</p> <ul style="list-style-type: none"> - "Construction, drilling and operation of a directional well from LB09". <p>A modification to this DA, approved 9 February 2007, was issued for the following:</p> <ul style="list-style-type: none"> - "re-drilling of wells Apap 01 and Mahon 01." <p>A modification to this DA, dated 4 July 2007, was issued for the following:</p> <ul style="list-style-type: none"> - "construction, drilling and operation of 2 surface to in-seam wells (AP02/AP03) at AP01". <p>A modification to this DA, dated 4 August 2008, was issued for the Kay Park and Loganbrae gas gathering line modification project.</p>
<p>DA-246-8-2002i – dated 20 September 2002</p>	<p>The Minister for the then NSW Department of Infrastructure, Planning and Natural Resources (now DoPE) determined the development application in accordance with Section 80 of the <i>Environmental Planning and Assessment Act 1979</i>. 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 as:</p>



Development Application No.	Description of Proposed Development
	<p>-“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. “</p> <p>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 (KP05 and KP06) at KP01”</p> <p>A modification to this DA, dated 4 August 2008 was issued for the Kay park and Loganbrae gas gathering line modification project.</p> <p>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.</p> <p>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).</p>
<p>DA No. 282-6-2003-i – 16 June 2004</p>	<p>The then Minister for Urban Affairs and Planning (now DoPE) determined the development application for Stage 2 in accordance with Section 76A, Section 77A, and Section 91 of the <i>Environmental Planning and Assessment Act 1979</i> 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:</p> <ul style="list-style-type: none"> - “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.” <p>A modification to this DA, dated 26 August 2004, was issued to include additional land that was emitted from the development consent.</p> <p>A modification to this DA, dated 01 February 2005, was issued to amend an access road and gathering line route on the EMAI.</p> <p>A modification to this DA, was issued, dated 01 June 2005.</p> <p>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”.</p> <p>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”</p> <p>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.”</p> <p>A modification to this DA, approved 2 May 2007 was issued for the following: - relocation of the Rosalind Park Gas Plant access road</p> <p>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”</p> <p>A modification to this DA, dated 11 April 2008, was issued for the following:</p>



Development Application No.	Description of Proposed Development
	<p>"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."</p> <p>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.</p> <p>A modification to this DA, dated 18 September 2009, was approved for the re-routing of a damaged gas gathering line at Glenlee.</p> <p>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.</p>
<p>DA-183-8-2004i – 16 December 2004</p>	<p>The then Minister for the NSW Department of Infrastructure, Planning and Natural Resources (now DoPE) determined the development application in accordance with Section 80 of the <i>Environmental Planning and Assessment Act 1979</i>. 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:</p> <ul style="list-style-type: none"> - 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. <p>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."</p> <p>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."</p>
<p>DA 9-1-2005 – 26 May 2005</p>	<p>The then Minister for the NSW Department of Infrastructure, Planning and Natural Resources (now DoPE) determined the development application in accordance with Section 80 of the <i>Environmental Planning and Assessment Act 1979</i>. 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:</p> <ul style="list-style-type: none"> - "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." <p>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."</p> <p>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."</p> <p>A modification to this DA, dated 16 November 2010, was issued for the following: modification of Schedule 2, Condition 26.</p>
<p>DA 75-4-2005 – 07 October 2005</p>	<p>The then Minister for the NSW Department of Infrastructure, Planning and Natural Resources (now DoPE) determined the development application in accordance with Section 80 of the <i>Environmental Planning and Assessment Act 1979</i>. The Conditions of Development Consent for DA No. DA-75-4-2005 dated</p>



Development Application No.	Description of Proposed Development
	<p>07 October 2005 relate to the Camden Gas Project Stage 2 (the 'Development'). The Development Consent describes the proposed development as:</p> <ul style="list-style-type: none"> - "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." <p>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."</p> <p>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.</p>
<p>Project Approval 06_0137 – 9 December 2006</p>	<p>The then Minister for Planning approved the Project under Section 75J of the <i>Environmental Planning and Assessment Act 1979</i>. 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:</p> <ul style="list-style-type: none"> - Construction and drilling of wells RB03-RB12 and gas gathering lines.
<p>Project Approval 06_0138 – 9 December 2006</p>	<p>The then Minister for Planning approved the Project under Section 75J of the <i>Environmental Planning and Assessment Act 1979</i>. 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:</p> <ul style="list-style-type: none"> - Construction and drilling of wells EM23-36 and gas gathering lines. <p>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."</p>
<p>Project Approval 06_0291 – 4 September 2008</p>	<p>The then Minister for Planning approved the Project under 75J of the <i>Environmental Planning and Assessment Act 1979</i>. 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.</p> <p>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.</p>
<p>Concept Plan Approval 06_0292 – 4 September 2008</p>	<p>The then Minister for Planning approved the Project under 750 of the <i>Environmental Planning and Assessment Act 1979</i>. 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:</p> <ul style="list-style-type: none"> - 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 with which 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

Requirement	Date of Requirement
Petroleum Exploration Licence No.2 (PEL), issued by the Department of Mineral Resources (now T&I)	The application for the renewal of PEL 2 has been lodged, and AGL are awaiting the offer for renewal from NSW Coal & Petroleum Titles.
PPL No.1, issued by the Department of Mineral Resources (now T&I)	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 T&I)	10 October 2002 (for a period of 21 years)
PPL No.4, issued by the Department of Mineral Resources (now T&I)	6 October 2004 (for a period of 21 years)
PPL No.5, issued by the Department of Mineral Resources (now T&I)	28 February 2007 (for a period of 21 years)
PPL No. 6, issued by the Department of Industry and Investment (now T&I)	29 May 2008 (for a period of 21 years)
Conditions of Consent for DA 15-1-2002i (file no. S00/00945), issued by the DoPE. The requirements of the Environment Protection Licence 12003 have been incorporated into relevant conditions of consent	<p>23 July 2002 (for a period of 21 years from date of granting of the production lease).</p> <p>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.</p> <p>The following modifications have been issued to this DA:</p> <ul style="list-style-type: none"> - 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 DoPE	<p>20 September 2002 (for a period of 21 years from date of granting of the production lease).</p> <p>The following modifications have been used to this DA:</p> <ul style="list-style-type: none"> -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 DoPE. The requirements of the Environment Protection Licence 12003 and 3A Permit have been incorporated into this Condition of Consent.	<p>16 June 2004 (for a period of 21 years).</p> <p>The following modifications have been issued to this DA:</p> <ul style="list-style-type: none"> - 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



Requirement	Date of Requirement
	<ul style="list-style-type: none"> - modification dated 1 November 2006 - modification dated 2 May 2007 - 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 DoPE	<p>16 December 2004 (for a period of 21 years).</p> <p>A notice of modification was issued on the 4 July 2007.</p> <p>A notice for modification was issued on the 9 July 2012</p>
Conditions of Consent for DA 9-1-2005, issued by the DoPE	<p>26 May 2005 (for a period of 21 years).</p> <p>The following modifications have been issued to this DA:</p> <ul style="list-style-type: none"> - 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 DoPE	<p>07 October 2005 (for a period of 21 years or expiry date of PPL No.4)</p> <p>The following modifications have been issued to this DA:</p> <ul style="list-style-type: none"> - modification dated 4 July 2007 - modification dated 10 January 2010
Conditions of Consent for DA 171-7-2005, issued by the DoPE	<p>25 March 2006 (for a period of 21 years or expiry date of PPL No.4)</p>
Conditions of Approval for PA 06_0137, issued by the DoPE	<p>9 December 2006 (for a period of 21 years or expiry date of PPL No.4)</p>
Conditions of Approval for PA 06_0138 issued by the DoPE	<p>9 December 2006 (for a period of 21 years or expiry date of PPL No.4)</p> <p>A notice of modification was issued on the 6 August 2007.</p>
Conditions of Approval for PA 06_0291 issued by the DoPE	<p>4 September 2008 (for a period of 21 years or expiry date of PPL No.5)</p> <p>The following modifications have been issued to this PA:</p> <ul style="list-style-type: none"> - modification dated 7 January 2011 - modification dated 20 April 2011
Conditions of Approval for Concept Plan Approval 06_0292 issued by the DoPE	<p>4 September 2008 (for a period of 5 years)</p>
Environment Protection Licence No.12003, issued by the Environment Protection Authority (>200,000 to 500,000 T)	<p>Issued 22 December 2004, anniversary date 22 December.</p> <p>During the reporting period, the licence was varied by notice 1518939 and re-issued on the 19 December 2013.</p>
Petroleum Operations Plan (POP)	<p>19 November 2013 - 19 November 2014</p>
Pipeline Licence No.30, issued by Department of Energy, Utilities and Sustainability, under NSW Pipelines Act 1987	<p>19 May 2004 (for a period of 20 years)</p>



Requirement	Date of Requirement
Bore Water Licence relating to Lot 6 DP 808569 (Licence No: 10BL160600), issued by Department of Natural Resources (Now NSW Office of Water)	24 September 2009 to 23 September 2014
Bore Water Licence relating to Lot 62 DP 735555 (Licence No: 10BL159415), issued by Department of Natural Resources (Now NSW Office of Water)	09 June 2010 to 08 June 2015
Bore Water Licences for Industrial (CSG dewatering) for 136 bores at various locations – Transitioned to 4 Water Access Licences, Works Approvals and Use Approvals (WAL25054, WAL 24856, WAL 24734 and WAL 24965)	February 2011 to February 2016
Bore Water Licence relating to Lot 35 DP 230946 (Licence No: 10BL605581), issued by NSW Office of Water	17 June 2014 to Perpetuity
Bore Water Licence relating to Lot 1 DP 790254 (Licence No: 10BL605472), issued by NSW Office of Water	12 November 2013 to Perpetuity

The CGP comprises 144 wells (96 operational at 30 June 2014), gas gathering pipelines and the RPGP. 137 of the gas wells were issued with industrial bore licences from the NSW Office of Water (NOW) between February 2011 and July 2011. The bore licences for the wellfield transitioned to Water Access Licences (WALs) and works/use approvals in 2012.

Following advice given to AGL from NOW, the former bore licence conditions prevailed as the new Works Approval conditions for the reporting period.

3.1.1. WorkCover Notification of Storage of Dangerous Goods

There is no requirement to notify WorkCover regarding the storage of Dangerous Goods at the RPGP due to the minor quantities of Dangerous Goods 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 2014.

4.1. Description of Operations from July 2013 to June 2014

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.

Two wells (EM23 & JD04) were plugged and abandoned during March 2014 in accordance with the 'NSW Code of Practice for Coal Seam Gas Well Integrity'.

The location of the existing wells and the two plugged and abandoned wells are illustrated in Appendix C.

Gathering Line Installation

No new Gas Gathering Lines were constructed and commissioned during this reporting period.

Workover Maintenance Activities

Fourteen (14) separate workover maintenance activities were undertaken during the reporting period. These workover maintenance activities were undertaken within PPL1, PPL4 and PPL5 at SF05, SF07, SF08, SF09, MP22, MP10, MP03, MP02, MP30, MT05, and SL03 well sites. The majority of these workover maintenance activities occurred within Menangle Park and Spring Farm fields, seven and four activities respectively with one workover activity each within Mt Taurus, EMAI and Sugarloaf fields. These activities primarily included works such as; cleaning out the wells and installing and removing pumps.

Table 4-1: Description of Workover Maintenance Activities

PPL / PEL	Well Name	Description of Activity
PPL4	SF08	Clean-out with open ended tubing
PPL4	SF09	Clean-out with open ended tubing
PPL4	SF07	Clean-out with open ended tubing
PPL4	SF05	Clean-out and removal of poly liner with open ended tubing
PPL4	MP22	Clean out of inside casing and installed PCP
PPL4	MT05	Attempt made free stuck tubing
PPL5	MP10	Clean-out and installation of PCP



PPL / PEL	Well Name	Description of Activity
PPL5	MP03	Clean-out and installation of ESPCP
PPL5	MP02	Clean-out and installation of PCP
PPL4	MP22	Clean out of well fish poly liner and installation of PCP
PPL 1	EM23	Plug and abandon / mill outcasing
PPL4	MP30	Fish liner from hole clean out and reinstall liner and RIH open end completion
PPL4	MP02	Installation of rods
PPL4	SL03	POOH rods unable to re-set pump due to fill in tubing

The workover rig also completed the Plug and Abandonment of EM23 during the reporting period. Please note that the workover rig completed the Plug and Abandonment of JD04 during a previous reporting period, with final works crossing over into this reporting period.

Rosalind Park Gas Plant Compressors

The RPGP compressors operated during the reporting period for:

- > Compressor No.1 operated for 3,031 hours;
- > Compressor No.2 operated for 6,677 hours; and
- > Compressor No.3 operated for 7,393 hours.

Land Access and Approvals

The RPGP Environment Protection Licence No. 12003 (EPL 12003) was varied on 19 December 2013 after consultation between the EPA and AGL. The licence was varied to include a Pollution Reduction Program (PRP) – Predictive Emissions Monitoring System (PEMS). This aim of the PRP is to allow the licensee to trial a PEMS on Compressor Engine 2 and 3 (Licensed Discharge Points 2 and 3 respectively on EPL 12003). EPL 12003 was varied again after the reporting period on 19 September 2014 and 13 November 2014.

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

Current Status of Well Operations

The status of CGP well operations as of 30 June 2014 are summarised in Appendix E. The only amendment from the previous reporting period is the plug and abandonment of two wells: EM23 and JD04.

4.1.2. Exploration

No exploration activities were undertaken during this reporting period.

4.1.3. Production

Production information is provided to NSW Trade and Investment on a monthly basis in accordance with the project's production lease requirements. This report includes monthly production volumes from each well in the PPLs.



4.1.4. Land Preparation

No wells were drilled during this reporting period.

EM23 and JD04 were plugged and abandoned by AGL in March 2014 in accordance with the 'NSW Code of Practice for Coal Seam Gas Well Integrity'. Final rehabilitation works were completed in consultation with the NSW Office of Coal Seam Gas (OCSG). AGL will continue to monitor site rehabilitation until the land is returned to the landowner.

4.1.5. Mining, Mineral Processing and Ore Production Stockpiles

The CGP primarily extracts coal seam gas. Therefore no mining, mineral processing or ore stockpiling is undertaken.

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 management strategies, 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 in February 2014 and approved by DoPE on the 14 March 2014 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 (November 2013);
- > Flora and Fauna Management (April 2014);
- > Soil and Water Management (April 2014);
- > Groundwater Management Plan / Typical Bore Licence;
- > European Heritage Management (April 2014);
- > Landscape and Rehabilitation Management (April 2014);
- > Aboriginal Cultural Heritage Management (December 2013);
- > Air Quality Management (currently under review);
- > Waste Management (April 2014);
- > Traffic Management (currently under review);
- > Dangerous Goods and Hazardous Materials Storage (April 2014); and
- > Emergency Response (November 2013).

Petroleum Operations Plan

A Petroleum Operations Plan (POP) has been updated by AGL to satisfy the applicable conditions of PPLs 1, 2, 4, 5 and 6. The document has been prepared to satisfy the Schedule of Conditions pursuant to the PPLs held by AGL that require a POP to be prepared and lodged.

The POP applies to the period 19 November 2013 through until 19 November 2014. The POP will be reviewed annually, and subsequent versions will be provided to the OCSG.



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 details the procedures for the notification of pollution incidents resulting in 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 environmental harm (a material harm incident) as defined in the POEO Act.

All other incidents deemed by AGL not to be causing or threatening to result in material harm will be managed through AGL's Emergency Response Plan and supporting procedures. In situations where notification of environmental harm is required under EPL 12003 AGL will report the incident to the EPA accordingly.

5.2. Actions Required by Regulatory Authorities from Previous AEPR Review

AGL received comment on 6 November 2013 in response to the 2012 – 2013 Annual Environmental Performance Report for the AGL Camden Gas Project. The AEPR was reviewed by officers from the OCSG who concluded the report was satisfactory and addressed the relevant conditions in PPL 1, 2, 4, 5 and 6 pertaining to the requirement for an AEMR.

