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AGL

Annual Environmental Performance Report 2011-2012

Camden Gas Project

Date: 6 May 2013

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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
CSG	Coal Seam Gas
DA	Development Application
DTIRIS	Department of Trade and Investment, Regional Infrastructure and Services (was DII)
DoPI	Department of Planning and Infrastructure (was DOP)
EECs	Endangered Ecological Communities
EMAI	Elizabeth Macarthur Agricultural Institute
EMP	Environmental Management Plan
EMS	Environmental Management System
EPA	Environment Protection Authority
EIS	Environmental Impact Statement
EPL	Environmental Protection Licence
GGL	Gas Gathering Line
LGA	Local Government Area
OEH	Office of Environment and Heritage (formerly DECCW Department of Environment, Climate Change and Water, or DECC Department of Environment and Climate Change prior to that)
NOW	NSW Office of Water
PA	Project Approval
PEL	Petroleum Exploration Lease
POP	Production Operations Plan
PPL	Petroleum Production Lease
RBTP	Ray Beddoe Treatment Plant
RPGP	Rosalind Park Gas Plant
SIS	Surface to-In-Seam
SEWPaC	Sustainability, Environment, Water, Populations and Communities (formerly DEWHA Department of Environment, Water, Heritage and the Arts)
VLMP	Vegetation and Landscape Management Plan
NO_X	Nitrogen oxides
SO_X	Sulphur oxides
PAC	Planning Assessment Commission
SSD	State Significant Development
CGP	Camden Gas Project
DG	Director General
HS&E	Health Safety and Environment
CoC	Condition of Compliance
NPI	National Pollutant Inventory

Executive Summary

This Annual Environmental Performance Report (AEPR) has been prepared to meet the reporting requirements of the NSW Department of Planning and Infrastructure (DoPI) and Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) for the AGL Camden Gas Project (CGP) located in the Camden, Campbelltown and Wollondilly Local Government Areas (LGA's) for the period of July 2011 to June 2012.

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 consisted of the construction and continued connection of previously drilled wells within Menangle Park and Kay Park sites, into the GGL networks. Drilling activities were completed in Menangle Park for gas well MP22 in early July 2011. Drilling activities then commenced within the same site for gas well MP11 and were completed on 31st July 2011. Both gas wells were successfully completed and connected into the GGL's during September 2011 and brought onto production.

The next stage for the CGP is the Northern Expansion Project, to the north-east of the existing development area. The Northern Expansion Project is the subject of a current application for development consent under the *Environmental Planning and Assessment Act 1979* (EP&A Act).

In February 2011 AGL completed and published their "*Phase 1 Groundwater Assessment and Conceptual Hydrogeological Model; Northern Expansion of the Camden Gas Project*" by Parsons Brinkerhoff. Phase 1 of the Groundwater Assessment aims to facilitate the future development of the northern expansion project for the CGP.

Since 2011, the groundwater assessments for the northern expansion project have progressed to Phase 2. Phase 2 of the study consists of a Groundwater Monitoring Program that is currently under way for gas wells within the CGP project and is being extended to the CGP northern expansion project area.

The installation of dedicated monitoring bores has commenced across the northern expansion project area. Phase 2 of the study is aiming to establish baseline conditions and to observe any natural or induced changes over time.

Environmental Management & Performance

Air Pollution

Air emissions associated with the Project are oxides of nitrogen (NO_X) and oxides of sulphur (SO_X) associated with compression of the coal seam gas resource, and to a lesser extent vehicle emissions. Other air emissions include potential dust emissions associated with construction activities and vehicle movements.

All quarterly monitoring results were compliant with the licence conditions of the current EPL 12003 for this period.

Pollutant concentrations were measured at the emission points and compared to the input data used in the modelling for the air impact assessment and confirmed compliance with air emission limits at the RPGP and therefore compliant at the nearest residence for this reporting period.

No exceedances of the annual pollutant load limits at the RPGP were reported within the 2010/2011 Annual Return.

The EPL licence requirement (M2.3) and DA-282-6-2003-i Schedule 4 Consent Condition 58 calls for continuous monitoring of NOx, temperature, flow rate, moisture and oxygen at a number of points (Point 1, 2, and 3) at the RPGP. During this reporting period and the previous reporting period it was identified by senior staff that continuous monitoring was not carried out. This was incorrectly stated in the previous AEPR 2010-2011, for which a correction notice was issued.

While independent quarterly air emissions monitoring, which has always been performed at the CGP, confirms AGL is well below its emission limits, AGL acknowledges that monitoring should have been performed on a continuous basis. AGL's technical expert has confirmed that there is no evidence of harm to the environment or human health arising from the lack of continuous monitoring data.

AGL took immediate steps to address the issue including the appointment of technical experts PAEHolmes to review the emission monitoring program, conduct monthly independent emission monitoring, repairs and reinstatement of existing continuous emissions monitoring systems, and replacing the continuous monitoring equipment at the RPGP with a custom built CEMS unit on trial.

The NPI for the 2011/12 financial year will be prepared and submitted during the next reporting period.

During the reporting period, there was one complaint from the general public relating to dust generation from vehicles travelling on internal access roads.

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 within in-ground tanks for grey water and septic water. A combined total of 376KL of grey water and septic water was transported off site by Thiess Services for disposal at a licensed facility.

During periods of continued dry weather, town water was delivered to the RPGP to enable the continued use of the amenities and wash bay.

Groundwater Management

During the reporting period, water was produced from CSG wells during dewatering and well workovers in Kay Park, Spring Farm, Menangle Park, EMAI and Glenlee fields.

AGL's Bore Licence Compliance Report was submitted to NOW on 19 September 2012, with AGL returning a nil impact result for the 2011/12 reporting year.

During this reporting period AGL was compliant with its Bore Licence conditions and new EPL reporting requirements.

Waste Management

The management objective with regards to waste is to minimise waste creation and disposal and maximise reuse or recycling.

There were no issues of non-compliance or any complaints in relation to waste and waste management during this reporting period.

Hazardous Materials and Land Contamination

The management objective with regards 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 not to cause pollution of the environment (soil, surface water, groundwater, atmosphere).

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

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 was compliant for the period with no reportable incidents or community complaints recorded.

Flora & Fauna

An assessment of flora and fauna is undertaken as part of each environmental assessment application with new project development.

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

During this reporting period AGL developed and implemented a Biodiversity Register that considers the biodiversity of all AGL's assets and projects including the CGP. The register provides a consolidated view of AGL's biodiversity impacts and management strategies for all sites of which AGL has operational control over. The register will improve the information that AGL can provide to stakeholders (CSR analysts, regulators) about AGL's management of biodiversity.

Noxious Weeds

The environmental management objective with regards to weed control is to minimise the introduction, establishment and spread of weeds.

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

Noise

All project aspects are designed with the aim of ensuring the amenity of surrounding residents is safeguarded through the proper management of all 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.

No exceedances and no noise complaints relating to operational noise from the RPGP during the 2011/12 reporting period were identified.

No exceedances of construction noise were identified during the 2011/12 reporting period.

All gas wells were monitored under suitable weather conditions and were assessed as compliant with the relevant noise criteria's.

One community complaint was received in relation to noise during a rig movement operation at MP22 and MP11 well site. The complaint was made to the supervisor of ITAC (rig moving contractors) on the 4th of August 2011. An unknown resident neighbour approached the contractors regarding the truck movements between 1am and 6am.

The ITAC Supervisor informed the resident, on site at the time of the complaint, that the truck movement was undertaken during these hours due to an RMS (then RTA) road restriction (permit). The resident was also informed that this was the last night the rig movements would be occurring. The resident understood and requested that noise be kept to a minimum for the remainder of the rig movement activities.