Suggested improvements to future AEPR's were provided as below:

- > Section 4.1 – this section should include a summary of 'work-over rig' and maintenance activities for the reporting period.
- > Section 6.1, Table 6-1 – Information has been requested for the landholder sign-off of the in-situ decommissioned gas lines (refer to the last column of Table 6.1 and note in footer).

A summary of work-over maintenance activities that occurred during the reporting period has been provided in Section 4.1.1 of this AEPR. The landholder sign-off information will not be published in this or any successive AEPR but instead supplied directly to the OCSG.

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.

External specialist consultants are engaged to undertake annual gas leak detection surveys of the entire gas gathering system network, RPGP and well sites. If any leaks are detected repairs are completed within the EPL prescribed timeframe.



The Sub Plan objectives with regards to air quality are to adequately protect air quality by:

- > Controlling the quality and minimising the quantity of air emissions associated with compression of the coal seam gas;
- > Minimising the quantity of vehicle exhaust emissions;
- > Preventing/minimising dust generation during construction, maintenance and operations and rehabilitation activities; and
- > Implementing a Leak Detection and Repair Program.

Management strategies used to meet the objectives for air quality that are contained in the CGP EMP are detailed in Table F-1 in Appendix F.

Fugitive Emissions Monitoring Program

On the 1 March 2013 AGL announced that the CGP will become the first coal seam gas project in New South Wales to implement a fugitive methane emissions monitoring program, leading the industry in best practice for emissions monitoring.

The monitoring program was designed to measure methane concentrations at 20 sites within the CGP, and five background locations to provide an indication of the current conditions in the vicinity of the CGP in comparison with background monitoring locations that are geographically removed from the CGP.

The field monitoring was undertaken at each of the 25 sites for a 15 minute period over two weekdays each week from 29 April 2013 until 17 July 2013, covering a period of twelve weeks. Pacific Environment Limited produced the AGL Fugitive Methane Emissions Monitoring Program Technical Report (5 February 2014) which concluded:

Over the 12 week monitoring program the average CH₄ concentration was 2.1ppm. This value is just above the global average of 1.8ppm (WMO, 2013) and in-line with CH₄ concentrations measured in urban areas commonly ranging between 1.8ppm and 3.0ppm (Lowry et al. 2001). The corresponding the average δ¹³C-CH₄ was -41‰, similar to values observed in residential areas reported in Montiel et al. (2011). Notwithstanding the above, it is concluded that when the study is considered as a whole, CH₄ concentrations and δ¹³C-CH₄ values observed within the boundaries of the Camden Gas Project showed no significant difference compared with those located outside (i.e. background locations).

5.3.2. Air Quality Criteria and Monitoring Requirements

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

The Ray Beddoe Treatment Plant (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 RGP were prepared by Emission Testing Consulting (ETC):

- > Quarterly Stack Emission Survey, 20, 23-26 September 2013;
- > Quarterly Stack Emission Survey, 10 & 12 December 2013;
- > Quarterly Stack Emission Survey, 13 & 19 March 2014; and
- > Quarterly Stack Emission Survey, 19 June 2014.

Monitoring results are provided in Appendix H. 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 RGP 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 RGP, 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 continuously by AGL with the results included in the 2012/2013 Annual Return (summarised in Appendix H and Appendix I). 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 were reported within the 2012/2013 Annual Return. Nitrogen oxide air concentration levels exceeded the licence limit at compressor 1 on two occasions during August 2013. Details of this non-compliance are provided within Section 9.1.1 of this report.

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 NO_x, temperature, flow rate, moisture and oxygen at Points 1, 2 and 3 at all times when the compressors are operating. A non-compliance with this condition occurred when the licence concentration limit for NO_x for Licence Discharge Point 1 Compressor Engine 1 was exceeded on 4 and 13 August 2013. Details of this non-compliance are provided within Section 9.1.1 of this report. A Penalty Infringement Notice was issued by the EPA in relation to this non-compliance.



National Pollutant Inventory Reporting

The National Pollutant Inventory (NPI) Report for the RGP for the 2013/2014 financial year was prepared and submitted on 25 September 2014. The NPI lists the fuel and energy usage plus emissions data for the RGP for the financial year prior to the report date.

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

RGP 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 period and the previous reporting period. Air emission monitoring methodology complies with EPL 12003 Condition M2.5.

RGP Assessable Pollutant and Air Concentration Limits

The following pollutants are assessable emissions from the RGP 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 2012/ 2013 Annual Return the calculated annual load for benzene was 3.49 kg/year, which is well below the limit of 47 kg/year as required by EPL 12003. This represented a decrease from the previous reporting period where 18.39 kg/year was calculated and is less than the annual load estimation of 42.5kg/yr as predicted in the RGP 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 2012/2013 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. This is also less than the annual load estimation of 0.24 kg/yr as predicted in the RGP EIS.
- > **Fine Particulates** - Fine particulates are an assessable pollutant and are calculated annually to determine the associated fees under EPL 12003. For the 2012/2013 Annual Return, the calculated annual total load for fine particulates was 0.0 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 RGP EIS. This result was significantly less than that of the previous year's level of 94.28 kg/year.



- > **Hydrogen Sulphide** - Hydrogen sulphide is an assessable pollutant and is calculated the annually to determine the associated fees under EPL 12003. For the 2012/2013 Annual Return, the calculated annual load for hydrogen sulphide was 0.0 kg/yr. This was a decrease from the previous reporting period where the annual load calculated was 0.727 kg/year and is less than the 1.6 kg/yr load limit required by EPL 12003. The annual load also remains less than the annual load estimation of 1.4 kg/yr as predicted in the RPGP EIS.
- > **Nitrogen Oxides** - NO_x annual pollutant loads and air concentration limits are monitored on a quarterly and continuous basis. AGL has also completed additional monthly monitoring for NO_x at compressors 1, 2 and 3 when operating. For the 2012/2013 Annual Return, the calculated annual load for NO_x was 31,386.08 kg/yr, which is well below the licensed limit of 103,000 kg/yr. The NO_x annual load for this reporting period was approximately less than one-third of the predicted assessable load of 93,226 kg/yr as stated in the RPGP EIS.
 - » During the reporting period, NO_x air concentration levels exceeded the licence limit at compressor 1 on two occasions during August 2013. Details of this non-compliance are provided within Section 9.1.1 of this report.
- > **Sulphur Dioxide, Sulphur Trioxide / Sulphuric Acid Mist Emissions** - Air concentration limits for Sulphur Dioxide, Sulphur Trioxide / Sulphuric Acid Mist Emissions are measured quarterly. No exceedances of the sulphur dioxide or sulphur trioxide/sulphuric acid mist concentration limits were recorded during the quarterly monitoring of this reporting period.
- > **Sulphur Oxides** - Sulphur oxides are measured quarterly in order to calculate the annual pollutant loads and the associated fees under EPL 12003. For the 2012/2013 Annual Return, the calculated annual total load for Sulphur Oxides was 65.24 kg/yr. This is significantly less than the 3000 kg/yr load limit required by EPL 12003 and less than the annual load estimation of 2689 kg/yr for sulphur oxide emissions as predicted in the RPGP EIS.
- > **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 2012/2013 Annual Return, the calculated annual load for VOCs was 3.65 kg/yr, which is well below the limit of 33,000 kg/year as required by EPL 12003. This load is less than the annual load limit of 29,696 kg/yr as predicted by the RPGP EIS.

There were no exceedances of the EPL 12003 licence limits for the assessable annual pollutant loads for the RPGP as reported within the 2012/2013 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 part of 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.



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.

Control of water erosion is a key environmental issue requiring careful consideration and management, so as to avoid the reduction of surface water quality through erosion processes and subsequent siltation.

In regard to erosion, the Sub Plan objectives 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.

Management strategies employed to meet the objectives for erosion and sediment are outlined in the Soil and Water Management Sub Plan (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

No physical construction works were undertaken during this reporting period.

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

The following general operating principles are implemented through the sub-plan in order to reduce the potential for soil erosion:

- > Wells and gas gathering lines are sited on the periphery of land and along existing track and road verges (where possible) to fit in with the primary land use and minimise land disturbance; and
- > Operations, maintenance and construction employees including contractors are required to attend an induction prior to commencing work at each site to ensure that all personnel are aware of their HSE responsibilities and have the necessary knowledge and skills to fulfil them.



5.4.3. Erosion and Sediment – Environmental Performance

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

5.5. Surface Water

5.5.1. Surface Water Management

Management strategies employed to meet the objectives for surface water are outlined in the Soil and Water Management Sub Plan of the CGP EMP. The Soil and Water Management Sub Plan 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 RGP. This water is stored in above ground rain water tanks and is used to service the RGP's amenities and wash bay. Once used, the water is separately stored in-ground tanks for grey water and septic water. A combined total of 224.2 tonnes 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 RGP 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 RGP flare pond stores treated water from the RGP, filtered produced water and direct rainfall. Analysis results for water stored within the RGP flare pond are as follows:

- > The water level in the flare pond remained at 2m or greater except in March 2014 when it was 1.9m;
- > Electrical conductivity levels ranged from 5,730 $\mu\text{S}/\text{cm}$ to 10,700 $\mu\text{S}/\text{cm}$;
- > Total suspended solids ranged from <5 to 98 mg/L;
- > Biochemical oxygen demand levels ranged from 17 to 46 mg/L;
- > Oil and grease results were all <5 mg/L post analysis with one spike (13 mg/L) pre-analysis in April which may have been due to sampling equipment;
- > Total polycyclic aromatic hydrocarbons results were all below the Limit of Reporting;
- > Total phenols ranged from <0.05 to 0.06 mg/L;
- > Total organic carbon levels ranged from 23 to 116 mg/L; and
- > Total petroleum hydrocarbons ranged from <50 to 2,370 $\mu\text{g}/\text{L}$.

While the Soil and Water Management Sub Plan 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 the continued operation of the RGP, RGP water treatment plant, and the decommissioning of two wells.

Rain water that is not harvested at the RGP is managed by 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.

5.6. Groundwater

5.6.1. Groundwater Management

Management strategies employed to meet the objectives for groundwater are outlined in the Soil and Water Management Sub Plan and Groundwater Management Plan of the CGP EMP. A summary of the strategies for erosion and sediment measures which relate to groundwater are presented in Table F-5 of Appendix F.

The objectives and roles and responsibilities for groundwater management as stated in the Groundwater Management Plan is 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 Spring Farm, Menangle Park, Mt Taurus, EMAI, and Sugarloaf field. The following volumes were generated and recycled or disposed:

- > 3,464.34 KL of produced groundwater 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;
- > 1190.7 KL of produced water from AGL wells was reused for production and well workovers during the 2013/14 reporting period; and
- > A combined total of 5,236.8 KL of produced water from well sites and the RGP was recycled during the 2013/14 reporting period at Worth Recycling.

5.6.3. Groundwater Related Activities

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

- > Representatives from NOW visited the CGP site for a site tour on 3 July 2013;
- > Two wells were plugged and abandoned during the reporting period, JD04 and EM23 in accordance with the NSW Code of Practice for Coal Seam Gas Well Integrity;



- > During February 2014 three dedicated monitoring bores were installed within the CGP wellfield (Glenlee Monitoring Bores 1, 2, 3; bore licence 10BL605472). There are now 11 operational monitoring bores within (and remote from) the CGP monitoring several aquifers and water bearing zones;
- > A 2013/2014 Annual Technical Groundwater report was produced;
- > The Groundwater Management Plan prepared by AGL in 2012 is currently with the NSW Office of Water for review of the 2013/14 draft;
- > Quarterly water quality monitoring events were completed at selected producing gas wells as part of the groundwater monitoring network;
- > Quarterly water quality and continuous water level monitoring was completed at dedicated groundwater monitoring bores; and
- > The 137 gas wells issued with industrial bore licences from the NSW Office of Water (NOW) between February 2011 and July 2011 were transitioned to Water Access Licences (WALs) and works/use approvals in 2012. Following advice given to AGL from NOW, the former bore licence conditions prevailed as the new Works Approval conditions for the whole of 2013/14.

AGL's Annual Bore Licence Compliance Report was submitted after the reporting period during September 2014 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-8 of Appendix F.

5.6.5. Groundwater Monitoring Results

The Quarterly Produced Water Quality Monitoring Reports relate to the groundwater monitoring activities specified in Part 5, Monitoring and Recording Conditions, of the EPL. The EPL conditions stipulate groundwater monitoring is required at eight locations either quarterly or yearly. The produced water salinity for the operating wells which produced moderate to high volumes of water (>50 KL) ranged between 7,000 to 20,000µs/cm.

Many of the operating wells within the CGP produce very low volumes of water resulting in not enough water present to allow for sampling at these monitoring points.

Groundwater quality monitoring required by the EPL 12003, for the parameters listed in Table F-7 of Appendix F is to be undertaken at EPL monitoring points 8-15 at quarterly and yearly intervals. 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 with the Annual Return.

5.6.6. Groundwater – Environmental Performance / Trends

The total volume of produced water generated has decreased from 4586 KL last reporting period to 3,464.34 KL this period, representing a decrease of 24.5%. This is a dramatic decrease from last year which experienced only a 3% decrease from the previous year. More than 80% of operating wells each produced less than 50 KL of produced water.



The total volume of produced water reused for well workovers has slightly decreased for this period in comparison with the last reporting period. The total volume of produced water that was reused this reporting year was 1,190.7 KL compared to 1,905.6 KL for the previous reporting period.

Total recycled produced water from well sites and the RGP has decreased from 8,880.3 KL last reporting period to 5,236.8 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 new EPL 12003 reporting requirements.

Data collected from the eleven groundwater monitoring bores located within close proximity to operational gas wells (within approximately 40 metres) and compared to data collected from a remote site (RMB site) provides additional information for assessing impacts of wellfield operation on the shallow beneficial aquifers. The salinities (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.

5.7. Waste Management

5.7.1. Waste Management

The Sub Plan objective with regards to waste 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.

Management strategies used to meet the objectives for waste management are detailed in 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 RGP site facilities	224.2 tonnes	
General Waste	87.7 tonnes	354.4 tonnes
Produced water		6427 KL
Hazardous Waste	12.2 tonnes	
Waste Oil		32.5 tonnes
Scrap steel		26.3 tonnes
Batteries		0.43 tonnes
Oil filters		1.15 tonnes
Paper		28 tonnes

AGL continues to operate a small wastewater treatment and separation plant at the RGP. 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

Waste volumes were recorded for the RGP during this reporting period which conforms to the relevant conditions of DA 282-6-2003-I. It was reported in the bi-annual 2010-2012 Independent Environmental Audit Report that information on waste transporters was not provided to the EPA as required by DA 282-6-2003-I. It is noted that this condition is no longer included in the EPL 12003 following a variation of the licence by the EPA which removed this waste reporting requirement.

AGL has commenced consultation with the DoPE and EPA in order to seek a modification of the development consent for DA 282-6-2003-I to provide consistency with EPL 12003.

5.8. Hazardous Materials

5.8.1. Hazardous Material Management

The Sub Plan objective with regard to hazardous materials is 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).

AGL has developed a Dangerous Goods and Hazardous Materials Sub Plan (DGHMSP) which outlines the management strategies for achieving this objective. The DGHMSP was updated during this reporting period.



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 RGP.

5.8.3. 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.

5.9. Contaminated Land

5.9.1. Contaminated Land Management

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

In regard to preventing contamination or pollution, the Sub Plan 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.

Management strategies 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 of the CGP EMP. A summary of the strategies is presented in Table F-10 of Appendix F.

5.9.2. Contaminated Land Management Requirements

In addition, 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 PIRMP. The specific requirements for PIRMPs are set out in Part 5.7A of the POEO Act and the *POEO (General) Regulation 2009*.

AGL completed their requirement to develop and implement a PIRMP in 2012.

5.9.3. Contaminated Land – Environmental Performance

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



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 with 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, highly regards 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 drilling related activities were undertaken in the EMAI field.

With regards to native flora and fauna the Sub Plan objective is to minimise the loss of remnant native vegetation and minimise adverse impacts on fauna.

Management strategies employed to meet the objective for flora and fauna are outlined in the CGP EMP with a summary included in Table F-11 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 incidents or complaints recorded.

5.11. Noxious Weeds

5.11.1. Noxious Weeds Management

The Sub Plan objective for weed control is to minimise the introduction, establishment and spread of weeds. Noxious weeds may be introduced and/or dispersed via personnel vehicles, equipment and plant.

Management strategies employed to meet the objectives for weed control are included within the Rehabilitation and Landscape Management Sub Plan of the CGP EMP. A summary of these measures are outlined in Table F-12 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 RGP site. The following provides a summary of the locations of weed spraying undertaken during the reporting period:

- > 7 August 2013: RP10 and 12, RGP Gas plant/yard;
- > 18 September 2013: GL 15, 12, 11, 13, 4, 5, 9, 8, 16, 07, 06;
- > 20 September 2013: KP06, 05, 01, RB06, 09;
- > 1 October 2013: EM 17, 7, 3, 40, 39, 2, 6, 4, 10, 13, 15, 18, 25, 24, 27;
- > 4 October 2013: MP25 and LB Yard;
- > 27 November 2013: RGP and car park;
- > 6 December 2013: Spring Farm 17 and 20;
- > 18 December 2013: ARTC well site, Glen Lee;
- > 7 March 2014: RGP, yard and car park;
- > 17 March 2014: Spring farm 17, 20;
- > 15 April 2014: GL 9, 8, 10, 14, 15, 7, 16, 5, 17, 11, 13, 4, 2, 12; and
- > 23 April 2014: EM 19, 20, 38-40, 5-8, 10, 11, 13-15, 27, 28, 24, 25, 18, 17, MP 15-17, 11, 12, 22, 23, 25, 03, ARTC.

The main herbicides used were Round Up, Round Up 450 and 360, Broadside and Dicamba (selective herbicide). Approximately 46.60 L of herbicides were used during the reporting period.

5.11.3. Noxious Weeds – Environmental Performance

Activities associated with weed control were compliant for the period with no reportable incidents or 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 RGP. 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.



The Sub Plan objectives regarding noise are to:

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

Management strategies employed to meet the objectives for noise are outlined in the Noise Management Sub Plan of the CGP EMP. A summary of these measures are outlined in Table F-13 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-14 of Appendix F.

Noise monitoring of the operating gas well SF20 in CGP was carried out by Wilkinson Murray during this reporting period.

Noise monitoring was undertaken in order to assess compliance with the relevant noise criteria set out in Project Application No. 06_0291. Noise generation from the operating gas wells were 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 on 19 March 2014 at the SF20 well surface location.

The SF20 well surface location (SF05, 07, 08, 09 wells) was monitored under suitable weather conditions and assessed as compliant with the relevant noise criteria's.

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 DoPE receive a summary of this information as part of this AEPR. A summary of the annual reports results is provided in Appendix J.

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 RGP.

Quarterly noise monitoring for this reporting period included:

- > Attended noise monitoring 11 July 2013;
- > Attended noise monitoring 25 September 2013;
- > Attended noise monitoring 11 December 2013;
- > Attended noise monitoring 17 March 2014; and
- > Attended noise monitoring 11 June 2014.

Five quarterly operational noise monitoring reports were prepared for the reporting period of July 2013 to June 2014 for the RGP.

All reports stated the RGP to be compliant with noise stipulations of DA-282-6-2003-I. A summary of the findings of each report is included within Appendix J.



5.13.3. Operational Noise - Environmental Performance / Trends

Operational Noise performance at the Rosalind Park Gas Plant

No exceedances and no noise complaints relating to operational noise from the RPGP were received during the 2013/14 reporting period. This trend is consistent with previous years. Noise performance is consistent with operational noise predictions in the RPGP EIS.

Noise Performance – Operations

Following a complaint from a Glen Alpine resident on 24 October 2013 in regards to noise coming from the MP03 location during workover activities, AGL engaged a third party specialist noise consultant to conduct noise monitoring. The noise monitoring was undertaken on Friday, 25 October and Monday, 28 October 2013, with the findings that work being conducted at MP03 exceeded noise criteria marginally by 2-3 dB, largely due to the AGL air compressor being only partially screened by the onsite noise walls.

Following this, three additional noise walls were installed to further screen the AGL air compressor at the western edge of the lease. Further noise monitoring on Monday, 28 October 2013 confirmed compliance with site noise criteria.

5.14. Construction Noise

5.14.1. Construction Noise Management

No 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 Sub Plan objectives regarding construction noise are to:

- > 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.

Management strategies employed to meet the objectives for noise are outlined in the Noise Management Sub Plan of the CGP EMP. A summary of the measures are provided in Table F-15 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-16 of Appendix F.



5.14.3. Construction Noise Monitoring Results

No construction occurred during this reporting period therefore there were no construction related noise complaints or monitoring.

5.14.4. Construction Noise Performance and Trends

No construction occurred during this reporting period therefore there were no construction noise performance and trends to report.

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 completely minimised during the reporting period.

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-17, Appendix F.

Visual amenity assessments of the RPGP were completed by Distinctive Living Design (Distinctive) in March 2012. The biennial independent "Landscape and Lighting Audit Report" (Landscape and Lighting Audit) remains current for this reporting period. The results of this audit are reflected in this AEPR. The next biennial independent audit was completed after the reporting with its result to be included in next year's 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 and recommended 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

Effectiveness of Lighting Controls (Schedule 4, Clause 10)

The Landscape and Lighting Audit (March 2012) specifically reported in relation to lighting performance and visual impact from the RPGP as required by DA 282-6-2003-I Schedule 4 Clause 10.

The Landscape and Lighting Audit for lighting performance identified one location which required adjustment of directional light wash, to reduce the visible prevalence of a single light location, angle and source. Adjustments were made during this reporting period to redirect this lights wash to conform with this recommendation.



All other light sources identified as visible in the assessment were considered acceptable, well within the desired scope and it was noted that continued growth of landscaped areas would further reduce light emissions.

There were no further requirements for lighting adjustments and no complaints were received relating to lighting controls during the reporting period.

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 K.

One full field flare event occurred during the reporting period. This event occurred on the 18 October 2013 from early morning through till mid-morning of the same day, lasting a total of 125 minutes. The flare event was due to a local power failure which caused a full plant shutdown.

Smaller flaring operations take place more regularly as part of controlled operations when AGL depressurise a line to switch compressors.

In comparison the previous AEPR period had two full flare events the first lasting 335 minutes and the second lasting 292 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 DoPE on 2 July 2004. The RPGP is maintained and monitored in accordance with the VLMP to ensure the condition the landscaping and the effectiveness of visual mitigation measures remains 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 March 2012 Landscape and Lighting Audit specifically assesses the performance of the mitigation measures to prevent and minimise the visual impacts of the RPGP and aims to facilitate on-going review, management and maintenance performance of the landscape treatment.

Appendix L provides a summary of the recommendations by Distinctive in relation to their observation of AGL's implementation of the 2008 landscaping recommendations.

Distinctive concluded 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. Responsive remediation and reparation works to any landscape zone identified in the monitoring report was also evident at time of assessment. Minor suggestions for further development of landscape works are included in the audit report."

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.



It was determined by Distinctive visual observations that the landscape performance in general is excellent and is now considered well established. The established landscape provides layered screening, dense canopy growth and delivers effective and maturing screening to the Mt Gilead Homestead.

Lighting visibility of the RPGP from Mount Gilead Homestead was in accordance with lighting performance objectives of the development. Evidence of the efficacy of the landscape planting plan and the efficacy of the landscape establishment was visually apparent as the ability to visually connect to and see the AGL site is significantly obscured by the landscape measures that have been implemented. It was also recommended that although the landscape planting plan documented the retention of several existing trees within and to the south of the gas plant, these trees now pose a potential safety risk to on site workers. The audit recommendation is to remove dead wood to trees as part of continuing management.

A Tree Planting Progress Inspection and accompanying Report were completed by Ultimate Horticultural Solution on the 10 December 2013.

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) 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 2012.

Distinctive concluded that the evidence of the efficacy of the landscape planting plan and the efficacy of the landscape establishment was visually apparent and in compliance with the Landscape Planting Plan.

A Tree Planting Progress Inspection and accompanying Report was completed by Ultimate Horticultural Solution on the 10 December 2013. The report generally concluded the planted vegetation has continued to mature with growth rates considered satisfactory for the last inspection. Despite this some vegetation is struggling due to lack of natural rainfall.

The Progress Report recommends the continuation of supplementary watering during drought periods, the control of weeds and the removal of any dead or damaged vegetation. This work has been 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 VIA 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 twice a year (early Spring and early Autumn) 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.

A Tree Planting Progress Inspection and accompanying Report was completed by Ultimate Horticultural Solution on the 10 December 2013. The progress report made the following recommendation which AGL will complete within the next reporting period:

- > Provide supplementary watering during periods of "extreme" drought;
- > Chemically control weeds and grasses in densely planted areas to reduce maintenance costs and eliminate competition;
- > "Crown lift" lower limbs to allow easier access for improved maintenance activities;
- > Remove dead and damaged vegetation;
- > Remove tree guards / bags / star pickets from mature plantings (those plantings that have reached 1.5m or greater in height, particularly at Zone J behind sediment pond);
- > "Thin Out" struggling vegetation within densely planted locations; and
- > Chemically control insect infestations throughout plantings chemically control Blackberry infestations at LA-3 and along "Quarry" boundary fence line.

Flare Events

One flare event occurred during this reporting period for a duration of 125 minutes. This is a decrease to the previous AEPR reporting period where two full field flare events occurred at the RPGP which lasted 627 minutes in total. Please refer to Appendix K for more information.

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. Management strategies 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 are summarised in Table F-18 of Appendix F.



A supplement of the CGP EMP is the CGP Aboriginal Cultural Heritage Management Sub Plan which 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 which associated with aboriginal heritage matters identified and no reportable incidents or community complaints recorded.

5.17. European Heritage

5.17.1. European Heritage Management

In terms of European heritage, the area falls within the lands originally granted to 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.

Management strategies 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-19 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.



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 objective is to reduce the threat of bushfires to personnel, third parties, property and the environment. Management strategies 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 management strategies are also reproduced in Table F-20 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. Hydrocarbon Contamination

5.21.1. Hydrocarbon Contamination Management

Fuel, oil or chemical spills may occur during operations. The environmental management objectives associated with spill response are to:

- > Prevent spills from occurring;
- > Protect the safety of the workforce and third parties;
- > Address any spill promptly and stop at source as soon as practicable;
- > Have all appropriate strategies and equipment in place to deal with spills of all types and volumes;
- > 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; and
- > Prevent or minimise contamination of soil and water.



Management strategies employed to meet the objectives for hydrocarbon contamination control are outlined in the Dangerous Goods and Hazardous Materials Management Sub Plan. A summary of these measures are summarised in Table F-21 of Appendix F.

Some minor spill events occurred during this reporting period, none of which being significant in nature and all of which were dealt with in line with the above management objectives and Sub Plans. These minor events are described in Section 5.24.2.

5.21.2. Hydrocarbon Contamination – Environmental Performance

During the reporting period, there were no reportable incidents in relation to hydrocarbon spills and leaks. All activities associated with hydrocarbon contamination control were compliant for the period with no reportable incidents or community complaints recorded.

5.22. 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.

5.23. Public Safety

5.23.1. 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.

5.23.2. Public Safety - Performance

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

5.24. Safety and Risk Management

5.24.1. 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-22 of Appendix F.



5.24.2. Incident Reporting

During the reporting period 17 Environmental Hazards, Near Misses and Incidents were reported within the Environmental Incidents Report with ten of these recorded as 'low' risk rating; seven of these recorded as 'moderate' risk rating.

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

- > Small spills or leaks;
- > Increase in emissions - rise in NOx emissions from Compressor Engine No. 1 (refer to Section 9.1.1);
- > Noise – Noise complaint received by neighbour to MP03 well site;
- > Vegetation – Landowner reported reduced crop growth which was later attributed to lack of rain; and
- > EPA EPL Audit findings - 17 non compliances identified. The non-compliances identified are low risk and described in Section 9.1.1. Appendix M describes the corrective actions taken by AGL to address the non-compliances as of 30 July 2014.

5.24.3. Safety and Risk – Environmental Performance

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

5.25. Environmental Training

During the reporting period, AGL personnel were provided with environmental training on 'Environmental Compliance' and 'Pollution Incident Response Management Plan'.

A training session, 'AGL Upstream Gas Environmental Compliance Training', was undertaken on the 30 October 2013. This internal training session included an explanation of the Enforceable Undertaking, impacts of environmental non-compliance, importance of environmental compliance, compliance management system and AGL staff responsibilities.

A second internal training session 'Lunch & Learn: Pollution Incident Response Management Plan', was undertaken on 27 March 2014. This session provided a description of the *Protection of the Environment Operations Act 1997*, objectives, scope and content of the PIRMP and AGL staff responsibilities.



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 Sub Plan 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.

Management strategies 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-23 of Appendix F.

6.1.1. Rehabilitation of Disturbed Land

Specific rehabilitation activities associated with the project may be subdivided into three 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 Rehabilitated (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
4	96	94	2	1	0	68.2	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:

- > Gas well EM23 and JD04 following plug and abandonment.

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.

Long-term operation of the wells requires the retention of a cleared area around each wellhead. 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.

6.1.3. Gas Gathering System

No rehabilitation of gas gathering lines occurred during this reporting period.

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 of rehabilitation for 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.



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.

6.1.5. Buildings and Auxiliary Facilities

The provision of offices and auxiliary services for the CGP operations of AGL are located at the RGP 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. Rehabilitation Criteria was established for the plug and abandonment of EM23 well site in consultation with the OCSG.

6.3. Further Development of Final Rehabilitation Plan

Though the current operations of AGL are not likely to cease for at least 20 years, 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 a plant site would be the salvage and sale of equipment, buildings and facilities, ripping of hardstand and compacted areas, the re-profiling and filling of any voids, spreading of retained topsoil and revegetation with a species mix compatible with the former vegetation.

6.4. Rehabilitation Activities Proposed in Next AEPR Period

There are currently no planned rehabilitation activities proposed during the next AEPR reporting period.



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

Though the current operations of AGL are not likely to cease for at least 20 years, 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 plugged and abandoned will be provided to the OCSG annually within the POP.



7. Project Commitments Register

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

On 30 June 2014, AGL implemented CMO as the replacement for Mipela, which was the compliance tracking database used during the previous reporting period.

This web-based system is the new central repository for entering, tracking and demonstrating compliance with regulatory obligations relating to Upstream Gas assets. CMO provides easy entry of requirements, alerts for pending actions, and reporting of obligations. CMO is a significant shift in the way Upstream Gas 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. In the next reporting period, additional obligations covering general legislative requirements, Code of Practices, Australian Standard and Water Licences will be integrated in to CMO.



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 or 02 9963 1318) 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 whereupon AGL personnel undertake an investigation. Relevant site personnel are also notified to resolve any issues and to make them promptly aware of the concern.

Resolution details are communicated directly to the complainant and are presented at the next Community Consultation Committee forum or other public opportunities.

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. AGL also makes summaries of the register, without details of the complainants, available for public inspection. 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 Glen Alpine resident contacted AGL in regards to noise coming from the MP03 location.	24 October 2013	AGL's Land and Compliance Officer spoke with the resident to discuss the details of the complaint. Wilkinson Murray was engaged by AGL to undertake noise monitoring on 25 (Friday) and 28 (Monday) October 2013.

8.1.4. Complaint Trend

The number of complaints received in 2013/14 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 monitoring requirement for a community consultative committee 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;
- > Participate in community events;
- > Volunteering with local initiatives;
- > Ensuring the AGL Camden Website is regularly updated; and
- > Distributing community consultation material to the 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. 37: 12 September 2013;
- > No. 38: 21 November 2013; and
- > No. 39: 7 May 2014.