Visual Amenity

Distinctive Landscape Planners were approved to undertake the biennial independent Landscape and Lighting Audit Report during this reporting period. Ground-truthing for lighting performance identified that the RPGP was in accordance with objectives of development consent. The audit of the Vegetation and Landscape Management Plan monitoring report is considered complete and successful.

One full field to flare event occurred during the reporting period, on the 12th March 2012. The event occurred in the late hours on the night and early hours of the morning and lasted 93 minutes. The event was caused by a blocked instrument transmitter causing plant shutdown and resulting in a Programmable Logic Controller (PLC) fault.

It was concluded by Distinctive Landscape Planners in the Audit Report 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.

Cultural Heritage

There were no activities associated with aboriginal heritage and therefore no reportable incidents or community complaints recorded.

No European Heritage Activities were carried out by AGL during the 2011-2012 reporting period.

No activities associated with cultural heritage were undertaken for this period with 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.

Public Safety

One public safety related incident was recorded during the reporting period. On the 30th January 2012 a private drilling contractor was installing communication utility lines without completing a 'Dial before you dig'. The contractor accidently punctured one of AGL's CGP underground low pressure gas gathering pipelines on a private property located at Glenlee.

The drilling contractor was not engaged by AGL in anyway and was carrying out underground directional drilling (also called "underbore") adjacent to AGL's underground gas pipeline for telecommunication purposes when the incident occurred.

AGL's Emergency Response Plan was immediately engaged to minimise the quantity of gas released.

The appropriate entities were promptly notified by AGL of the incident.

There were no other public safety related reportable incidents or community complaints recorded during the reporting period.

Safety and Risk Management

During this reporting period there was an incident that occurred at AGL's Spring Farm 09 (SF09) well site. The release of produced water at SF09 occurred after hours on the 13 November 2011, while the well was shut in for a well workover. At the time of the incident no onsite activities were being undertaken and the site was under the supervision of a security guard.

The security guard reported this incident to AGL, and the on-call field operator was immediately sent to site to assess the incident.

Although the incident caused no harm to the environment or would have any further impacts to the surrounds, AGL reported the incident to each of the EPA, the DTIRIS, and the Camden Community Consultative Committee.

A number of corrective actions have been fully implemented to prevent this incident from reoccurring.

Rehabilitation

Rehabilitation during this reporting period consisted of:

- Final rehabilitation of the EM 26 holding dam;
- Rehabilitation of KP06 well site;

- Rehabilitation of the MP22 (MP11 and MP22 wells), MP23 (MP12 and MP23 wells) and MP03 well surface locations (MP01, MP02, MP03, MP09, MP10 wells); and
- Rehabilitation of the MP03 GGL's.

Progressive rehabilitation is an on-going management practice for all areas impacted by the Project.

Environmental Complaints

AGL has a 24 hour contact telephone number which allows the community to raise any issues or concerns that relate to the operations of the Project. The details of this are included on signs at all property entries and well site compounds as well as on notifications to landowners.

Two community complaints regarding environmental concerns were received during this reporting period. One complaint was received directly by AGL and one complaint was received via the EPA complaints line.

These complaints were responded to and resolved promptly by AGL representatives.

Community Liaison

AGL has pro-actively engaged the community, in order to keep residents informed of the CGP, and ensure that community interests are 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
- Distributing community consultation material to the local council offices.

A great deal of consultation has taken place in person directly with each landowner. This has ensured that their interests can be quickly understood and specifically addressed.

In January 2012 two new community members were approved by the DoPI and appointed to the CCC.

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

- Public Information Stand at the Campbelltown Show (September 2011);
- Public Information Stand at the Camden Show (March 2012);
- Project Open Days for the CGP were held for the Community in November 2011, March 2012 and May 2012;
- Letter drops to affected residents regarding the flaring operations at MP03 Well (May 2012);
- Camden Council staff were briefed on the CGP developments and a site visit of the Spring Farm producing wells with Camden Council (April 2012);
- Councillors of Camden Council were briefed on the CGP and developments (May 2012);
- AGL's CGP Website is updated regularly http://agk.com.au/camden/index.php/news/
- Advertorials placed in the Macarthur Chronicle and Camden Advisor to update the community on the project, emissions monitoring and general operations update;
- Discussions between AGL and the EPA in relation to the re-issue of the EPL 12003 for the RPGP in 2012;
- The RPGP Environment Protection Licence No. 12003 was re-issued (February 2012) after consultation between EPA and AGL; and

- On-going consultation with stakeholders regarding the CGP Northern Expansion Project.

Environmental Non Compliance Issues and Incidents

Non-conformances with the site's Environment Protection Licence are reported in the Annual Return to EPA.

The EPL Licence 12003 Annual Return for the period 22/12/10 to 21/12/11 was submitted in February 2012. There was one non-conformance reported within this Annual Return (2010-2011) for an incident that occurred within the previous AEPR reporting period at the Sugarloaf Well Site (SL03). This incident was non-compliant with the Licence Condition O2 and is outlined within this report.

For this reporting period, one issue of non-compliance in relation to *Licence Requirement M2.3* was not reported within the recently submitted 2010-2011 Annual Return.

Following this Annual Return's submission it was identified that the Annual Return 2010-2011 was erroneous. The Annual Return should have reported that *Condition M2.3* of Environmental Protection Licence 12003, which requires continuous monitoring of NOx, temperature, flow rate, moisture and oxygen at Points 1, 2 and 3, was not complied with. This non-compliance was identified by senior management following an internal review of operational procedures and upon discovery, AGL immediately notified the EPA.

In addition to this, it has been noted during the preparation of this AEPR that a number of development consents have been outstanding as non-compliant for the previous two biennial independent audits at the time of this AEPR and require further action or proof of enactment. These are detailed within this report.

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1 Introduction

1.1 Introduction and History of the 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 July 2011 to June 2012 for the Camden Gas Project (CGP).

The CGP consists of an area located 65 kilometres (km) south-west of Sydney in the Camden region of NSW and currently consists of 143 gas wells, low-pressure underground gas gathering line's (GGL's), a high pressure supply line, gas plant facilities and associated infrastructure.

Sydney Gas initially developed the CGP which comprised the first two Petroleum Production Lease's (PPL's) 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 the 1 April 2009 the CGP changed from a Joint Venture between AGL and Sydney Gas (Camden) Operations to become wholly owned by AGL. On 29 January 2010 AGL Gas Production (Camden) Pty Limited re-named to become AGL Upstream Investments Pty Limited.

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 Development Consent and 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, PPL's 1, 2, 4, 5, and 6 were transferred to AGL Upstream Investments Pty Limited 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 Project. Prior to this AGL operated under a combined Environmental, Health and Safety Management Plan. The EMP together with the environmental management sub plans form a key component of the Project's Environmental Management System (EMS) and facilitates uniform implementation of environmental obligations.

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. Further works are still planned in Menangle Park.

Field development during this reporting period consisted of the construction and continued connection of previously drilled wells within Menangle Park and Kay Park, into the GGL networks. Drilling activities were completed in Menangle Park for gas well MP22 in early July 2011. Drilling activities then commenced within the same site for gas well MP11 and were completed on 31st July 2011. Both gas wells were successfully completed and connected into the GGL's during September 2011 and brought onto production.

The next stage for the CGP is the Northern Expansion Project, to the north-east of the existing development area. The Northern Expansion Project is the subject of a current application for development consent under the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The CGP Northern Expansion Project is proposed to involve the construction and operation of 11 additional well surface locations, gas gathering and water lines. Public exhibition of the Environmental Assessment prepared for the Northern Expansion Project was held in late 2010. Submissions were received from stakeholders during the public exhibition period. AGL submitted an amended development application and Submission Report in October 2012.

In February 2011 AGL completed and published their "*Phase 1 Groundwater Assessment and Conceptual Hydrogeological Model; Northern Expansion of the Camden Gas Project*" by Parsons Brinkerhoff. The primary objectives of this desktop study was to characterise the groundwater systems in the northern expansion area, assess the value of groundwater resources, describe current monitoring activities and assess the likely connectivity between Triassic sandstone aquifers and Permian coal seams targeted for CSG extraction. The study also provides information on regulatory requirements for groundwater management and expected requirements for groundwater monitoring.

Phase 1 of the Groundwater Assessment aims to facilitate the future development of the northern expansion area of the CGP.

Since 2011, the groundwater assessments for the northern expansion area have progressed to Phase 2. Phase 2 of the study consists of a Groundwater Monitoring Program that is currently under way for gas wells within the CGP project and is being extended to the CGP northern expansion area. The installation of dedicated monitoring bores has commenced across the north expansion area. Phase 2 of the study is aiming to establish baseline conditions and to observe any natural or induced changes over time.

During this reporting period AGL has maintained their efforts on enhanced environmental improvements. On-going environmental management improvements have for this reporting period has included:

- Continued enactment of the CGP EMS;
- Current update and preparation of the CGP EMP and associated documents;
- Continued recycling of produced water for drilling and workover operations where possible;
- Participating in research and development for potential disposal and potential reuse options of CSG products;
- Working with the EPA to establish 5 Pollution Reduction Programs for inclusion on the CGP Environment Protection Licence, focussed on Leak Detection and Repair, Human Health and Ecological Risk Assessments for Hydraulic Fracture Stimulation and Workovers, Spatial Database information, and Groundwater Monitoring;
- Regularly scheduled Community Open Days to educate the community on the CGP and the coal seam gas industry;

- Staff volunteer work with Barragal Landcare to assist with the natural restoration of Navigation Creek;
- Provision of environmental monitoring data to external stakeholders through the uploading of information to the CGP website;
- Continued engagement of environmental and engineering consultants, Parsons Brinckerhoff, to continue the development of a detailed groundwater assessment and hydrogeological model for the new coal seam gas (CSG) development (Northern Expansion Project Area) associated with the CGP; and
- Working in partnership with contracting drilling companies, appropriate authorities and the community to resolve issues and concern 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 NSW Department of Planning and Infrastructure (DoPI) and Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) for the AGL CGP located in the Camden, Campbelltown and Wollondilly Local Government Areas (LGA's) for the period of July 2011 to June 2012.

The requirements of the DoPI and the DTIRIS are provided in Section 1.2.1 and 1.2.2 below.

1.2.1 Requirements of the NSW Department of Planning and Infrastructure (DoPI)

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.

The requirements detailed in the above Development Consent Conditions for an AEPR correlate, with only minor differences in wording, within the different approval documents.

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 DoPI and DTIRIS.

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;
- 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.

This document has been prepared to address the requirement for an AEPR, for the period of 1st July 2011 to 30th June 2012, in each of the above listed Development Application Approvals and Project Approvals.

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

This AEPR also fulfils the requirements of DTIRIS NSW.

The requirement for an Annual Environmental Management Report (AEMR) is set out in Clause 3 of the PPL's 1, 2, 4, 5, and 6 transferred to AGL Upstream Pty Limited by the Director-General, 22 November 2010.

The above PPL's require the preparation of an AEMR in accordance with the DTIRIS guidelines.

This AEPR has been prepared in accordance with the DTIRIS guideline '*Guidelines to the Mining, Rehabilitation and Environmental Management Process*' (dated January 2006). The headings in this AEPR are provided in accordance with the Guideline for formatting AEMR's. Where information required under a heading is not applicable to the CGP, the heading has been kept and the applicability stated.

The Plans required by DTIRIS guidelines are not relevant to the operation of the CGP. A plan showing the layout of the PPL's is included as Figure 3-1.

1.3 Camden Gas Project Area Details

The details of each property or area of the CGP are provided in the table in Appendix A. A Map of the CGP and its PPL locations are depicted in Figure 3-1. The CGP infrastructure map for works undertaken during this reporting period is provided in Appendix B.

Project Details and Contacts

A list of project details and contacts as required by DTIRIS is provided in Table 1-1 below.

Table 1-1: Project Details and Contacts

Project Details	
Mine/project name:	**Camden Gas Project**
Titles / Consents:	Refer to Table 1-1
Expiry Date of Titles / Consents(s)	Refer to Table 2-2
Titleholder	AGL Upstream Investments Pty Limited
Operator	AGL Upstream Investments Pty Limited
Project Manager Details	
Contact name	Mike Roy
Position	Head of Gas Operations
Contact address	AGL Rosalind Park Gas Plant, Lot 35, Medhurst Road, Menangle, NSW, 2568
Telephone	02 4633 5200
Facsimile	02 4633 5201
Email	mroy@agl.com.au
Reporting officer details	
Contact name	Aaron Clifton – 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	02 9963 1318
POP and AEMR Reporting Periods	
POP Commencement Date	01 May 2008
POP Period End Date	31 May 2015
AEMR Commencement Date	July 2011
AEMR Period End date	June 2012

1.4 Format of the Annual Environmental Performance Report

This AEPR is formatted as follows:

- Section 1 - Is introductory and provides the background to the AEPR;
- Section 2 - Lists the environmental regulatory requirements relevant to the Camden Gas Project;
- Section 3 - Describes the operations during the reporting period;
- Section 4 - Outlines the environmental management and performance of the Camden Gas Project;
- Section 5 – Describes the rehabilitation undertaken at the site;
- Section 6 – Provides an update to the Project Commitments Register (Compliance Register);
- Section 7 – Describes the stakeholder engagement that has been undertaken during the reporting period; and
- Section 8 – Lists non-conformances identified and actions to address these.

2 Environmental Standards, Performance Measures and Statutory Requirements

This section provides a list of the environmental regulatory requirements relevant to the CGP to June 2012.

2.1 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 2-1 provides a description of the activities for which each of the DAs and Project Approvals has been issued.

Table 2-1: Activities described by approved Development Applications (DAs)

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

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

Development Application No.	Description of Proposed Development
	GL10, GL10-GL05, GL05-GL07 and RP03-RP08"
	A modification to this DA, dated 11 April 2008, was issued for the following: *"construction, drilling and operation of 2 surface to in-seam wells EM39 (from EM02) and GL17 (from GL05), upgrading (twinning) of the gas gathering line from EM39 to the junction of the gas gathering line and road to the EM03 well, and connection of the new wells to the existing gas gathering system."*
	A modification to this DA, dated 16 March 2009, was issued for the construction of an access road to the existing RP09 gas well and the twinning of a small section of the existing gas gathering line between RP08 and the RPGP.
	A modification to this DA, dated 18 September 2009, was approved for the re-routing of a damaged gas gathering line at Glenlee.
	A modification to this DA, dated 25 November 2010, was issued for the modification of RPGP noise monitoring requirements, air emission concentration limits and waste storage and generation volumes.
DA-183-8-2004i – 16 December 2004	The Minister for the NSW Department of Infrastructure, Planning and Natural Resources (now DoPI) determined the development application in accordance with Section 80 of the *Environmental Planning and Assessment Act 1979*. The Conditions of Development Consent for DA No. DA-183-8-2004i dated 16 December 2004 relate to the Camden Gas Project Stage 2 (the 'Development'). The project involves the following: - Connection of 15 existing coal seam methane wells to the Rosalind Park Gas Plant from the Mount Taurus and Menangle Park properties, for the production of methane gas; and - Construction of a Dam at the MT1 gas well site.
	A modification to this DA , dated 4 July 2007, was issued for the following: *"construction, drilling and operation of 1 surface to in-seam well (MP30) at MP13 and upgrading (twinning) of the gas gathering line between MP13 and MP14."*
	A request for modification of this DA (DA 183-8-2004i - Mod 2) was submitted in October 2011, for the addition of a new production well, MP25 (the well), associated GGL and the upgrade of and construction of additional access tracks for access. At the end of this reporting period the proposed modification was pending the final determination of the Planning Assessment Commission (PAC).
DA 9-1-2005 – 26 May 2005	The Minister for the NSW Department of Infrastructure, Planning and Natural Resources (now DoPI) determined the development application in accordance with Section 80 of the *Environmental Planning and Assessment Act 1979*. The Conditions of Development Consent for DA No. DA-9-1-2005 dated 26 May 2005, relate to the Camden Gas Project Stage 2 (the 'Development'). The Development Consent describes the proposed development as: - *"Construction and drilling of well GL11;* - *Construction of a gas gathering system between four wells at Glenlee and two wells at EMAI;* - *Connection of 6 coal seam methane wells to the previously approved Stage 2 Camden Gas Project – Gas Treatment Plant, for the production of methane gas."*
	A modification to this DA, dated 16 May 2006, was issued for the following: - *"Construction, drilling and operation of a directional well from each of GL02 and GL11."*