CCC meeting minutes are made available on the CGP project website.

The following table outlines a summary of the meetings actions and their current status at the time of this documents publication that arose from each meeting.

Table 8-2: CCC Meeting Action Items (1 July 2013 to 30 June 2014)

Action Item	Responsible	Status
Meeting 37 – 26th September 2013		
Investigate the ability of changing the names of existing wells (i.e Raby / Denham Court) as some well names do not correspond with their location which can be confusing for the community.	AGL	Completed
Send CCC the link to Office of Coal Sean Gas (CSG) website and interactive map.	AGL	Completed
Review of existing well location maps to ensure wells can easily be distinguished between whether they are plugged, abandoned, suspended being drilled or in production.	AGL	Completed
Review of information provided to the CCC to date and provide further detail where possible.	AGL	Completed
Request report from Contractor who repaired the cracked engine mount on Compressor 1.	AGL	Completed
Meeting 38 – 21st November 2013		
Send Environmental Health Impact Assessment (EHIA)- Camden North Expansion Project presentations to CCC members.	AGL	Completed
Confirm with CCC member that their query from last meeting has been answered as they were not present at this meeting.	CCC member	Completed
Confirm pipe depths and sizes of domestic gas pipelines following question from CCC member.	AGL	Completed
Send email about percentage breakdown of wells and gathering line infrastructure on public and private land to the CCC.	AGL	Completed
Upload the September quarterly air emissions monitoring results to the website.	AGL	Completed
Send link to updated maps on project website that now contain clearer labels following a request from last meeting.	AGL	Completed
CCC member to follow up with CCC member whether issue raised with page 6 of previous minutes has been address to information from this meeting.	CCC member	Completed
Meeting 39 – 7th May 2014		
AGL consultant to follow up enquiry regarding the quoting of average levels over 100 years.	AGL consultant	Completed
Report back to the group on the progress of addressing action from audits.	AGL	Completed



8.3.2. Other Consultation

The following consultation processes have also been undertaken for the CGP:

- > AGL volunteering with Wollondilly Shire Council, (July 2013);
- > Community consultation group on the expanded ground water and air monitoring programs view of the emissions monitoring equipment at Sugar Loaf 02 well, (August 2013);
- > Community Information marquee at the Campbelltown Show (September 2013);
- > Briefing of the Environmental Health Impact Assessment to the three local LGA's- Camden, Campbelltown and Wollondilly Councils by EnriskS who conducted the study, (October 2013);
- > The Environmental Health Impact Assessment for the Northern Expansion was released, (October 2013);
- > Major supporter of Christmas in Narellan, (November, 2013);
- > Official opening of the AGL Lakeside Pavilion, Mount Annan (November, 2013);
- > Sharing the findings of the Camden Fugitive Methane Emissions Monitoring Report with the community consultation group (February 2014);
- > Sharing the findings of the Camden Fugitive Methane Emissions Monitoring Report with NSW Government agencies (February 2014);
- > Sharing the findings of the Camden Fugitive Methane Emissions Monitoring Report with AGL's Climate Change Council (February 2014);
- > Community Information marquee at the Camden Show (March 2014);
- > Primary Industries Ministerial Advisory Council (April, 2014);
- > AGL volunteering with Tahmoor Men's Shed, (June 2014);
- > External presentations to Narellan Chamber of Commerce (June 2014);
- > Email updates to General Managers and Mayors of Camden, Wollondilly and Campbelltown Local Governments;
- > Email Updates to local Members of Parliament in the Camden, Campbelltown and Wollondilly Councils;
- > 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>; and
- > Advertorials placed in the Macarthur Chronicle and Camden/ Campbelltown Advertisers to update the community on the project, water monitoring and general operations update.



8.4. Audits and Visits

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

- > NSW Chief Scientist (July 2013);
- > NSW Office of Water (July 2013);
- > Camden Community Open Day, (July 2013);
- > EPA EPL Compliance Audit (July 2013);
- > NSW State and Regional Development Committee, (September 2013);
- > EPA site inspections (x10) to producing well sites (September 2013 – March 2014);
- > Camden Community Open Day (October 2013);
- > EPA visit to Camden (November, 2013);
- > National Party's Energy & Resources Committee (December 2013);
- > CSIRO Project Team for the Bioregional Assessment (December 2013);
- > Camden Community Open Day (February 2014);
- > Gloucester Water Steering Committee visit (February 2014);
- > Camden Community Open Day (March 2014);
- > Office of Coal Seam Gas visit to EM23 and JD04 for site rehabilitation inspection (March);
- > EPA Board and Executive Team visit (April 2013);
- > Rotary Club of Camden visit (May 2014); and
- > NSW National Party visit (May 2014).



9. Summary of Environmental Non-Compliance Issues and Actions

9.1. Identification of Environmental Non Compliance Issues

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

- > Review during EPL Annual Return process;
- > EPA Compliance Audit completed on 17 and 19 July 2013, for the period up to 12 months prior to the audit;
- > Weekly CMO review; and
- > Independent Environmental Audits undertaken biennially.

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 2012 to 21 December 2013 was submitted on the 18 February 2014 as required by the EPA.

There were 14 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;
- > EPL 12003 Condition O2 in relation to L3.4;
- > Protection of the Environment Operations Act 1997 - Section 66(6);
- > EPL 12003 Condition O1.1 (underground storage tanks);
- > EPL 12003 Condition O1.1 (Transfer of produced water);
- > EPL 12003 Condition M1.3 (d);
- > EPL 12003 Condition M2.1 and M2.2;
- > EPL 12003 Condition M2.3;
- > EPL 12003 Condition M2.5;
- > EPL 12003 Condition M2.7;
- > EPL 12003 Condition M3.1 in relation to M2.2 and M2.3;
- > EPL 12003 Condition M3.2;
- > EPL 12003 Condition M5.2 (a) and (c); and
- > EPL 12003 Condition R1.10.

These are detailed 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

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 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 monitoring, 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 these conditions. The non-compliance took place for the full reporting period. Monitoring Point 1 was non-compliant from 22 December 2012 to 15 March 2013. Monitoring Point 2 and Monitoring Point 3 were non-compliant from 22 December to 21 December 2013. As at the date of this report, Monitoring Point 2 and Monitoring Point 3 are still not monitoring moisture and flow, and are only monitoring for 45 minutes of each hour.

This non-compliance was also reported in the previous 2012-2013 Annual Return. AGL is now compliant with this condition.

Non-Compliance with EPL 12003 Conditions O2 in relation to L3.4 – Regarding the exceedance of concentration limits of NOx

AGL failed to comply with EPL Condition O2 in relation to L3.4 when the CEMS on Compressor 1 recorded exceedances of concentration limits as specified by Condition L3.4 of EPL 12003 for NOx at Compressor 1.

These exceedances were recorded on the 4 August 2013 and 13 August 2013.

The cause of the NO_x exceedance on Compressor 1 on 4 August 2013 was found to be one broken wire from the intake manifold pressure transducer on the Air Fuel Ratio Module (AFM) which forced Compressor Engine 1 to run rich and consequently increased NO_x emissions from Point 1.

This event occurred 4 August 2013 (Sunday) at approximately 12:32pm until 1:04pm when Compressor Engine 1 was shut down.

The second exceedance at Compressor 1 occurred 13 August 2013 between 5am – 8am. This incident was identified following review of the Ecotech Environmental Reporting Services monthly Continuous Emissions Monitoring System report for Compressor Engine 1 for August 2013.

AGL directed Ecotech technicians to go onsite on 8 September 2013, to investigate the inconsistency of results from SCADA (the RGP control system) and the NATA accredited report issued by Ecotech. The technicians reported the oxygen concentration used for the NO_x calculation was not the dry oxygen, but the direct process oxygen reading. This therefore caused the calculated NO_x emissions displayed on the RGP SCADA to be less than the actual NO_x emissions calculated by Ecotech.

The EPA issued AGL with an Official Caution and Penalty Infringement Notice (PIN) in relation to this non-compliance (refer to Section 9.1.2). AGL is now compliant with this condition.



Non-Compliance with Section 66(6) of the Protection of the Environment Operations Act 1997

This non-compliance has no applicable condition in EPL 12003 but is non-compliant with Section 66(6) of the POEO Act. A letter from the EPA dated 6th June 2013 refers to the obligation to publish monitoring data. AGL failed to publish monthly Continuous Emissions Monitoring System data specified by EPL 12003 Condition M2.3.

The non-compliance occurred from February 2013 to April 2013 for Compressor 1, Compressor 2 and Compressor 3.

The EPA issued AGL with a PIN in relation to this non-compliance (refer to Section 9.1.2). AGL is now compliant with this clause.

Non-Compliance with EPL 12003 Conditions O1.1 – Regarding not completely managing water pollution risk of underground storage tanks

This non-compliance was identified within the EPA Compliance Audit Report with the EPA assessing that AGL was not competently managing the risk of water pollution associated with the storage of oily water in underground concrete storage tanks.

The non-compliance took place at the two RGP 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 Conditions O1.1 – Regarding not completely managing water pollution risk of transfer of produced water

This non-compliance was identified within the EPA Compliance Audit Report with the EPA assessing that AGL was not competently managing the risk of water pollution associated with the transfer of produced water from tankers to the flare pit.

The non-compliance took place at the RGP 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.

AGL is now compliant with this condition, managing 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.

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

This non-compliance was identified within the EPA Compliance Audit Report. It was found that quarterly stack testing reports prepared by AGL's specialist consultant do 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 name of the person sampling in future stack testing reports.

This non-compliance occurred March 2013 to December 2013.



Non-Compliance with EPL 12003 Conditions M2.1 and M2.2 – Regarding sampling method for sulphur dioxide concentrations

This non-compliance was identified within the EPA Compliance Audit Report that the concentration of sulphur dioxide was not measured at monitoring points 1, 2, 3, 4 and 5 using the sampling method TM-4 as specified in EPL 12003.

The non-compliance occurred during the reporting period from 12 June 2013 to 12 December 2013 with AGL's specialist consultant using TM-3 as an alternative method to TM-4 to measure sulphur dioxide at the monitoring points listed above. AGL had received advice from two air specialist consultancies, Emission Testing Consultants (ETC) and EML Air Pty Ltd (EML) that TM-3 is an appropriate alternative to TM-4 for sampling sulphur dioxide. AGL has reverted to using TM-4 to measure sulphur dioxide and is now compliant with this condition.

Non-Compliance with EPL 12003 Conditions M2.3 – Regarding test method for monitoring of moisture

This non-compliance was identified within the EPA Compliance Audit Report which identified that AGL's specialist CEMS contractor used an in-house test method instead of TM-22 to monitor for moisture at Monitoring Point 1. This non-compliance occurred 15 March 2013 to October 2013.

The EPA acknowledged that the non-compliance was not of direct environmental significance. On 22 October 2013 the EPA varied EPL Condition M2.4 and approved the specialist contractor's in-house method to continuously monitor for Moisture on Monitoring Point 1, 2 and 3, providing that calibration is completed with reference to TM-22. AGL is now compliant with this condition.

Non-Compliance with EPL 12003 Condition M2.5 – Regarding Quarterly Sampling Methodologies

This non-compliance was identified within the EPA Compliance Audit Report. The EPA found that the selection of sampling positions for quarterly monitoring at points 4 and 5 were not carried out in accordance with the test method TM-1 as specified in the "*Approved Methods for the Sampling and Analysis of Air Pollutants in NSW, 2000*".

Monitoring Point 4

- > There is no second port installed at 90 degrees to the existing port therefore it does not comply with AS 4323.1.
- > On one occasion, the sampling plane did not meet relevant criteria as the gas velocity was less than 3m/s.
- > The non-compliance took place from 22 December to April 2013 at Reboiler flue.

Monitoring Point 5

- > There is no second port installed at 90 degrees to the existing port therefore it does not comply with AS 4323.1.
- > The gas flow velocity threshold of greater than 3m/s was not met.
- > The non-compliance took place until 22 October 2013 at Reflux Column Vent.

The cause of non-compliance was found to be a design fault as installed by the previous RGP operator. To address the non-compliance a second useable port was installed in April 2013 at Monitoring point 4 and 5 although due to design specifications it is not possible to obtain a gas velocity greater than 3m/s at monitoring Point 5. In response to this, the EPA varied EPL 12003 to exclude velocity at Monitoring Point 5 for the purpose of compliance with TM-1. AGL is now compliant with this condition.



Non-Compliance with EPL 12003 Condition M2.7 – monitoring for Bromide

This non-compliance was identified within the EPA Compliance Audit Report which found that quarterly produced water monitoring was completed without sampling for Bromide at Monitoring Points 10, 13 and 15. This non-compliance occurred 29 May 2013 and 05 September 2013.

It was found that samples collected at the above three monitoring points have been analysed for Bromine not Bromide. AGL is now monitoring for Bromine and Bromide.

Non-Compliance with EPL 12003 Condition M3.1 in relation to M2.2 and M2.3 – monitoring of pollutants emitted to air.

This non-compliance was identified within the EPA Compliance Audit Report and relates to the concentration of pollutants emitted to air not being conducted in accordance with the 'Approved Methods for the Sampling and Analysis of Air Pollutants'.

Quarterly Stack Testing

- > The method used to determine the concentration for dry gas density and molecular weights was not carried out by a laboratory accredited by NATA to use TM-23.
- > The non-compliance took place 22 December 2012 to 19 March 2014 on Monitoring Points 1, 2, 3, 4, 5 and 6.
- > AGL'S Air specialist consultant ETC used NSW TM-24 (USEPA Method 3A) and NSW TM-25 (USEPA Method 3A) to measure carbon dioxide and oxygen concentrations respectively. They have advised AGL that it is standard practice in the stack testing industry to use USEPA Method 3A to calculate molecular weight/dry gas density.
- > AGL is now compliant with this condition.

Continuous Emissions Monitoring

- > The laboratory used to determine the concentration for moisture and velocity on Monitoring Point 1 was not accredited by NATA.
- > The non-compliance took place 15 March 2013 to 22 October 2013.
- > The EPA varied the EPL 12003 Condition M2.4 on 22 October 2013 and approved the in-house method to continuously monitor for Moisture on Monitoring Points 1, 2 and 3 providing that calibration is completed with reference to TM-22.
- > AGL is now compliant with this condition.

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

This non-compliance was identified within the EPA Compliance Audit Report finding 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 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. AGL is now compliant with this condition.

Non-Compliance with EPL 12003 Condition M5.2 (a) and (c) – Recording name of complainant

This non-compliance was identified within the EPA Compliance Audit Report, finding that a complaint record did not include the name of the complainant or time of complaint. The complaint occurred on the 27 December 2012.

AGL stated the full details were not provided at the time of the complaint and this was not identified within the database. AGL will ensure that future complaints are recorded with name and date of complainant or in a circumstance where this does not occur a record will be made to that effect.



Non-Compliance with EPL 12003 Condition R1.10 – Regarding compliance with noise monitoring

This non-compliance was identified within the EPA Compliance Audit Report. The EPA found AGL had not undertaken noise monitoring in accordance with the NSW Industrial Noise Policy, with the non-compliance occurring 22 December 2012 to 22 March 2014.

Noise monitoring reports prepared by AGL's specialist noise consultants now include details of instrumentation used to determine meteorological conditions. AGL is now compliant with this condition.

9.1.2. Penalty Infringement Notices (EPA)

During this reporting period AGL received two Penalty Infringement Notices (PIN) from the EPA in relation to an incidence of non-compliance.

The first PIN was issued on 11 July 2013 to AGL for the 'Failure to Publish Continuous Emission Monitoring System (CEMS) data' during the previous reporting period from February 2013 to April 2013. This PIN was issued in relation to AGL not publishing the required emissions data specified by the license from Compressor Engines 1, 2 and 3 within 14 days as required by the Act. The PIN resulted in a penalty payment by AGL to the EPA of \$1,000.