Development Application No.	Description of Proposed Development
	A modification to this DA, dated 4 July 2007, was issued for the following: *"upgrading (twinning) of the gas gathering line between GL02 and GL05."*
	A modification to this DA, dated 16 November 2010, was issued for the following: modification of Schedule 2, Condition 26.
DA 75-4-2005 – 07 October 2005	The Minister for the NSW Department of Infrastructure, Planning and Natural Resources (now DoPI) determined the development application in accordance with Section 80 of the Environmental *Planning and Assessment Act 1979*. The Conditions of Development Consent for DA No. DA-75-4-2005 dated 07 October 2005 relate to the Camden Gas Project Stage 2 (the 'Development'). The Development Consent describes the proposed development as: - "Construction and drilling of 7 wells; - Construction of a gas gathering system and access roads; - Connection of the wells to the Stage 2 Camden Gas Project – Gas Treatment Plant; and - Production of methane gas."
	A modification to this DA, dated 4 July 2007, was issued for the following: *"construction and drilling of 9 wells, including 2 surface to in-seam wells (SL08 and SL09) at SL03."*
	A modification to this DA, dated 10 January 2010, was approved for the twinning of a gas gathering line from well surface locations SL03 and SL09 to the Rosalind Park Gas Plant.
DA 171-7-2005 – 2006	The Minister for Planning determined the application in accordance with Section 80 of the *Environmental Planning and Assessment Act 1979*. The Conditions of Consent for DA 171-7-2005 relate to the El Bethel wells. The project involves the following: - Construction and drilling of 10 wells (EB01 – EB10); - Construction of a gas and water gathering system and access roads; - Connection of the wells to the Rosalind Park Gas Plant; and - Production of methane gas. *Note: This Development Application has now expired.*
Project Approval 06_0137 – 9 December 2006	The Minister for Planning approved the Project under Section 75J of the *Environmental Planning and Assessment Act 1979*. The Conditions of Consent for Project Approval 06_0137 dated 9 December 2006 relate to the Razorback Wells (RB03-RB12). The project involves the following: - Construction and drilling of wells RB03-RB12 and gas gathering lines.
Project Approval 06_0138 – 9 December 2006	The Minister for Planning approved the Project under Section 75J of the *Environmental Planning and Assessment Act 1979*. The Conditions of Consent for Project Approval 06_0138 dated 9 December 2006 relate to the Elizabeth Macarthur Institute Wells (EM23-EM36). The project involves the following: - Construction and drilling of wells EM23-36 and gas gathering lines.
	A modification to this Approval, dated 6 August 2007, was issued for the following: *"One additional directional well at an existing well, changing an approved but not yet constructed well to a directional well, connection of the wells to the existing gas gathering system and production of coal seam methane gas."*

Development Application No.	Description of Proposed Development
Project Approval 06_0291 – 4 September 2008	The Minister for Planning approved the Project under 75J of the *Environmental Planning and Assessment Act 1979*. The Conditions of Consent for Project Approval 06_0291 dated 4 September 2008 relate to the Spring Farm and Menangle Park wells. The project involves the following: Construction and drilling of wells and gas gathering lines in the Spring Farm and Menangle Park area.
	Modifications to this PA were issued 7 January 2011 and 20 April 2011 to include gas gathering lines MP06 – 11 and MP11 – MP23 (via MP19), and, MP03-05 and MP22 – SL02 respectively.
Concept Plan Approval 06_0292 – 4 September 2008	The Minister for Planning approved the Project under 75O of the *Environmental Planning and Assessment Act 1979*. The Conditions of Consent for Project Approval 06_0292 dated 4 September 2008 relate to the Spring Farm and Menangle Park wells. The project involves the following: - Construction and operation of coal seam methane gas wells and associated infrastructure within the Stage 2 Concept Plan area of the Camden Gas Project.

A summary of the status of the above approved works are described in Section 2.1 of the AEPR.

The standards, performance measures and statutory requirements with which the CGP is required to comply with are outlined in the consents, leases and licences listed in the below Table.

It is noted that most of the requirements of the Environment Protection Licence (EPL) and 3A Permit requirements are incorporated into the Development Consent Conditions.

Table 2-2: Consents, Leases and Licences

Requirement	Date of Requirement
Petroleum Exploration Licence No.2 (PEL), issued by the Department of Mineral Resources (now DTIRIS)	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 DTIRIS)	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 DTIRIS)	10 October 2002 (for a period of 21 years)
PPL No.4, issued by the Department of Mineral Resources (now DTIRIS)	6 October 2004 (for a period of 21 years)
PPL No.5, issued by the Department of Mineral Resources (now DTIRIS)	28 February 2007 (for a period of 21 years)
PPL No. 6, issued by the Department of Industry and Investment (now DTIRIS)	29 May 2008 (for a period of 21 years)
Conditions of Consent for DA 15-1-2002i (file no. S00/00945), issued by the DoPI. The requirements of the Environment Protection Licence have been incorporated into relevant conditions of consent	23 July 2002 (for a period of 21 years from date of granting of the production lease). If after 5 years of the date of this consent any well that is subject of this consent has not yet been drilled or completed, then the applicant shall

Requirement	Date of Requirement
	surrender the approval for that well. The following modifications have been issued to this DA: - modification dated 16 May 2006 - modification dated 9 February 2007 - modification dated 4 July 2007 - modification dated 4 August 2008
Conditions of Consent for DA 246-8-2002i (file no. S02/01615), issued by the DoPI	20 September 2002 (for a period of 21 years from date of granting of the production lease). The following modifications have been used to this DA: -modification dated 4 July 2007 -modification dated 4 August 2008 -modification dated 3 December 2008 -modification dated 20 April 2011
Conditions of Consent for DA 282-6-2003-i, issued by the DoPI. The requirements of the Environment Protection Licence and 3A Permit have been incorporated into this Condition of Consent.	16 June 2004 (for a period of 21 years). The following modifications have been issued to this DA: - modification dated 26 August 2004 - modification dated 16 May 2006 - modification dated 22 October 2006 - modification dated 1 November 2006 - modification dated 2 May 2007 - modification dated 4 July 2007 - modification dated 11 April 2007 - 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 DoPI	16 December 2004 (for a period of 21 years). A notice of modification was issued on the 4 July 2007.
Conditions of Consent for DA 9-1-2005, issued by the DoPI	26 May 2005 (for a period of 21 years). The following modifications have been issued to this DA: - modification dated 16 May 2006 - modification dated 4 July 2007 -modification dated 16 November 2010
Conditions of Consent for DA 75-4-2005, issued by the DoPI	07 October 2005 (for a period of 21 years or expiry date of PPL No.4) The following modifications have been issued to this DA: - modification dated 4 July 2007 - modification dated 11 January 2010
Conditions of Consent for DA 171-7-2005, issued by the DoPI	25 March 2006 (for a period of 21 years or expiry date of PPL No.4)

Requirement	Date of Requirement
Conditions of Approval for PA 06_0137, issued by the DoPI	9 December 2006 (for a period of 21 years or expiry date of PPL No.4)
Conditions of Approval for PA 06_0138 issued by the DoPI	9 December 2006 (for a period of 21 years or expiry date of PPL No.4) A notice of modification was issued on the 6 August 2007.
Conditions of Approval for PA 06_0291 issued by the DoPI	4 September 2008 (for a period of 21 years or expiry date of PPL No.5) The following modifications have been issued to this PA: - modification dated 7 January 2011 - modification dated 20 April 2011
Conditions of Approval for Concept Plan Approval 06_0292 issued by the DoPI	4 September 2008 (for a period of 5 years)
Environment Protection Licence No.12003, issued by the Environment Protection Authority, incorporated into the Office of Environment and Heritage, for Petroleum and Fuel Production (>200,000 to 500,000 T)	Issued September 2003, anniversary date 22 December, review date 23 June 2013. This licence was most recently varied by notice 1504429 and re-issued on the 16 February 2012.
Production Operations Plan (POP)	01 May 2008 – 31 May 2015
Pipeline Licence No.30, issued by Department of Energy, Utilities and Sustainability, under NSW Pipelines Act 1987	19 May 2004 (for a period of 20 years)
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
Controlled Activity Approval for a gas gathering line crossing of an existing drainage line at Kay Park	10 December 2008 to 10 December 2012
Controlled Activity Approval for temporary culvert installation and removal at GL17 well site	3 June 2008 to 3 June 2013

AGL was issued 136 bore licences from February 2011 to July 2012 by the NSW Office of Water. These are detailed in the Bore Licence Compliance Report 2011-12.

Bore Licence Compliance Report is prepared annually as a condition of the collective bore licences issued under the *Water Act (1912)*. The NSW Office of Water (NOW) requires an annual report by October for the preceding water year. The report details AGL's compliance with the 136 bore licences for July 2011-June 2012.

Appendix C contains the 136 Bores Licence details of the gas production wells that are licensed under the *Water Act (1912)* for the CGP.

2.1.1 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.

3 Operations within the Reporting Period

This section provides a description of the operation undertaken at the CGP and the status of the project as of June 2012.

3.1 Description of Operations from July 2011 to June 2012

3.1.1 Development

During this reporting period (July 2011 to June 2012), development associated with the CGP comprised of the following:

Drilling

The completion of drilling activities for gas well MP22 at Menangle Park was completed at the start of this reporting period (July 2011). Drilling activities then followed onto the drilling of gas well MP11. Within this reporting period, this totalled two new horizontal production wells being drilled (MP22 followed by MP11) and connected into the GGL network system. No wells were fracture stimulated.

The location of the drilled wells is illustrated in Figure 3-1 and Appendix B.

Gathering Line Installation

Approximately 130m of GGL was constructed and commissioned across the Menangle Park site. The location of the installed GGL's is illustrated in Figure 3-1.

Rosalind Park Gas Plant Compressors

Compressor No.1 operated for 8,539 hours during the reporting period.

Compressor No.2 operated for 6,077 hours during the reporting period.

Compressor No.3 operated for 4,093 hours during the reporting period.

Land Access and Approvals

The RPGP Environment Protection Licence No. 12003 was re-issued (February 2012) after consultation between EPA and AGL. *Section 8 – Pollution Studies and Reduction Programs* was added to the licence conditions. Five Pollution Reduction Programs were incorporated within this section of the EPL that cover Groundwater Assessment, Groundwater Monitoring, Provision of Spatial Information, LDAR, Fracture Stimulation & Well Workover, all which require associated reports to be progressively submitted between 30/01/12 and 30/11/12.

The CGP Northern Expansion Project is the subject of a current application for development consent under the EP&A Act.

An application was originally lodged on 23 September 2010 under Part 3A of the EP&A Act. The requirements of the EP&A Act were subsequently duly followed, including the preparation and public exhibition of an Environmental Assessment. The Environmental Assessment was prepared to address the assessment requirements issued by the Director-General of the then Department of Planning on 1 October 2010.

Part 3A of the EP&A Act has since been repealed, with effect from 1 October 2011. Savings and transitional provisions enacted upon the repeal defined the CGP North Expansion Project as a 'transitional Part 3A project', and continued the operation of Part 3A for transitional Part 3A projects despite the repeal of that Part.

However, on 19 October 2012, the Minister for Planning and Infrastructure declared the CGP North Expansion Project to be State Significant Development under Division 4.1, Part 4 of the EP&A Act by an order published in the NSW Gazette on 26 October 2012. As a consequence, the Project will now proceed to be assessed and determined under Part 4 of the EP&A Act. The Minister has, for the purpose of the Part 4 assessment, accepted previous steps taken under Part 3A.

A Submissions Report has been prepared to respond to issues raised in public submissions, and includes additional assessment in relation to amendments made to the scope and configuration of the Project.

By virtue of the delegations made by the Minister for Planning and Infrastructure on 14 September 2011, the NSW Planning Assessment Commission will determine the application for the proposed development subject of the Part 4 application.

A modification to DA 183-8-2004i was prepared and submitted in October 2011 and was currently pending determination during this reporting period. The modification is for the addition of a new production well MP25, associated GGL's and the upgrade and construction of additional access tracks for construction access.

Current Status of Well Operations

The status of CGP operations as of 30th June 2012 are summarised in the below Table. Changes from the previous reporting period are shaded in grey.

Table 3-1: Current Status of Well Operations (Current as of June 2012)

Well Name	Date Completed	Status June 2012
AP01	2000	Drilled
EB01-10	Incomplete	Approved – Not Drilled (DA now expired)
EM01	Incomplete	Plugged and Abandoned
EM02, 05, 07, 09, 10, 11, 12, 13, 14, 15, 17, 18, 19 and 20	2005	Drilled
EM03, 04, 06, 08 and 16	2005	Drilled
EM21 and 22	2002	Drilled
EM23	2007	Drilled
EM24, 25, 27, 28, 30, 33, 34, 37, 38	2007	Drilled
EM26, 29, 35, 36	Incomplete	Approved – Not Drilled
EM31, 32	2007	Drilled
EM39	2008	Drilled
EM 40	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	2007	Drilled
GL17	2008	Drilled
JD01, 07A and 11	1999	Drilled
JD02, 03, 06, 09 and 10	1999	Plugged and Abandoned
JD04 and 05	1999	Drilled
JD08	Incomplete	Approved under PEL 2 – Not Drilled
JS01, 03 and 04	2000	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 and 07	2001	Drilled
LB06, 09 and 10	2001	Drilled
LB11	2007	Drilled
LP01	Incomplete	Not Completed
MH01	Incomplete	Not Completed
MP14, 15, 16 and 17	2003	Drilled
MP13	2003	Drilled
MP30	2008	Drilled

Well Name	Date Completed	Status June 2012
MT01 02, 03, 04, 06, 07, 08, 09 and 10	2004	Drilled
MT05	2004	Drilled
Ray Beddoe Treatment Plant	2008	Decommissioned and rehabilitated
RB03, 04 and 05	Incomplete	Approved – Not Drilled
RB06, 07, 08, 09, 10, 11 and 12	2007	Drilled
Rosalind Park Gas Plant	2005	Operating
RP01	Incomplete	Approved – Not Drilled
RP02, 07, 08, 10 and 12	2003	Drilled
RP03, 04, 05, 06, 09 and 11	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 17 (01,02,03)	2010	Drilled
SF 20 (05,07,08,09)	2010	Drilled
MP01, 05A, 12, 23	2010	Drilled
KP06	2011	Drilled
MP02, 03, 09, 10	2011	Drilled
MP22	2011	Drilled
MP11	2011	Drilled

3.1.2 Exploration

No exploration activities were undertaken during this reporting period.