The second PIN was issued on 19 December 2013 to AGL regarding 'exceedances of the license concentration limit for oxides of nitrogen (NOx) for License discharge Point (LDP) 1 Compressor Engine 1' on both the 4 and 13 August 2013. The EPA determined that an appropriate regulatory response to these license non-conformances was to issue a PIN for failure to comply with Condition O2 "maintenance of plant and equipment" for the 4 August 2013 incident with a resulting penalty payment of \$1,500. For the 13 August incident the EPA issued an 'Official Caution' for failure to comply with Condition O2 "maintenance of plant and equipment".

9.1.3. Enforceable Undertaking (EU)

During this reporting period AGL proposed an Enforceable Undertaking (EU) to the EPA for its approval in response to AGL's failure to comply with continuous emissions monitoring for air emissions at the RPGP.

An EU is a regulatory response available to the EPA under the POEO Act. It is a written, legally enforceable document where AGL provide a full disclosure on the non-compliance, how they addressed the behaviour and the consequences of the non-compliance. In addition, AGL has to make good the consequences that came out of the breach. The EU document is signed by the EPA's Chief Regulator.

On 9 July 2012, AGL verbally informed the EPA that since October 2009, AGL had failed to fully undertake continuous emissions monitoring of air emissions on Compressor Engines 1, 2 & 3. AGL stated this was because of repeated technical and mechanical failures of the CEMS. AGL stated this failure in the monitoring system was not fully recognised by AGL until all monitoring data required under a licence was required by the EPA to be regularly published in accordance with the amendments to the POEO Act as set out in the *Protection of the Environment Legislation Amendment Act 2011* (NSW).



AGL responded to this non-compliance by issuing media statements and fact sheets regarding the details of the non-compliance. They also introduced interim measures in cooperation with the EPA until continuous monitoring could be undertaken in accordance with the EPL 12003 licensing conditions.

The EU has been prepared in cooperation with the EPA and was approved by the EPA on 8 August 2013. The EU details a number of actions to be taken by AGL.

Table 9-1 outlines the status of each EU condition as of the date of this report. Two clauses were not completely finalised during the reporting period, being Clause 2.2 which has since been met, and Clause 2.7 which AGL is awaiting EPA's confirmation that AGL has now fully complied with this clause.

Table 9-1: Current Status of EU Conditions

Item no.	Undertaking	Timing	Status
1	Clause 2.1: AGL must submit in writing to the EPA a RATA for the new CEMS unit installed in Compressor Engine 1 to demonstrate compliance against all relevant licence requirements.	8 September 2013	RATA sent to EPA on 7 August 2013.
2	Clause 2.2: Submit a proposal to trial a predictive emissions monitoring system to the EPA for engines 2 and 3 for an agreed period. Implement the trial of the PEMS. Upon completion of trial, EPA may approve PEMS as monitoring system for engines 2 and 3 subject to EPL conditions.	8 September 2013 1 January 2014 EPA approval depends on EPA timing.	PEMS Trial Proposed submitted to the EPA on 02 September 2013. PEMS implemented from 14 January 2014 to 14 July 2014. EPL 12003 was varied to include condition relating to PEMS. As required under EPL 12003, a report to the EPA about the PEMS trial was submitted 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. AGL has requested the EPA to make changes to the proposed PEMS Stage 2 Trial through a letter to the EPA dated 12 November 2014.
3	Clause 2.3 and 2.4: Review the air emission monitoring requirements on engines 1 to 3 in consultation with the EPA to achieve the following objectives: <ul style="list-style-type: none"> - protection of environment & human health demonstrated through effective air emissions monitoring & compliance with EPL conditions - public and EPA having access to accurate and reliable information regarding air emissions 	8 February 2014	Review was completed by AGL between August 2013 and February 2014 as confirmed in a letter from AGL to the EPA dated 06 March 2014.



Item no.	Undertaking	Timing	Status
	<ul style="list-style-type: none"> - having in place an effective air monitoring system at all times - properly specifying all monitoring requirements in the EPL conditions <p>Ensure that the monitoring system is compliant with EPL conditions.</p> <p>Report the results of the review to EPA</p>	<p>8 February 2014</p> <p>8 March 2014</p>	<p>The monitoring system is compliant with EPL conditions as relayed by AGL to the EPA in a letter dated 7 February 2014.</p> <p>Results of the report were submitted to the EPA on 06 March 2014.</p>
4	<p>Clauses 2.5 to 2.6: Implement measures to prevent recurrence of incidents, including:</p> <ul style="list-style-type: none"> - informing staff of non-compliances to re-emphasise & ensure that all staff maintain a high awareness & culture of compliance - putting actions & processes in place including Plant Operator process changes to check that the CEMS is functional for each running unit, an operating procedure to enforce the process required for the CEMS operation, & loading new CEMS onto AGL's Preventative Maintenance Database to capture all required maintenance - reviewing database management tools to investigate system improvements - providing additional environmental compliance training to operations staff & management - reviewing AGL's compliance approach will involve revised auditing methods 	<p>8 February 2014</p>	<p>Measures were implemented to prevent a recurrence of the incidents as set out in a letter to the EPA sent on 7 February 2014.</p>
5	<p>Clause 2.7: Continue monthly independent air monitoring & publication of monthly results in AGL's website</p>	<p>Continue until otherwise agreed with the EPA</p>	<p>Continuing.</p>
6	<p>Clauses 2.8-2.10: Pay \$150,000 to the University of Western Sydney for the Love Your Lagoons project</p>	<p>22 September 2013</p>	<p>Payment received by University of Western Sydney on 2 September 2013.</p>
7	<p>Clause 2.11: Pay EPA's investigation and legal costs (\$10,000)</p>	<p>5 September 2013</p>	<p>Payments made to the EPA on 22 and 26 August 2013.</p>
8	<p>Clause 2.12: Issue media release about the undertaking commitments</p>	<p>29 August 2013</p>	<p>Media release issued on 09 August 2013.</p>
9	<p>Clause 2.13: Issue statement in AGL website about the undertaking</p>	<p>29 August 2013</p>	<p>Website statement published on 9 August.</p>



Item no.	Undertaking	Timing	Status
10	<p>Clause 2.14-2.15: Have in place a written compliance system to ensure AGL's compliance with the conditions of the undertaking.</p> <p>Provide report to EPA about the written compliance system</p>	<p>8 November 2013</p> <p>8 December 2013</p>	<p>Written compliance system in place by 8 November 2013.</p> <p>Report sent to the EPA on 6 December 2013.</p>
11	<p>Clause 2.16: Submit Revised Return Declaration Forms to EPA including EPL non-compliances not previously reported to EPL</p>	<p>8 September 2013</p>	<p>Submitted to the EPA on 2 September 2013.</p>
12	<p>Clause 2.17: Nominate as person responsible for ensuring that AGL complies with EU.</p>	<p>8 August 2013</p>	<p>Nominated Mike Moraza (Upstream Gas Group General Manager).</p>

9.1.4. Non-Compliances Identified During Independent Environmental Audit

An Independent Environmental Audit (2010-2012 Audit Report) was undertaken by Treo Environment Pty Ltd (Treo) for the period of 1 July 2010 to the 30 June 2012. The audit assessed whether the CGP is complying with the relevant standards, performance measures, and statutory requirements.

The report summarises its findings and recommendations which have been addressed by AGL as follows:

- > **Air monitoring** – AGL entered into an EU with EPA 8 August 2013 to address the CEMS air monitoring issues. Since September 2012 AGL has conducted air emissions monitoring on a quarterly basis on all compressors operating during that quarter. To ensure compliance with test method TM-1 Point 1, 4 & 5 had a second sampling port installed with consultation held with EPA in regards to minimum volumetric flow rate at point 5;
- > **Consultation** – AGL has improved its Upstream Gas Compliance Management System to ensure that all nominated stakeholders are identified and consulted with in accordance with consent conditions for future / ongoing operations;
- > **Independent audits** – AGL has improved its Upstream Gas Compliance Management System to ensure that all future auditors are engaged, with sufficient time allow completion of the audit report and submission with in the required timeframe;
- > **Land subsidence** – AGL is continuing consultation with DoPE;
- > **Noise management** –AGL has engaged an external noise consultant to update the latest Noise Management Plan to establish effective monitoring tools to achieve compliance;
- > **Reporting** – AGL has improved its Upstream Gas Compliance Management System to identify and track its reporting obligations, allocate responsibility and ensure submission within required timeframe. AGL is also consulting with DoPE to modify development consent (DA 282-6-2003-I) to provide consistency with EPL 12003; and
- > **Water Monitoring** – AGL has commenced consultation with DoPE and EPA to seek modification of the development consent (DA 282-6-2003-I) to provide consistency with EPL 12003.

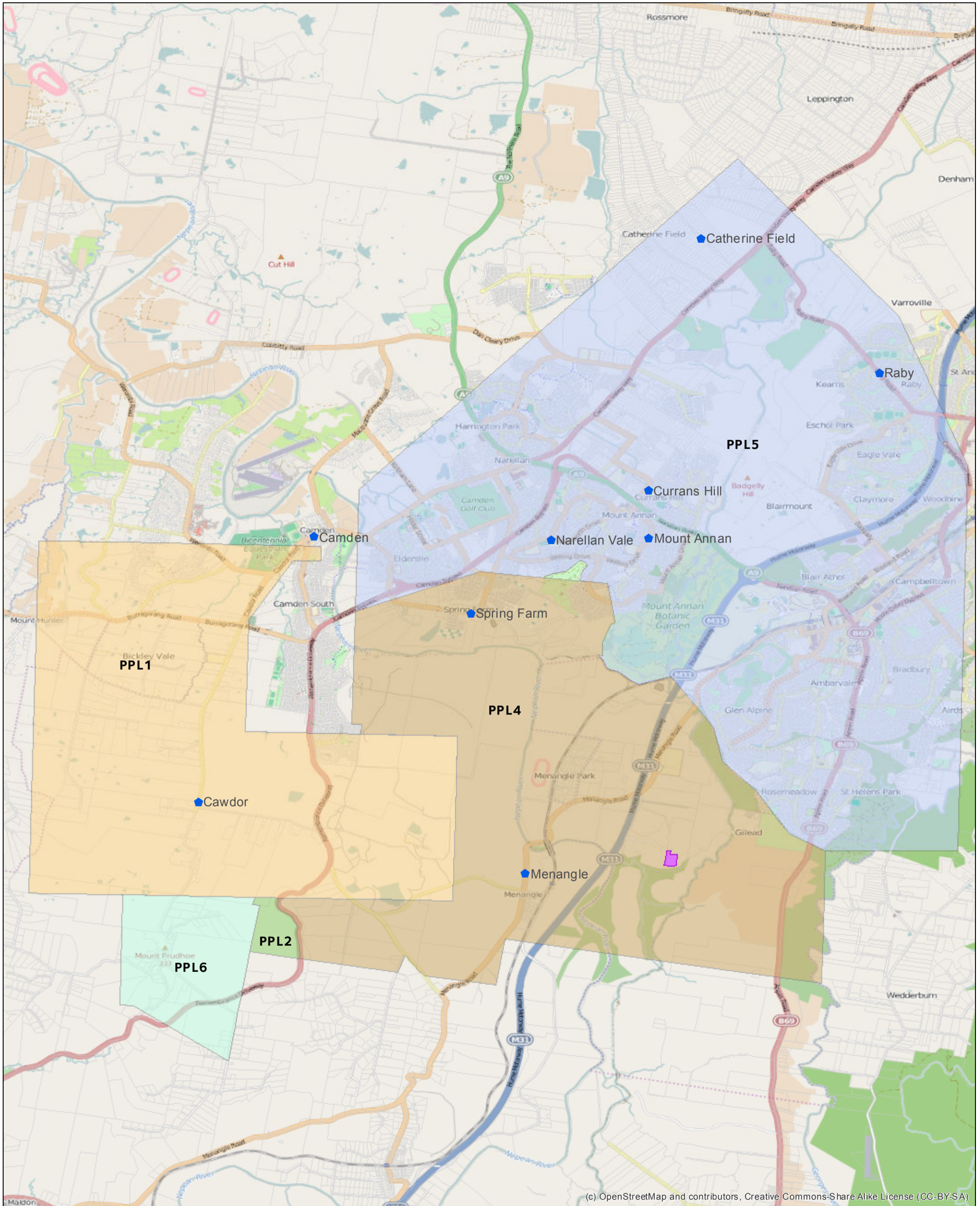


In accordance with the "Audit Findings and Recommendations" Section of the audit report AGL has prepared a corrective actions register which responds to the issues and recommendations raised by Treo, which are summarised above. The status of corrective actions by AGL are included within the Corrective Actions Register attached at Appendix G of this AEPR of which some were in progress or completed during the reporting period.



Appendix A. Camden Gas Project Petroleum Production Licence Locations

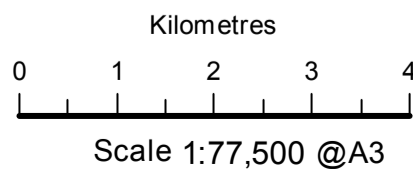
Camden Gas Project PPL Locations



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Author: Upstream Gas
 Date: 11/11/2014
 Ref: 1652R4



- Legend**
- PPL 1
 - PPL 2
 - PPL 4
 - PPL 5
 - PPL 6
 - RPGP
 - Towns
 - Property Boundaries



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.



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 04, 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 - EM 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 23-26*, 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 (Mod 26 August 2004)
	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 (Mod 2 May 2007)



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 & WG 04	24	4450	282-6-2003i (Mod 26 August 2004)
	WG 02, WG 03, WG 05 & WG 06	23	4450	282-6-2003i (Mod 26 August 2004)
	Gas gathering system	23 & 24	4450	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	1081753	PA 06_0291
		1	1007608	
		4	1007608	
11		1081753		
	2	1076817		
	54	864754		
Menangle Park	MP01 – 03, 09, 10 (MP03 site)	7	253700	PA 06_0291
	MP06*	2	790254	
		X	378264	
	MP11	2	737485	
	MP19*, MP22	8	249530	
	MP21*, MP12 & MP23 (MP23 site)	1	598067	
MP04*	31	1100981		