3.1.3 Production

Production information is provided to DTIRIS on a monthly basis in accordance with the project's production lease requirements.

3.1.4 Land Preparation

Wells drilled during the last reporting period and newly drilled wells MP22 and MP11 continued to be completed and brought on to production capability. Rehabilitation of the construction works for wells MP22 and MP11 has occurred and each well site now constitutes a fenced footprint containing the wellhead, water separating equipment and ancillary equipment. The surrounding clearing, required for possible future well maintenance, has been rehabilitated and is under a long-term monitoring program. Where possible, the land has been returned to the landholder's use.

All completed and installed gas gathering infrastructure has been rehabilitated and is under a long-term monitoring program.

3.1.5 Mining, Mineral Processing and Ore Production Stockpiles

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

3.1.6 Other Infrastructure Management

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

3.1.7 Production and Waste Summary

A summary of waste produced is included in Section 4.8.

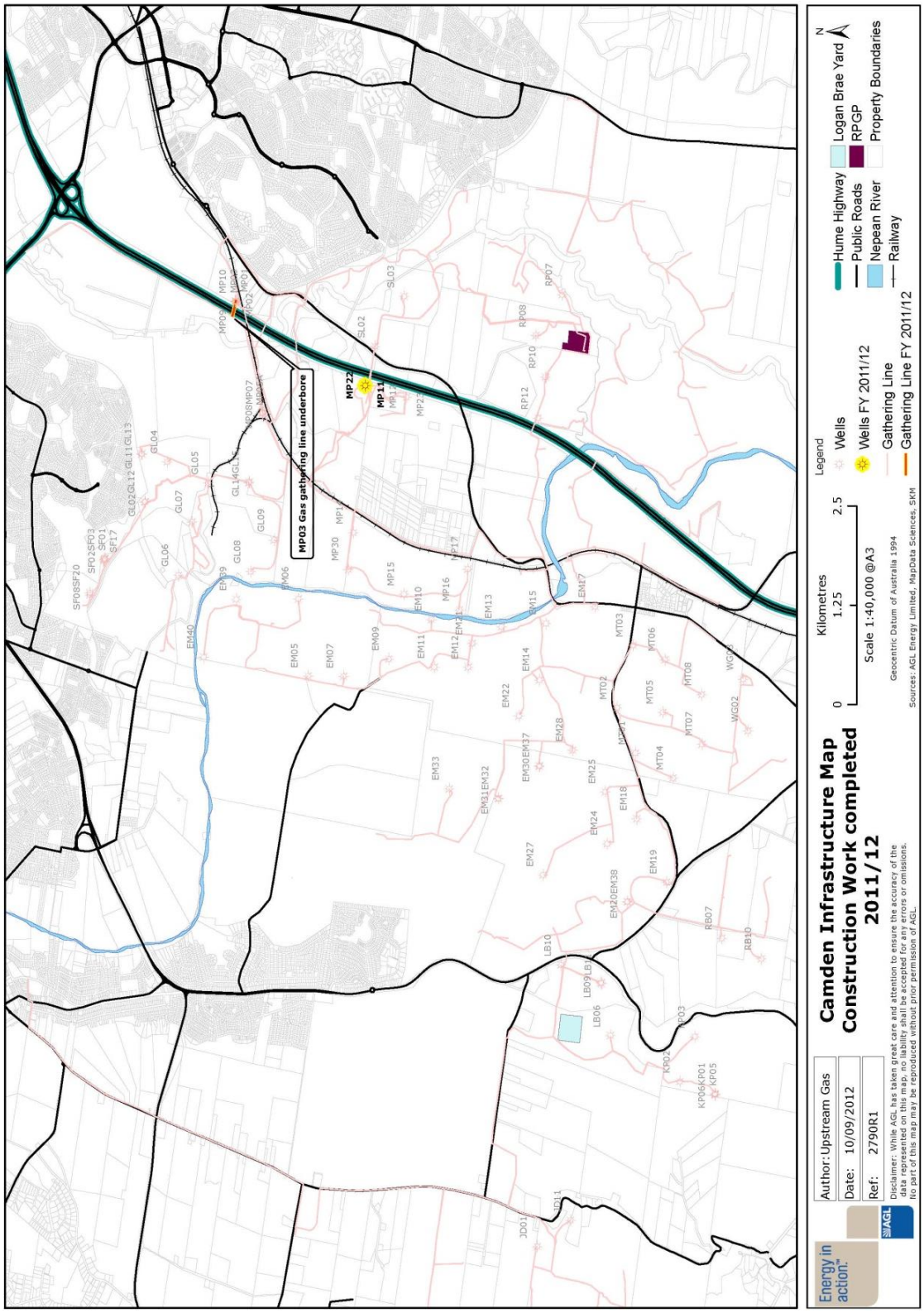


Figure 3-1: Camden Infrastructure Map for works 2011-2012

4 Environmental Management and Performance

This section of the AEPR outlines the environmental management and performance of the CGP. The headings are provided in accordance with the DTIRIS guideline for formatting AEMR's. Where environmental monitoring is required by the Conditions of Consent for the development (issued by the DoPI), the monitoring requirement and results are discussed within the relevant section.

4.1 Introduction

This section documents the implementation and effectiveness of control strategies for environmental risks identified in the POP and previous AEPR, in the following order:

- Overview of Environmental Management;
- Actions required from the previous AEPR review;
- Air quality;
- Erosion and sediment control;
- Surface water;
- Groundwater;
- Waste management;
- Hazardous materials;
- Contaminated land;
- Threatened flora and fauna;
- Noxious weeds;
- Blasting;
- Operational noise;
- Construction noise;
- Visual amenity;
- Aboriginal heritage;
- European heritage;
- Spontaneous combustion;
- Bushfire;
- Mine subsidence;
- Hydrocarbon contamination;
- Methane drainage/ventilation;
- Public safety;
- Safety and risk management; and
- Environmental training.

4.2 Overview of Environmental Management

In 2008 AGL commenced the development of a Project Environmental Management System (EMS) to manage potential environmental aspects associated with CGP activities. An Environmental Management Plan (EMP) and Environmental Sub Plans were prepared facilitating uniform implementation of environmental management. Sub Plans have been developed for the following issues:

- Noise Management;
- Flora and Fauna Management;
- Soil and Water Management;
- Aboriginal Cultural Heritage Management;
- European Heritage Management;
- Landscape and Rehabilitation Management;
- Air Quality Management;
- Waste Management;
- Traffic Management;
- Dangerous Goods and Hazardous Materials Storage; and
- Environmental Emergency Response.

A Health Safety and Environment Action Plan was implemented during the previous reporting period. The HSE Action plan focused on improvements to the following areas:

- Leadership commitment;
- Systems improvement;
- Workplace and equipment; and
- Active HSE culture.

4.3 Actions Required from Previous AEPR Review

This section provides an overview of actions required from the previous AEPR review. Further information is available in the referenced sections of this AEPR.

AGL had received no feedback on the 2010/11 AEPR at the time of this report. Table 4-1 summarises the requirements that were assessed as non-compliant or indeterminate during the 2010 independent environmental audit by URS issued in August 2011 and the status of actions taken in response to the audit's recommendations.

Table 4-1: Non-compliances identified with environmental standards during 2010 independent audit report and action status update

Non Compliance CoC No. Reference	Summary of CoC Requirement	Recommended Action	Status of Actions (July 2012)
Approved Development Applications			
DA 15-1-2002i, Sch 3 Condition 14 **DA 246-8-2002i, Sch 3 Condition 10**	PRODUCTION OPERATIONS PLAN The Applicant shall prepare a Production Operations Plan (POP) for the approval of the Department of Mineral Resources. The POP shall have regard to the conditions of this consent and the licence under the POEO Act.	An updated POP (v7) was submitted to DTIRIS (then DII) in 2010; however DTIRIS required changes (e.g. update well numbers) before an approval was granted. AGL was not able to provide evidence to verify the POP (v7) was resubmitted to DTIRIS. As the current/approved POP (v6) does not reflect the current status of operations at CGP (i.e. development has progressed without an approved POP (v7), the development is considered to not comply with this condition.	On-going. AGL is to provide a record of transaction of the POP (v7) or rectify this non-compliance and resubmit to DTIRIS as soon as possible.

Non Compliance CoC No. Reference	Summary of CoC Requirement	Recommended Action	Status of Actions (July 2012)
DA 282-6-2003i, Sch 3 Condition 15 **DA 183-8-2004i, Sch 2 Condition 6** **DA 9-1-2005, Sch 2 Condition 7** **DA 75-4-2005, Sch 2 Condition 13**	LOCATION OF GAS WELLS AND GAS GATHERING SYSTEMS The Applicant shall provide Camden Council, Campbelltown City Council and Wollondilly Shire Council with the Geographical Positioning System (GPS) co-ordinates and digital survey data for gas well sites and gas gathering systems within their respective LGA, in a format suitable to each of these Councils, within two months of the completion of the gas wells and gas gathering system.	It is recommended that GPS coordinates and digital survey data for gas well sites and gas gathering systems be compiled and issued to local councils and records of transaction retained.	AGL provided this information to Local Councils in November 2011, and will continue to provide regular updates.
DA282-6-2003i, Sch 3 Condition 16 **DA183-8-2004i, Sch 2 Condition 7** **DA9-1-2005, Sch 2 Condition 8** **DA75-4-2005, Sch 2 Condition 14**	The Applicant shall provide Camden Council, Campbelltown City Council and Wollondilly Shire Council with the wellhead configurations of each gas well within two months of the gas well being completed or two months from the date of the consent, whichever is the later.	It is recommended that well head configurations be compiled for new and existing wells and provided to local councils and records of transaction be retained.	On-going. AGL to provide this information to Local Councils. AGL will obtain records of transactions and keep on file in the future.
DA282-6-2003i, Sch 3 Condition 17 **DA183-8-2004i, Sch 2 Condition 8** **DA9-1-2005,**	The Applicant shall provide written notification to the Director-General that it has fulfilled the requirements of the above two conditions (DA282-6-2003i Conditions 15 and 16) or (DA183-8-2004i Conditions 6 and 7) or (DA9-1-2005 Conditions 7 and 8) or ((DA9-1-2005 Conditions 13 and 14), within two weeks of the information being provided to the Councils.	It is recommended that written notification is provided to the DoPI upon completion of the requirements of the above two conditions.	On-going. AGL to provide this information to the Director General (DG).

Non Compliance CoC No. Reference	Summary of CoC Requirement	Recommended Action	Status of Actions (July 2012)
Sch 2 Condition 9 DA75-4-2005, Sch 2 Condition 15			
DA282-6-2003i, Sch 4 Condition 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. Monitoring program to include certain features. The results and recommendations of the monitoring program must be submitted to the Director-General at the conclusion of each stage of monitoring.	It is recommended that the results and recommendations of the landscaping monitoring reports be submitted to the DG with records of their submission kept on file.	AGL has engaged *Distinctive Landscape Planners,* an approved Auditor, to complete the outstanding 2010 audit. Audit was completed in March 2012.
DA282-6-2003i, Sch 4 Condition 18	INDEPENDENT AUDIT 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.	It is recommended that the 2010 audit of performance of the mitigation measures be implemented to prevent and minimise visual impacts. Once completed the audit report is to be submitted to the DG, with records maintained to demonstrate compliance.	AGL has engaged *Distinctive Landscape Planners,* an approved Auditor, to complete the outstanding 2010 audit. Audit was completed in March 2012.
DA282-6-2003i, Sch 4	Within 2 months of commissioning this audit the Applicant shall submit a copy	It is recommended that the audit report (stated in condition 18) be submitted	On-going. AGL to provide this information to the DG once

Non Compliance CoC No. Reference	Summary of CoC Requirement	Recommended Action	Status of Actions (July 2012)
Condition 19	of the audit report to the Director-General and provide a detailed response to any of the recommendations in the audit report. A copy of the Independent Audit, and/or the results and recommendations of any monitoring carried out under condition 14, will be provided to the owner of Lot 1 DP 807555 by the Director-General upon request.	to the DG and records maintained to demonstrate compliance.	completed.
DA282-6-2003i, Sch 4 Condition 19B	Within 6 months of completion of the landscaping and every 2 years thereafter, unless the Director-General directs otherwise, the Applicant shall commission and pay the full costs of an Independent Audit of the performance of the mitigation measures.	It is recommended that the audit of landscape planting (due 2010) be completed and the audit reports be submitted to the DG as required.	AGL has engaged *Distinctive Landscape Planners,* an approved Auditor, to complete the outstanding 2010 audit. Audit was completed in March 2012.
DA282-6-2003i, Sch 4 Condition 40	MONITORING The Applicant must submit a noise compliance report to the DECC (now 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 DECC (now EPA) 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.	It is recommended that the noise compliance report is prepared and submitted with the Annual Return in future.	AGL has provided this information to the EPA as part of the Annual Returns for 2009-10 and 2010-11.
DA282-6-2003i, Sch 4 Condition 48	For each discharge point (referred to in the EPL 12003), the Applicant shall ensure that the concentration of a pollutant discharged at that point does not exceed the concentration limit specified for that pollutant in the table, and where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.	It is recommended that AGL continue to monitor and maintain the plant within specified operating criteria. *Note that limits were increased following the previous audit period; refer to current EPL.*	AGL will continue to undertake monitoring. During this reporting period concentrations were monitored at under the limits within the EPL. Refer to current EPL.
DA282-6-2003i, Sch 4 Condition 83	The Applicant shall document in detail the decommissioning of all sediment and erosion controls and any other water diversion structures to the satisfaction of the Director-General. The Applicant shall ensure that	Decommissioning was not documented to verify actions; therefore the development is non-compliant with this condition. Only two well sites required rehabilitation in two years.	It was reported that sediment and erosion control measures are installed, monitored and decommissioned in accordance with the Landcom Guidance. Removal of sediment