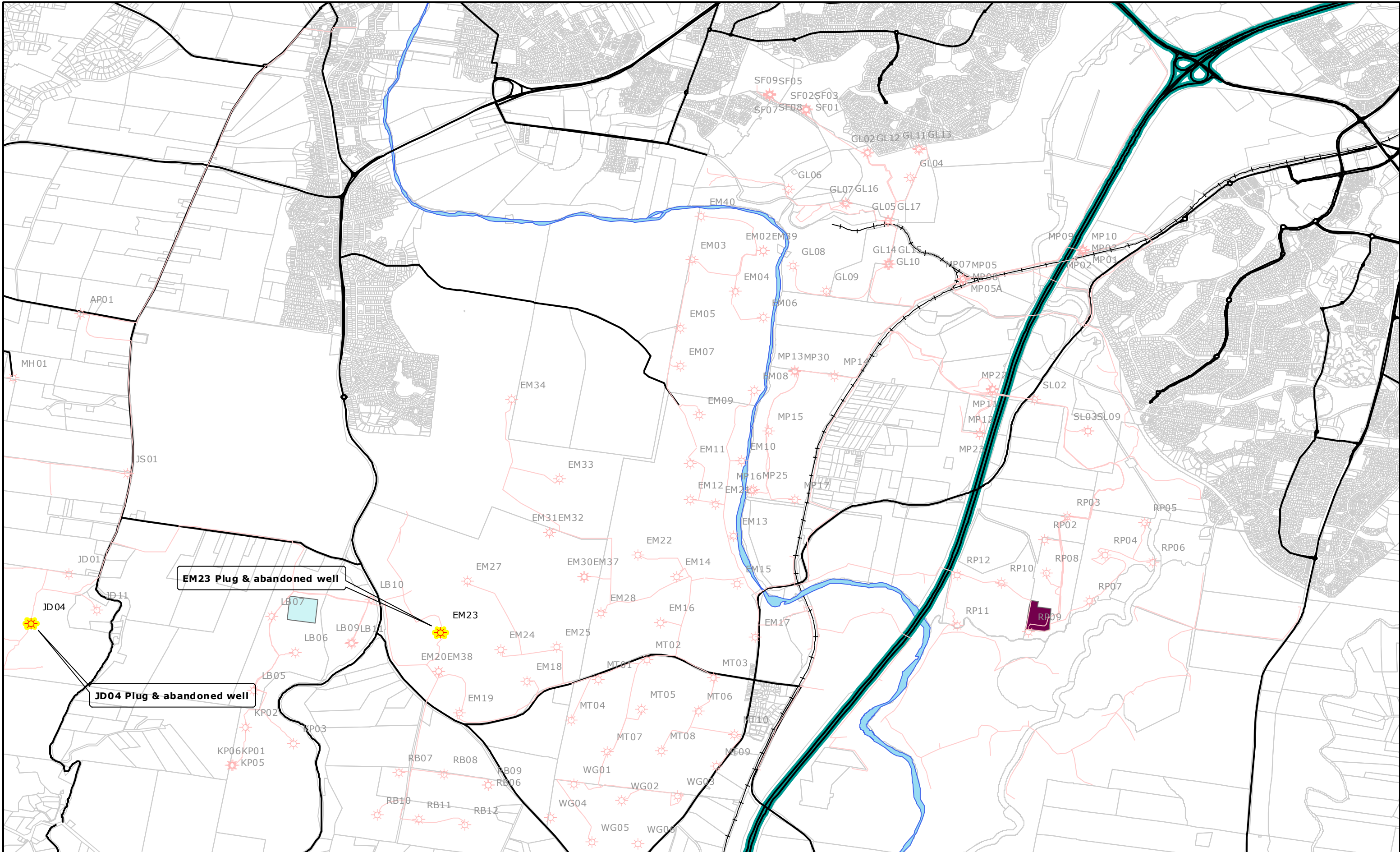
Area	Well Numbers	Property Lot Number	Deposited Plan No.	DA No.
	MP05, MP05A, MP07 & MP08	1	790254	
	MP33*	1	249393	
	MP24*	2	236059	
Menangle Park	Gas gathering system and access roads	7 2 X D 2 8 1 11 3 8 31 26 27 1 9 Book 70 Book 80 2 3 1Menangle Road reserve 63 64 2 12 1001 1002	253700 790254 378264 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 FY2013-2014



Energy in action.
 Author: Upstream Gas
 Date: 28/08/2014
 Ref: 2790R3

Camden Infrastructure Map Construction Work completed 2013-14

Kilometres
 0 1.25 2.5
 Scale 1:40,000 @A3
 Geocentric Datum of Australia 1994
 Sources: AGL Energy Limited, Omnilink PSMA Data, SKM

Legend

Plug & Abandoned Wells	— Gathering Line	■ Logan Brae Yard
☀ EM23	— Public Roads	■ RPGP
☀ JD04	— Hume Highway	□ Property Boundaries
☀ Wells	— Nepean River	
	— Railway	



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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	10BL604877		Menangle Park	MP18
10BL603937	24856	Kay Park	KP01	10BL604876		Menangle Park	MP33
10BL603938	24856	Kay Park	KP02	10BL604874		Menangle Park	MP24
10BL603939	24856	Kay Park	KP03	10BL604881		Spring Farm	SF01
10BL603940	24856	Kay Park	KP05	10BL604882		Spring Farm	SF02
10BL603941	24856	Logan Brae	LB05	10BL604883		Spring Farm	SF03
10BL603942	25054	Logan Brae	LB06	10BL604884		Spring Farm	SF05



Licence No.	WAL	Field	Well name	Licence No.	WAL	Field	Well name
10BL603952	25054	Logan Brae	LB07	10BL604885		Spring Farm	SF07
Key				10BL604886		Spring Farm	SF08
	Proposed well as at 30 June 2014			10BL604887		Spring Farm	SF09
	Duplicate licence			10BL604878		Menangle Park	MP05A
	Plugged and abandoned well			10BL604879		Menangle Park	MP12
#	Pad location only			10BL604880		Menangle Park	MP23



Appendix E. Status of Well Operations FY2013-2014

Changes from the previous reporting period are shaded in grey.

Current Status of Well Operations (Current as of June 2014)

Well Name	Date Completed	Status of Operation June 2014
AP01	2000	Drilled
EB01-10	Incomplete	Approved – Not Drilled (DA now expired)
EM01	Incomplete	Plugged and Abandoned
EM02 - 20	2005	Drilled
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
LB11	2007	Drilled
LP01	Incomplete	Not Completed
MH01	Incomplete	Not Completed
MP13, 14, 15, 16 and 17	2003	Drilled



Well Name	Date Completed	Status of Operation June 2014
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

Note: Shading indicates wells plugged and abandoned during this reporting period.



Appendix F. Environmental Management Strategies and Monitoring Requirements



Environmental Management Strategies and Monitoring Requirements

This section provides an overview of the management strategies 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;
- > Contaminated Land;
- > Threatened Flora and Fauna;
- > Noxious Weeds;
- > Operational Noise;
- > Construction Noise;
- > Visual Amenity;
- > Aboriginal Heritage;
- > European Heritage;
- > Bushfire;
- > Hydrocarbon Contamination;
- > Safety and Risk Management; and
- > Rehabilitation.



Air Pollution

Air pollution is managed in relation to air quality management strategies which are contained in the Air Quality Management Sub Plan. The key management strategies employed to meet the objectives for air quality are summarised in Table F-1.

Table F - 1: Management strategies used to meet the objectives for air quality

CGP Activity	Action	Area		Responsibility
		RPGP	Field	
General	The workforce induction program shall inform site personnel of the general requirements for the protection of air quality.	✓	✓	Environment Manager
Construction	Greenhouse gas emissions associated with production testing shall be minimised by implementing strict operating procedures.		✓	All personnel
Construction, Operation and Rehabilitation	Plant and equipment shall be regularly maintained and serviced to limit the amount of pollution generated.	✓	✓	All personnel
	The volume of gas flared shall be minimised.	✓	✓	All personnel
	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.		✓	All personnel
	Activities will be carried out in a manner that does not cause or aggregate air pollution.	✓	✓	All personnel
Operation	All pollution control equipment is to be maintained in an efficient condition.	✓		All personnel
	Air emissions monitoring will be carried out at the points described in EPL 12003 and following the methodology defined in DA 282-6-2003 CoC 47, 48 and 58.	✓		All personnel

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
<p>Schedule 4. CoC 47</p> <p>The applicant shall ensure air pollutant emissions do not exceed the following criteria at any privately owned residence:</p> <p>Nitrogen Dioxide: 246 µg/m³ (1 hour average) and 62 µg/m³ (annual average)</p> <p>Sulphur Dioxide: 570 µg/m³ (1 hour average) and 60 µg/m³ (annual average)</p> <p>Sulphuric acid mist: 33 µg/m³ (3 minute average)</p>



DA-282-6-2003 RPGP - Air Quality Criteria and Monitoring Requirements

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/m³) Sulphur Dioxide (7 mg/m³) Sulphuric acid mist and/or sulphur trioxide (5 mg/m³)

POINT 4: Oxides of Nitrogen (110 mg/m³) Sulphur Dioxide (35 mg/m³) Sulphuric acid mist and/or sulphur trioxide (3.5 mg/m³)

POINT 5: Oxides of Nitrogen (13 mg/m³) Sulphur Dioxide (1042 mg/m³) Sulphuric acid mist and/or sulphur trioxide (35 mg/m³)

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)
Arsenic	No limit stipulated
Benzene	47
Benzo(a) pyrene	0.27
Fine Particulates	460
Hydrogen Sulphide	1.6
Lead	No limit stipulated
Mercury	No limit stipulated
Nitrogen Oxides	103,000
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 management strategies are contained in the Soil and Water Management Sub Plan. The key management strategies employed to meet the objectives for erosion and sediment are summarised in the below table.

Table F - 5: Management Strategies – Erosion and Sediment Control

Activity	Management Strategies	Responsibility
Planning	<p>Informing site personnel and contractors of the general requirements for the protection of soil to prevent erosion, and water quality via an induction program.</p> <p>Implementation of the Soil and Water Management Plan (SWMP) as part of the EMP with the main aim being to prevent sediment leaving the construction areas.</p>	Environment and Safety Officer
Operations	<p>Undertake all works in accordance with the requirements set out in Section 120 of the <i>Protection of the Environment Operations Act 1997</i>, except as may be expressly provided for by a licence under the <i>Protection of the Environment Operations Act 1997</i> in relation to the development.</p> <p>Take all practicable measures to minimise soil erosion and the discharge of sediments and water pollutants, and to maintain soil quality, integrity and structure.</p> <p>Use diversion drains, silt fences and check dams where practicable to divert surface water around disturbed areas and control runoff velocity.</p> <p>Only undertake works within 20 metres of watercourses during dry weather conditions.</p> <p>Store and manage the use and disposal of water in accordance with EPA's Waste Classification Guidelines (DECC, 2009).</p> <p>Implement all erosion and sediment control measures consistent with the requirements of <i>Managing Urban Stormwater: Soils and Construction manual</i> (Landcom, 2004, or its latest version).</p> <p>Undertake monitoring of land and receiving waters to determine the impact of waste water application, if applicable.</p> <p>Install silt fences and/or hay bale filters when required around the downslope perimeter of disturbed areas where potential for significant</p>	Environment Manager



Activity	Management Strategies	Responsibility
	<p>sediment migration is identified by the Environment Manager.</p> <p>Construct soil stockpiles in accordance with details in Chapter 4.3 of Managing Urban Stormwater – Soils and Construction (Landcom, 2004).</p> <p>Erosion and sediment control structures and banded areas shall be routinely inspected and maintained to ensure they remain effective (namely removal of silt build up, replacement of failed components such as straw bales, silt fencing, breached berms).</p>	



Surface Water and Groundwater Management

Water Management Strategies

Water Management strategies are contained in the Soil and Water Management Sub Plan and Groundwater Management Plan (GMP). The key management strategies 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: Management Strategies and Monitoring Requirements – Groundwater

Role	Responsibility	Frequency
Preparation and review of GMP.	AGL - Manager Hydrogeology.	Annually 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 – Production Supervisor.	See Note 1.
Water quality monitoring within the CGP.	AGL– Environment Team.	Quarterly.
Dewatering volumes within the CGP.	AGL– Production Supervisor.	Monthly.
Monitoring Bores		
Water level monitoring within the CGP.	External Consultant.	Continuous (data loggers) Quarterly (manual dips)
Water quality monitoring within the CGP.	External Consultant.	Quarterly
Compliance Matters		
Annual (NOW) Bore Licence	AGL Upstream Gas - Manager Hydrogeology.	Annual report by 30 September each year.



Role	Responsibility	Frequency
Compliance Report.		
Response triggers and actions.	AGL Upstream Gas - Manager Hydrogeology.	As required.
Audits and actions Regarding compliance.	NOW – Regional Hydrogeologist/Licensing Manager – Parramatta Office.	As required.
Annual (EPA) EPL Compliance Report.	AGL Upstream Gas – Environment Manager.	Annual report by 20 February each year.

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
<p>DA-282-6-2003-I Schedule 4. CoC 69 (RPGP Flare Pond)</p> <p>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.</p> <p>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).</p>
<p>EPL 12003 Condition M2.5 and M2.6 Groundwater Quality Monitoring Requirements</p> <p>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:</p> <p><i>M2.5 Water and/ or Land Monitoring Requirements</i></p> <p>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</p> <p>Yearly Samples will be collected (mg/L) for: Ammonia, Benzene, Ethyl benzene, Methane, Nitrate, Nitrite, Phenols, Polycyclic aromatic hydrocarbons.</p> <p>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.</p>



Table F - 8: Water Bore Licence Groundwater Monitoring Requirements

Ground Water Licence	Condition Requirements
<p>Water Licence Conditions for Existing and Proposed Gas Production Wells. Issued Bore Licence No:</p> <p>10BL603867 to 10BL603878</p> <p>10BL603881 to 10BL603893</p> <p>10BL603897 to 10BL603903</p> <p>10BL603905 to 10BL603906</p> <p>10BL603911 to 10BL603915</p> <p>10BL603917 to 10BL603922</p> <p>10BL603924 to 10BL603942</p> <p>10BL603952 to 10BL603965</p> <p>10BL603976</p> <p>10BL603978</p> <p>10BL603981</p> <p>10BL603989 to 10BL603994</p> <p>10BL604007 to 10BL604017</p> <p>10BL604031</p> <p>10BL604032 to 10BL604045</p> <p>10BL604131</p> <p>10BL604582</p> <p>10BL604597</p> <p>10BL604623 to 10BL604626</p> <p>10BL604672 and 10BL604673</p> <p>10BL604874</p> <p>10BL604876 to 10BL604888</p>	<p>Condition 10 (for Existing bore licences) and Condition 12 (for Proposed bore licences) generally state:</p> <p>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.</p> <p>Condition 11 (for Existing bore licences) or Condition 13 (for Proposed bore licences) generally state:</p> <p>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.</p> <p>The installation of monitoring bores is to be carried out within three years of the commencement of this license.</p> <p>The license holder must maintain the records of the groundwater levels as measures in the monitoring bores</p> <p>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.</p> <p>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,</p> <p>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.</p>



Waste Management

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

Table F - 9: Waste Management Strategies

Activity	Action	Area		Responsibility
		RPGP	Field	
General	The employee and contractor induction shall inform all site personnel about waste management general requirements based on the principles of reduce, reuse and recycle and appropriate disposal.	✓	✓	Environment and Safety Officer
	Waste containers shall be provided at all work sites.	✓	✓	All (Employees and 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 and 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
	Recycling must be stored separately from other waste and labelled accordingly.	✓		All (Employees and Contractors)
Spills	Spills of waste materials shall be dealt with in a prompt and thorough manner, and reported to the Field Safety and Environment Officer.	✓	✓	All (Employees and 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 and Contractors)

Waste volumes were recorded for the RPGP during this reporting period which conforms to the relevant conditions of DA 282-6-2003-I. It was reported in the bi-annual 2010-2012 Independent Environmental Audit Report that information on waste transporters is not currently provided to the EPA as required by DA 282-6-2003-I. It is noted that this condition is no longer included in the EPL 12003 following a variation of the licence by the EPA which removed this waste reporting requirement.



Contaminated Land

Management strategies 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 - 10: Management Strategies - Contaminated / Polluted Land

Activity	Management Strategies	Responsibility
Planning	<p>A chemical manifest shall be prepared and detailed procedures for chemical storage and handling, waste management and spill response shall be in place.</p> <p>The workforce induction program shall inform site personnel of the general requirements for chemical storage and handling.</p>	Environment Manager/ Health and Safety Business Partner
Operations	<p>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)</p> <p>Due to its stenchant characteristics, Mercaptan (odorant) shall be handled in accordance with the strictest of protocols (refer to Emergency Response Plan).</p> <p>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.</p> <p>All storage and handling equipment (including transfer hoses) shall be kept in a well maintained condition.</p> <p>All vehicles and equipment shall be adequately maintained so as to minimise drips/leaks of Dangerous Goods and Hazardous Materials.</p> <p>Spilt material shall be recovered as soon as possible, using appropriate equipment.</p> <p>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 T&I: DRE)), including but not limited to containment, placarding and segregation from incompatible materials.</p>	<p>Environment and Safety Officer/ All employees</p> <p>Health & Safety Business Partner</p>

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

Table F - 11: Management Strategies - 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

Management strategies 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 - 12: Management Strategies - 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
Construction - Weeds and Pathogens Cleaning Introduced Pest Species	<p>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.</p> <p>Cleaning procedures shall be thorough so as to remove all soil or organic matter from the surfaces of vehicles, equipment and portable infrastructure, including the undercarriage.</p> <p>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.</p> <p>All plant and equipment shall be inspected and be free of invertebrates and pest species prior to coming on site.</p> <p>Waste management shall be implemented to avoid attracting vertebrate pests (see Waste Management Sub Plan).</p>	Environment Manager (primary)/ Land & Compliance Officer (secondary)
Weed control and monitoring	<p>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.</p> <p>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.</p> <p>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.</p>	Environment Manager (primary)/ Land & Compliance Officer (secondary)



Operational Noise

Management strategies 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 - 13: Operational Noise Management Strategies

Activity	Management Strategies	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
Operations	<p>With the exception of well drilling and emergency situations, the construction and operational hours are: Monday to Friday 7.00am-6.00pm, Saturday 8.00am-1.00pm</p> <p>No construction work is to take place on Sundays or Public Holidays.</p> <p>Drilling activities may be undertaken 24 hours per day, 7 days per week, where approved.</p> <p>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).</p> <p>Ensure that plant and equipment is well maintained and operated, and carry out maintenance as required.</p> <p>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</p> <p>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.</p>	<p>Operations Manager/ All personnel</p> <p>Land & Compliance Officer/ Community Relations Manager</p> <p>Environment Manager</p>

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 - 14: CoC's Operational Noise Monitoring Requirements

Operational Noise Monitoring Requirements
DA 15-1-2002
<p>Schedule 3. CoC 38</p> <p>The Applicant shall comply with the following noise criteria (L_{Aeq} 15 minute):</p> <p>RECEIVER A: 40 dBA (Day, Evening and Night)</p> <p>RECEIVER B, C and F: 37 dBA (Day, Evening and Night)</p> <p>RECEIVER D, E and G to M: 37 dBA (Day and Evening), 35 dBA (Night)</p> <p>Any other residential receiver: 35 dBA (Day, Evening and Night)</p> <p><i>Note: This development refers to the RBTP, which has been decommissioned and rehabilitated</i></p>
DA 282-6-2003
<p>Schedule 4. CoC 29</p> <p>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:</p> <p>R1 Medhurst Rd, Gilead: 35dBA (Day, Evening and Night)</p> <p>R7 Mt Gilead, Gilead: 37dBA (Day), 36dBA (Evening and Night)</p> <p><i>Note: This Development refers to the operation of the RPGP</i></p>
<p>Schedule 4. CoC 40</p> <p>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</p>
<p>Schedule 4. CoC 41</p> <p>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".</p>
DA 75-4-2005
<p>Schedule 2. CoC 18.</p> <p>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.</p>
PA 06_0137
<p>Schedule 3. CoC 4</p> <p>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.</p> <p>Refer to DA for notes relating to this condition.</p> <p><i>Note: This development refers to the operation of wells RB03, RB05-RB07, RB09-RB11</i></p>
PA 06_0138
<p>Schedule 3. CoC 4</p> <p>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.</p> <p>Refer to DA for notes relating to this condition.</p> <p><i>Note: This development refers to the operation of wells EM23-EM37</i></p>
PA 06_0291



Operational Noise Monitoring Requirements

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

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

Management strategies 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 - 15: Construction Noise Management Strategies

Activity	Management Strategies	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
Operations	<p>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.</p> <p>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).</p> <p>Implement site specific recommendations arising from the Noise Assessment</p> <p>Carry out environmental noise monitoring in accordance with the monitoring requirements specified in Appendix A of the Noise Management Sub Plan.</p> <p>Notice of works will be provided to landowners and appropriate relevant affected receivers at least 14 days prior to commencing planned construction activities.</p>	<p>Operations Manager/ All personnel</p> <p>Environment Manager</p> <p>Land Compliance & Officer/ Community Relations Manager</p>

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 - 16: Construction Noise Limits and Monitoring Requirements

Approval Criteria for Construction Noise	Activities undertaken during the reporting period
PA 06_0137	
<p>Schedule 3. Clause 2 – Construction noise Criteria</p> <p>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.</p> <p><i>Note: This development refers to the drilling of wells RB 03- RB 12.</i></p>	No construction or drilling activities were undertaken at these wells sites during the reporting period.
PA 06_0138	
<p>Schedule 3. Clause 2 – Construction Noise Criteria</p> <p>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.</p> <p><i>Note: This development refers to the drilling of wells EM23-36</i></p>	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
PA 06_0291	
<p>Schedule 3 Clause 3 – Construction Noise Goals</p> <p>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:</p> <p>MP02, MP03, MP04: Day (49), Evening (47), Night (41), Sat & Sun (47)</p> <p>MP05, MP06: Day (40), Evening (40), Night (40), Sat & Sun (40)</p> <p>MP11, MP24, MP33: Day (42), Evening (42), Night (40), Sat & Sun (42)</p> <p>MP19 R3: Day (40), Evening (40), Night (40), Sat & Sun (40)</p> <p>MP19 R25: Day (49), Evening (47), Night (41), Sat & Sun (47)</p> <p>MP21, MP22, MP23: Day (49), Evening (47), Night (41), Sat & Sun (47)</p> <p>SF04A: Day (43), Evening (42), Night (37), Sat & Sun (42)</p> <p>SF10, SF17, SF20: Day (43), Evening (41), Night (36), Sat & Sun (43)</p>	<p>No construction or drilling activities were undertaken at these wells sites during the reporting period.</p>
DA 75-4-2005 (Mod 4 July 2007)	
<p>Schedule 2, Clause 18A</p> <p>Noise from the drilling and construction of SL08 and SL09 shall not exceed the following noise limits at the nearest sensitive receiver:</p> <p>Weekday (7am to 6pm) and Sat (7am-1pm): 54 dB(A)_{L_{Aeq}}</p> <p>Saturday (1pm to 6pm) and Sunday (7am to 6pm): 44 dB(A)_{L_{Aeq}}</p> <p>Evening: 47 dB(A)_{L_{Aeq}}</p> <p>Night: 41 dB(A)_{L_{Aeq}}</p>	<p>No construction or drilling activities were undertaken at these wells sites during the reporting period.</p>
DA 15-1-2002 (Mod 4 July 2007)	
<p>Schedule 3 Clause 47A</p> <p>Noise from the drilling and construction of AP02 and AP03 shall not exceed the following limits at receivers A1, A2, A3 and A4:</p> <p>Weekday (7am to 6pm) and Sat (7am-1pm): 45 dB(A)_{L_{Aeq}}</p> <p>Saturday (1pm to 6pm) and Sunday (7am to 6pm): 40 dB(A)_{L_{Aeq}}</p> <p>Evening: 40 dB(A)_{L_{Aeq}}</p> <p>Night: 30 dB(A)_{L_{Aeq}}</p>	<p>No construction or drilling activities were undertaken at the above wells sites during the reporting period.</p>
DA 246-8-2002-I (Mod 20 April 2011)	
<p>Schedule 3, Clause 19B</p> <p>Noise from the drilling and construction of KP05 and KP06 shall not exceed the following noise limits at the nearest receiver:</p> <p>Weekday (7am to 6pm) and Sat (7am-1pm): 53 dB(A)_{L_{Aeq}}</p> <p>Saturday (1pm to 6pm) and Sunday (7am to 6pm): 48 dB(A)_{L_{Aeq}}</p> <p>Evening: 41 dB(A)_{L_{Aeq}}</p> <p>Night: 35 dB(A)_{L_{Aeq}}</p>	<p>No construction or drilling activities were undertaken at the above wells sites during the reporting period.</p>
DA 282-6-2003i (Mod 4 July 2007)	
<p>Schedule 4, Clause 34B</p> <p>Noise from the drilling and construction of EM38 shall not exceed the following noise limits at the nearest sensitive receiver:</p> <p>Weekday (7am to 6pm) and Sat (7am-1pm): 54 dB(A)_{L_{Aeq}}</p> <p>Saturday (1pm to 6pm) and Sunday (7am to 6pm): 39 dB(A)_{L_{Aeq}}</p> <p>Evening: 39 dB(A)_{L_{Aeq}}</p> <p>Night: 35 dB(A)_{L_{Aeq}}</p>	<p>No construction or drilling activities were undertaken at this location during the reporting period.</p>



Approval Criteria for Construction Noise	Activities undertaken during the reporting period
DA 282-6-2003i (Mod 11 April 2008)	
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 construction or drilling activities were undertaken during the reporting period.



Visual Amenity

Strategies implemented to manage visual amenity are included within the Rehabilitation and Landscape Management Sub Plan. The key objectives in relation to visual amenity are as follows:

- > To minimise visual impacts from operations activities in consultation with the relevant landowner; and
- > To minimise impacts to the visual characteristics of the project area.

In addition to the Sub Plan 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 - 17: Visual Amenity Monitoring Requirements

Visual Amenity Monitoring Requirements
DA 282-6-2003-i
<p>Schedule 4. CoC 10. The applicant shall report on the effectiveness of the lighting controls in the AEPR.</p>
<p>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:</p> <ul style="list-style-type: none"> (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."
<p>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:</p> <ul style="list-style-type: none"> (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

Management strategies 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 - 18: Management Strategies - Aboriginal Heritage

Activity	Management Strategies	Responsibility
Planning	<p>The workforce induction program shall inform site personnel of the required requirements for protection of cultural heritage.</p> <p>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.</p>	Environment Manager
Operations	<p>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.</p> <p>There are three basic levels of management options available for the Aboriginal archaeological sites that will be impacted. In order of preference these are:</p> <ol style="list-style-type: none"> 1. Conservation through avoidance; 2. Preservation through ongoing management such as relocation; and 3. Destruction mitigated by salvage and interpretation <p>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.</p> <p>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.</p>	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

Management strategies 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 - 19: Management Strategies - European Heritage

Activity	Action	Responsibility
Pre-Activity	<p>Obtain approval from the NSW Heritage Council prior to commencing construction works.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Note: This Action has been previously completed.</p>	Head of Land and Approvals and 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 Manager
Construction, Operation, Rehabilitation	Maintain existing vegetation which provides screening of works and minimise removal of vegetation where possible.	Environment Manager
Construction, Operation, Rehabilitation	Implement the recommendations of heritage assessments, where relevant.	Environment Manager
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	Responsibility
Construction, Operation, Rehabilitation	Maintain records of the identified items of heritage significance within a site land dossier.	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

Management strategies employed to meet the objectives for bushfire control are outlined in the Emergency Response Plan and are reproduced in the table below.

Table F - 20: Management Strategies – Bushfire

Activity	Management Strategies	Responsibility
Planning	<p>The induction program shall inform personnel of the required bushfire management procedures.</p> <p>AGL shall maintain regular liaison with local emergency services organisations.</p> <p>Regular liaison with landholders shall be conducted regarding the nature and schedule of operational activities.</p>	<p>Environment & Safety Officer/ Health and Safety Business Partner/ Land and Compliance Officer</p>
Operations	<p>All operational activities shall be restricted to the well site area, gathering line route, site office, lay down yard, workshop, Gas plant and designated access routes.</p> <p>All vehicles shall carry fire extinguishers.</p> <p>A mobile safety trailer with water backpacks, water tanks, fire extinguishers and general safety gear is used for site operational work. In addition, a 20,000 litre water tanker may be available for dedicated use by the FRNSW / NSW RFS during an emergency situation. However this may not be available for immediate use as it may be required to be filled with water before use.</p> <p>All machinery shall be maintained and operated to comply with relevant fire safety standards.</p> <p>The event of a fire shall be limited through the employment of fire prevention mechanisms.</p>	<p>Environment & Safety Officer/ Health and Safety Business Partner</p> <p>All personnel</p>

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



Hydrocarbon Contamination

Management strategies employed to meet the objectives for hydrocarbon contamination control are outlined in the Dangerous Goods and Hazardous Materials Management Sub Plan. The key measures are summarised in the below table.

Table F - 21: Management Strategies - Hydrocarbon Contamination

Activity	Management Strategies	Area		Responsibility
		RPGP	Field	
Planning	<p>During operations appropriate strategies and equipment shall be in place to deal with a spill of all types of fuel, oil or chemicals to be used on-site.</p> <p>The workforce induction program shall inform site personnel of the required spill prevention and response procedures.</p>	✓	✓	Environment Manager
Operations	<p>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 T&I: DRE)), including but not limited to containment, placarding and segregation from incompatible materials.</p>	✓	✓	Health & Safety Business Partner
	<p>All activities under the existing EPL licence shall be undertaken in a competent manner, including handling, movement and storage or materials and substances.</p>	✓	✓	Environment Manager, Operations Manager
	<p>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.</p>	✓	✓	All Employees
	<p>Spilt material shall be recovered as soon as possible, using appropriate equipment.</p>	✓	✓	All Employees
	<p>Contaminated soil, or spill recovery materials (such as kitty litter and absorbent pads) shall be disposed of at appropriately licensed facilities.</p>	✓	✓	Environment and Safety Officer
	<p>Spill response equipment shall be maintained on-site and replaced as required.</p>	✓	✓	All Employees
	<p>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).</p>	✓	✓	Environment and Safety Officer



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 management 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 - 22: Incident Reporting Monitoring Requirements

Incident Reporting Monitoring Requirements
DA 15-1-2002-i
<p>EPL Requirement</p> <p>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.</p>
DA 282-6-2003-i
<p>Schedule 4. CoC 94</p> <p>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.</p> <p>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.</p>
DA 246-8-2002-i
<p>Schedule 3. CoC 13</p> <p>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.</p> <p>Schedule 3. CoC 14</p> <p>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.</p>
PA 06_0137, PA 06_0138 & PA 06_0291
<p>Schedule 4. CoC 2</p> <p>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:</p> <ul style="list-style-type: none"> (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



Incident Reporting Monitoring Requirements

(d) Describe the proposed measures to address the exceedance/incident.
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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

Management strategies 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 - 23: Management Strategies – 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
Access Roads	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
Visibility (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)
Initial Rehabilitation	<p>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.</p> <p>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 revegetation in accordance with the requirements of the Office of Coal Seam Gas, the EMP and this Sub Plan.</p> <p>Earthworks, vegetation clearing and soil disturbance would be limited to the construction and operational footprint as appropriate.</p> <p>Existing vegetation will be maintained wherever possible.</p> <p>Native screen trees may be planted around the well site using appropriate species in consultation with the landowner.</p> <p>All waste materials and equipment shall be removed from the area once backfilling and tie-ins are completed.</p> <p>Sediment control measures shall be implemented where necessary to prevent erosion and water contamination. (See Soil and Water Management Sub Plan).</p> <p>Areas to be rehabilitated shall be graded to reinstate pre-existing surface contours and natural drainage patterns.</p> <p>All fences which were cut and replaced by gates during operations shall be repaired to at least the equivalent pre-</p>	Environment Manager (primary), Land & Compliance Officer (secondary)



Activity	Action	Responsibility
	<p>operations condition, unless permanent gates or other arrangements are agreed with the landholder.</p> <p>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).</p> <p>Initial rehabilitation of the well construction compound and gas gathering lines is to be consistent with the established character of surrounding land.</p> <p>All flagging and bunting installed for environmental or safety reasons shall be removed.</p>	
Stockpiles	<p>Cleared vegetation shall be stockpiled separately for subsequent re-spreading within the compound during site rehabilitation.</p> <p>Disturbed areas shall be progressively rehabilitated as soon as practicable.</p>	<p>Environment Manager (primary), Land & Compliance Officer (secondary)</p>
Construction - Weeds and Pathogens	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>All plant and equipment shall be inspected and be free of invertebrates and pest species prior to coming on site.</p> <p>Waste management shall be implemented to avoid attracting</p>	<p>Environment Manager (primary), Land & Compliance Officer (secondary)</p>
Weed control and monitoring	<p>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.</p> <p>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.</p> <p>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.</p>	<p>Environment Manager (primary), Land & Compliance Officer (secondary)</p>



Activity	Action	Responsibility
<p>Final Rehabilitation</p>	<p>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 revegetation in accordance with the EMP and this Sub Plan.</p> <p>Earthworks, vegetation clearing and soil disturbance would be limited to the construction and operational footprint as appropriate.</p> <p>Existing vegetation will be maintained wherever possible.</p> <p>If removal of the gas gathering system is required, the excavated trench would be backfilled and rehabilitated, including contouring and revegetation.</p> <p>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.</p> <p>Final rehabilitation is to be completed to the satisfaction of the Director-General and Office of CSG, in consultation with the landowner, and in a manner that is generally consistent with the landform of the surrounding land.</p> <p>Revegetating would include but not be limited to broadcast of seed and ongoing maintenance and monitoring activities for 12 months minimum.</p> <p>All private tracks used during operations will be returned to their pre-operations state, or to a condition agreed by the landholder.</p> <p>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.</p> <p>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.</p>	<p>Environment Manager (primary), Land & Compliance Officer (secondary)</p>

There are no specific monitoring requirements for rehabilitation in addition to visual amenity monitoring requirements as specified in Table F-17 above that applied during this reporting period.



Appendix G. 2010-2012 Independent Audit Report – Non-Conformances Corrective Actions Register

AGL Corrective Action Register based on Independent Audit Recommendations

July 2014

[Note: these actions reflect the Audit Findings and Recommendations in Section 4 of the Independent Environmental Audit Report.]

Issue Raised in Audit Report	Auditor Recommendations	Actions taken by AGL	Action Due Date	Action Status	Notes
Air Monitoring - 1 Continuous Emissions Monitoring System (CEMS)	Resolve CEMS air monitoring issues in consultation with EPA	On 8th August 2013, AGL entered into an Enforceable Undertaking with EPA with an action to address this non-conformance.	8 February 2014	COMPLETED	
Air Monitoring - 2 Quarterly Sampling	Conduct air emissions monitoring on a quarterly basis on all compressors operating during that quarter.	Since September 2012, AGL has conducted air emissions monitoring on a quarterly basis on all compressors operating during that quarter.	Ongoing (each quarter)	COMPLETED	
Air Monitoring - 3 Sampling Positions	Sampling positions for quarterly air emissions monitoring at Points 1, 4 & 5 to be compliant with test method TM-1.	Points 1 & 4: Install second sampling port. Point 5: Install second sampling port. Consult with EPA in regards to minimum volumetric flow rate.	21 December 2013	COMPLETED	
Independent Audits	Ensure that suitably qualified and approved professionals are engaged early enough to allow completion of the audit and submission within the required timeframe.	AGL has improved its Upstream Gas Compliance Management System to ensure that all future auditors are engaged, with sufficient time to allow completion of the audit report and submission within the required timeframe.	Ongoing	COMPLETED	
Consultation	Ensure consultation with nominated regulatory authorities/stakeholders during the development or update of Plans in accordance with consent conditions.	AGL has improved the Upstream Gas Compliance Management System to ensure that all nominated stakeholders are identified and consulted with in accordance with consent conditions for future/ongoing operations. AGL has commenced updates to Plans since the audit and commenced consultation with relevant stakeholders prior to submission of relevant plans.	Ongoing	COMPLETED	
Land Subsidence	If AGL is satisfied, based on expert opinion that no subsidence monitoring is required, then they should seek to modify this condition accordingly.	AGL has engaged a suitably qualified expert to conduct subsidence monitoring. If the results confirm AGL's previous expert subsidence report prepared in April 2007 (risk of subsidence almost negligible) and hence monitoring is not required, AGL will seek to modify this condition.	31 December 2014	IN PROGRESS	AGL has commenced consultation with the DPE.
Reporting	Establish an appropriate system to identify reporting requirements, allocate responsibility and ensure submission within the required timeframe.	AGL has improved its Upstream Gas Compliance Management System, which will identify and track its reporting obligations, allocate responsibility and ensure submission within the required timeframe.	Ongoing	COMPLETED	
Reporting	Seek a modification of the development consent DA282-6-2003-1 to provide consistency with EPL 12003 (requirement for quarterly reports for waste transports and waste disposal facilities).	AGL will seek a modification of the development consent to provide consistency with EPL 12003.	31 December 2014	IN PROGRESS	AGL has commenced consultation with the DPE and EPA.
Noise Management	Review and revise the Noise Management Plan to establish effective monitoring tools to achieve compliance.	AGL has engaged an external noise consultant to update the latest Noise Management Plan.	31 October 2013	COMPLETED	
Water Monitoring	Seek a modification of DA 282-6-2003-1 to align with the conditions of EPL 12003 (water monitoring).	AGL will seek a modification of the development consent to provide consistency with EPL 12003.	31 December 2014	IN PROGRESS	AGL has commenced consultation with the DPE and EPA.



Appendix H. Air Quality Monitoring Results Reported in Annual Returns

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	3	4.50	4.87	5.30	N/A
Dry gas density	Kg/m ³	4	3	1.30	1.30	1.30	N/A
Moisture	%	4+CEMS	3+CEMS	7.20	8.35	9.40	N/A
Molecular weight of stack gases	g/g-mole	4	3	29.00	29.00	29.00	N/A
Nitrogen Oxides	mg/m ³	4+CEMS	3+CEMS	182.00	328.00	616.00	461
Oxygen (O ₂)	%	4+CEMS	3+CEMS	10.55	12.33	12.90	N/A
Sulfuric acid mist and sulphur trioxide (as SO ₃)	mg/m ³	4	3	0.30	0.60	0.90	5.0
Sulphur dioxide	mg/m ³	4	3	BLD	0.90	2.60	7
Temperature	Degrees Celsius	4+CEMS	3+CEMS	316.00	349.14	371.00	N/A
Velocity	m/s	4	3	25.00	25.67	26.00	N/A
Volumetric flowrate	m ³ /s	4+CEMS	3+CEMS	2.80	2.90	2.90	N/A

*BLD: Below Limit of Detection

Note: Monitoring point 1 was not sampled during the fourth quarter 2013 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	11.10	11.33	11.50	N/A
Dry gas density	Kg/m ³	4	4	1.30	1.30	1.30	N/A
Moisture	%	4+CEMS	4	16.00	18.25	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	76.00	192.70	250.00	461
Oxygen (O₂)	%	4+CEMS	4+CEMS	0.39	0.54	0.62	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	328.00	415.78	504.00	N/A
Velocity	m/s	4	4	17.00	21.50	30.00	N/A
Volumetric flowrate	m ³ /s	4+CEMS	4	0.67	0.82	1.10	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	11.20	11.30	11.40	N/A
Dry gas density	Kg/m ³	4	4	1.30	1.30	1.30	N/A
Moisture	%	4+CEMS	4	13.00	15.00	19.00	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	71.00	132.20	210.00	461
Oxygen (O₂)	%	4+CEMS	4+CEMS	0.47	0.77	1.00	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	331.00	430.93	510.00	N/A
Velocity	m/s	4	4	18.00	22.25	30.00	N/A
Volumetric flowrate	m ³ /s	4+CEMS	4	0.71	0.86	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	4.20	4.38	4.50	N/A
Dry gas density	Kg/m ³	4	4	1.30	1.30	1.30	N/A
Moisture	%	4	4	7.20	8.08	10.00	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	100	100	100	110
Oxygen (O₂)	%	4	4	12.70	13.10	13.60	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	259.00	272.75	301.00	N/A
Velocity	m/s	4	4	3.20	3.28	3.30	N/A
Volumetric flowrate	m ³ /s	4	4	0.08	0.08	0.08	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	12.50	13.50	14.00	N/A
Dry gas density	Kg/m ³	4	4	1.30	1.30	1.30	N/A
Moisture	%	4	4	72.00	74.50	79.00	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 (O₂)	%	4	4	*BLD	0.78	0.92	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	89.75	91.00	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	Licensed frequency
Carbon dioxide	%	4	4	*BLD	*BLD	*BLD	Quarterly
Dry gas density	Kg/m ³	4	4	1.30	1.30	1.30	Quarterly
Moisture	%	4	4	1.00	2.93	3.90	Quarterly
Molecular weight of stack gases	g/g-mole	4	4	29.00	29.00	29.00	Quarterly
Odour	Odour units	4	4	49.00	537.25	1,400.00	Quarterly
Oxygen (O₂)	%	4	4	20.80	20.88	20.90	Quarterly
Temperature	Degrees Celsius	4	4	21.00	30.50	36.00	Quarterly
Velocity	m/s	4	4	5.10	5.30	5.50	Quarterly
Volumetric flowrate	m ³ /s	4	4	0.12	0.13	0.14	Quarterly

*BLD: Below Limit of Detection

Note: Quarterly monitoring at point 8 was included as EPL condition m2.7 after first quarter 2013. Insufficient water in quarter 2, 3 and 4 to collect samples.



Appendix I. Assessable Pollutant Results – RGP

Assessable Pollutant	Assessable Load (Kg)	Load Limit (Kg)
Arsenic	0.00	No limit stipulated
Benzene	3.49	47
Benzo(a) pyrene	0.0	0.27
Fine Particulates	0.0	460
Hydrogen Sulphide	0.0	1.60
Lead	0.0	No limit stipulated
Mercury	0.0	No limit stipulated
Nitrogen Oxides	31,386.08	103,000.00
Nitrogen Oxides – summer	4,504.94	No limit stipulated
Sulphur Oxides	65.24	3000.00
Volatile Organic Compounds	3.65	33,000.00
Volatile Organic Compounds-Summer	0.91	No limit stipulated



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

Noise Monitoring Undertaken	Summary of Results
Attended noise monitoring 11th July 2013	<p>Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time periods.</p> <p>At R1 noise from the RPGP was inaudible during the evening and night predominantly being masked by Hume HWY traffic, other noise such as fauna or aeroplanes. The RPGP was occasionally audible during the day while still being predominantly masked by other noise sources.</p> <p>At R7 noise from RPGP was inaudible at all times (day, evening and night) and was almost constantly masked by Hume HWY traffic, other noise such as fauna or aeroplanes.</p>
Attended noise monitoring 25th September 2013	<p>Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time periods.</p> <p>At R1 noise from the RPGP was inaudible at all times (day, evening and night) and was almost constantly masked by Hume HWY traffic, other noise such as fauna or aeroplanes.</p> <p>At R7 noise from RPGP was inaudible at all times (day, evening and night) and was almost constantly masked by Hume HWY traffic, other noise such as fauna or aeroplanes.</p>
Attended noise monitoring 11 December 2013	<p>Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time period.</p> <p>At R1 noise from the RPGP was inaudible at all times (day, evening and night) and was almost constantly masked by Hume HWY traffic, other noise such as fauna or aeroplanes.</p> <p>At R7 noise from RPGP was audible at times during day, evening and night with respective L_{Aeq} levels of 35dBA and 37dBA.</p>
Attended noise monitoring 17 March 2014	<p>Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time period.</p> <p>At R1 noise from the RPGP was inaudible at all times (day, evening and night) and was almost constantly masked by Hume HWY traffic, other noise such as fauna or aeroplanes.</p> <p>At R7 noise from RPGP was audible at times during day, evening and night with respective L_{Aeq} levels of 34-36dBA.</p>
Attended noise monitoring 11 June 2014	<p>Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time period.</p> <p>At R1 noise from the RPGP was inaudible at all times (day, evening and night) and was almost constantly masked by Hume HWY traffic, other noise such as fauna or aeroplanes.</p> <p>At R7 noise from RPGP was audible at times during day, evening and night with respective L_{Aeq} levels of 36dBA, 36dBA and 33 dBA.</p>
Annual Noise Report Summary (From Final Compliance Audit Report)	<p>All monitoring showed the RPGP to be compliant with the relevant operational noise limits set by the EPL and DA Consent No. 282-6-2003-I at both R1 and R7 receiver locations for day, evening and night under typical operating conditions.</p>



Appendix K. Flare Event Monitoring

The RPGP flare log is provided in this Appendix from July 2013 to June 2014.

Date	Time	Duration (minutes)	Light (Day, Dusk, Night, Dawn)	No. Compressor on line	Cause of Flare Occurrence
18/10/2013	0832 hrs to 1037 hrs	125	Dawn to Day	None	Local power failure causing full plant shutdown



Appendix L. Visual Audit Comments and Implementation

Summary of 2012 visual audit comments on the implementation of the 2008 recommendations and their status

Landscape Zones	Visual Audit of the Implementation of 2008 Recommendations (Distinctive 2012)	Implementation Status (As of June 2014)
A1	Trees established with growth in excess of 3m. Consistent and even growth. Minor pruning for safety and maintenance requirements to buildings. No plant replacement required. Continued maintenance and tree establishment in all areas.	Maintenance which includes tree pruning has continued for this reporting period, by AGL's contractors.
A2	No signs of insect attack. Well established plantings. Minor pruning undertaken and required to power lines.	AGL's maintenance contractors have conducted pruning as recommended.
B3	Planting requires on-going fertiliser and treatment due to poor establishment in this area only.	AGL has closely monitored this section and applied mulch to maintain plant growth and bank stability during the reporting period.
D1	Re-mulching sloping bank for on-going support of planting establishment.	AGL has closely monitored this section over the reporting period, and bank stability has been maintained. Mulch was applied during the reporting period.
E1	No further works required. Continue on-going maintenance should be undertaken.	On-going maintenance which includes grass slashing around trees has continued for this reporting period, by AGL's contractors.



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



AGL Corrective Actions Register – EPA 2013 Compliance Audit

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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.	In progress: 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 being progressively implemented to further reduce the likelihood of a water pollution event. Works completed to date include: <u>Short Term:</u>

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Condition Number	Action Required by the EPA in the Audit Report	Non Compliance Code*	Target/ Action Date	Action Taken By AGL
				<ul style="list-style-type: none"> > 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. <p><u>Longer Term</u></p> <ul style="list-style-type: none"> > In progress: 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.	<p>In progress: 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 being progressively implemented to further reduce the likelihood of a water pollution event. Works completed to date include:</p> <p><u>Short Term:</u></p> <ul style="list-style-type: none"> > 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;

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Condition Number	Action Required by the EPA in the Audit Report	Non Compliance Code*	Target/ Action Date	Action Taken By AGL
				<ul style="list-style-type: none"> > 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. <p>Longer Term:</p> <ul style="list-style-type: none"> > In progress: 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	<p>The licensee must operate plant and equipment associated with the Continuous Emissions Monitoring equipment on Compressor engine 3 in a proper and efficient manner.</p> <p>The licensee must comply with the requirements set out in the 'Enforceable Undertaking' dated 8 August 2013.</p>	Code Yellow	Refer to requirements outlined in 'Enforceable undertaking' dated 8 August 2013 and EPL 120043 Condition U1.	In progress: In compliance with the Enforceable Undertaking Clause 2.2 and EPL 12003 Condition U1, AGL is presently trialling a Predictive Emissions Monitoring System (PEMS) as an alternative to Continuous Emissions Monitoring System (CEMS) on Compressor Engine 2 and Compressor Engine 3.
M1.3	<p>Air monitoring</p> <p>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.</p>	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.

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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	<p><u>Quarterly air monitoring</u></p> <p>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</p> <p>http://www.epa.nsw.gov.au/air/appmethods.htm</p>	Code Blue	When sampling is next required or apply for approval of alternative method.	<p>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.</p> <p>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.</p>
M2.3	<p><u>Continuous air monitoring – pollutants monitored</u></p> <p>Point 1: The licensee must monitor the pollutants specified in the licence condition.</p> <p>Points 2 and 3: The licensee must comply with the requirements set out in the 'Enforceable Undertaking' dated 8 August 2013.</p>	Code Blue	<p>Point 1- Immediately/ Ongoing</p> <p>Points 2 and 3- refer to 'Enforceable undertaking' and EPL 12003 Condition U1.</p>	<p><u>Point 1</u></p> <p>Complete: Pollutants are now monitored as specified in the licence conditions.</p> <p><u>Points 2 and 3</u></p> <p>In progress: In compliance with the Enforceable Undertaking Clause 2.2 and EPL 12003 Condition U1, AGL is presently trialling a PEMS as an alternative to CEMS on Compressor Engine 2 and Compressor Engine 3.</p>
M2.3	<p><u>Continuous air monitoring – sampling method at Point 1</u></p> <p>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.</p>	Code Blue	Immediately	<p><u>Point 1</u></p> <p>Complete: Pollutants are now monitored as specified in the licence conditions.</p>

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

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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.