Non Compliance CoC No. Reference	Summary of CoC Requirement	Recommended Action	Status of Actions (July 2012)
	the decommissioning meets the requirements of the most recent version of the NSW Department of Housing's publication "Managing Urban Stormwater: Soils and Construction" (3rd Edition 1998).	It is recommended that AGL document in detail the decommissioning of all sediment and erosion controls and any other water diversion structures.	and erosion controls may only be completed upon approval by AGL Environmental Operator and/or Field Environment & Safety Officer. All decommissioning and removal of sediment and erosion controls is now fully documented.
DA282-6-2003i, Sch 4 Condition 85	EVAPORATION POND LINER INTEGRITY EVALUATION PROGRAM The Applicant must submit at least 1 month prior to completion of construction of the Treatment Plant, to the DECC (Now EPA, PO Box A290 Sydney South, NSW 1232) Manager Sydney Industry PO Box 668 Parramatta NSW 2124, a written report containing a program for future evaluation of the integrity testing of the liner in the evaporation pond. The report must contain details of an initial evaluation of the liner prior to use and then an on-going program for review of the integrity of the liner.	It is recommended that AGL provide to EPA a program for review of the integrity of the liner in the evaporation pond, as well as details of the initial integrity testing carried out. It is also recommended that this program be implemented and records retained.	AGL has undertaken initial integrity testing of the evaporation pond and on-going monthly testing to record quality of water/volumes lost.
DA282-6-2003i, Sch 4 Condition 95 **DA9-1-2005, Sch 2 Condition 34** **DA75-4-2005, Sch 2 Condition 31**	HAZARD AUDIT Twelve months after the commencement of operations of the proposed development or within such further period as the Director-General may agree, the Applicant shall carry out a comprehensive hazard audit of the proposed development and within one month of the audit submit a report to the Director-General. *DA282-6-2003i, Sch 4 Condition 95 also states:* The audit shall include a review of the safety Management system and a review of all entries made in the incident register since the previous audit.	The Hazard Audit should be commissioned with priority, with the audit report submitted to the DG as required by this condition.	On-going AGL will provide this information to the DG once completed.
DA282-6-2003i, Sch 4 Condition 96	CRIME RISK PERFORMANCE The Applicant is required to implement measures to minimise the risk of crime from the proposed development.	It is recommended that AGL install self-closing gates at the RPGP or seek approval from DoPI for alternative security	Self-closing gates have been installed and a site security was installed on the entry points to the gas plant.

Non Compliance CoC No. Reference	Summary of CoC Requirement	Recommended Action	Status of Actions (July 2012)
	The Applicant shall implement the measures prior to the operation of the proposed development Gas Treatment Plant. The Applicant is required to undertake certain crime prevention measures.	measures.	
DA282-6-2003i, Sch 4 Condition 127	GAS GATHERING SYSTEM The Applicant shall comply with certain standards and measures in the construction of the gas gathering system pipeline.	In regards to trenching works, AGL notified DTIRIS at the start and finish of project works but not DoPI. As DoPI was not notified as required by this condition, the development was deemed to be non-compliant.	AGL will notify DoPI as soon as possible to comply with the requirements of this condition.
DA282-6-2003i, Sch 5 Condition 7	The Applicant shall also submit a copy of the AEPR to the EPA (was DECC), DoPI, Camden Council, Campbelltown City Council and Wollondilly Shire Council. The Applicant shall make a copy of the Report publicly available.	It is recommended that copies of the 2009/10 AEPR and future AEPR's be provided to local councils and evidence of submission is retained.	Each AEPR and future AEPR's are uploaded to the AGL website for public access. Email notifications are also sent to each of the identified government agencies and local councils.
DA282-6-2003i, Sch 5 Condition 20	COMMUNITY AWARENESS PROTOCOL The Applicant shall prepare a Community Awareness Protocol to advise nearby residents and appropriate authorities if a leak of mercaptan odourant occurs from the Gas Treatment Plant and/or associated facilities. The Protocol must include certain matters.	However evidence to verify that the community awareness protocol was submitted to the DG for approval was not made available for inspection. As a result, the development was not able to demonstrate compliance with the full requirements of this condition. Obtain DG's approval for the community awareness protocol and retain records.	A community awareness protocol is defined within the Emergency Response Management Plan.
DA75-4-2005, Sch 2 Condition 20	At least one month prior to operation of the development the Applicant shall prepare and submit for the Director-General's approval, a Well Gathering System and Trunk Line Maintenance Noise Management Protocol to be used for the premises for the life of the consent. The Protocol must include certain matters.	However evidence to demonstrate that the protocol was submitted to the DG for approval at least one month prior to operation of the development was not available. Therefore the development did not comply with this condition.	Well Gathering System and Trunk Line Maintenance Noise Management Protocol is contained within the EMS and associated Noise Management Sub-Plan. Relevant sections of the EMS and the noise management sub-plan highlight controls for items a) - i). This is available on AGL's CGP Website. The trunk line is no longer proposed.

Non Compliance CoC No. Reference	Summary of CoC Requirement	Recommended Action	Status of Actions (July 2012)
DA75-4-2005, Sch 2 Condition 30	COMPLIANCE REPORT Three months after commencement of operation of the development, the Applicant shall submit to the Director-General a compliance report detailing compliance with Condition 29, including dates of commencement and actions taken.	It is recommended that a compliance report be prepared and submitted to the DG.	On-going AGL will provide this information to the DG once completed.
DA75-4-2005, Sch 2 Condition 44	Prior to operation the Applicant shall prepare a Bushfire Management Plan for the development, to the satisfaction of the Director-General. The Applicant shall consult with Council and the Rural Fire Service in the preparation of the Plan.	Bushfire management is covered within the Emergency Plan; however documentation to verify that consultation was carried out or the DG was satisfied was not made available for inspection.	On-going. AGL's current Emergency Response Plan (including Bushfire Management) has been reviewed by the Rural Fire Service and comments have been incorporated.
Project Approvals			
PA06_0137, Sch 2 Condition 8 **PA06_0138, Sch 2 Condition 8** **PA06_0291, Sch 2 Condition 13**	NOTIFICATION Within 3 months of the commissioning of the wells, the Proponent shall provide Council with GPS coordinates and wellhead configurations. PA06_0291 also states: The Proponent shall provide a copy of this information to the landowner on request.	It is recommended that GPS coordinates and digital survey data is compiled with well head configurations for new and existing wells and provided to local councils and records of transaction be retained.	GPS details and digital survey data was provided to each of the three local councils in November 2011. Wellhead configurations have not yet been provided.
PA06_0137, Sch 3 Condition 6 **PA06_0138, Sch 3 Condition 6** **PA06_0291, Sch 3 Condition 7**	NOISE MONITORING PROGRAM The Proponent shall prepare and implement a Noise Monitoring Program for the construction and operation of the project to the satisfaction of the Director-General. The Program shall be submitted to the Director-General prior to construction commencing and shall include a noise monitoring protocol for evaluating compliance with the construction noise goals and the operational noise impact assessment criteria in this approval.	A Noise Monitoring Program was prepared and presented as part of the EMS (2008) and Noise Management Plan (previously approved by the DG in 2006). The Plan requires that noise is monitored on installation and at 3 months at 7m from the well. Currently noise is monitored at the well on commissioning and observations check that noise levels from operating wells are inaudible. As noise monitoring is not implemented in a way that is consistent with the approved plan, it is recommended that the Noise Management Sub	On-going. AGL has prepared the Noise Monitoring Plan and it has been updated in September 2011 and June 2012, but has not yet been submitted to DoPI for review/ approval.

Non Compliance CoC No. Reference	Summary of CoC Requirement	Recommended Action	Status of Actions (July 2012)
		Plan and Monitoring Program are updated to reflect monitoring practices adopted onsite and submitted to DoPI for review/approval.	
PA06_0137, Sch 3 Condition 12 **PA06_0138, Sch 3 Condition 13** **PA06_0291, Sch 3 Condition 16**	COMPLIANCE REPORT Within 3 months of commissioning of the project, the Proponent shall prepare a compliance report to the satisfaction of the Director-General. The report shall be prepared by a suitably qualified, experienced, and independent expert whose appointment has been endorsed by the Director-General, to include dates of construction and actions undertaken.	It is recommended that a suitably qualified, experienced, and independent expert endorsed by the DG be appointed to prepare the compliance report and it is submitted to the DG, as required by this condition.	AGL has engaged an independent and approved expert to prepare the Compliance Report however, the report has not yet been completed. On-going AGL will provide this information to the DG once completed.
PA06_0137, Sch 4 Condition 7 **PA06_0138, Sch 4 Condition 7** **PA06_0291, Sch 4 Condition 7**	Following each Independent Environmental Audit, the Proponent shall review and if necessary revise the Operational EMP (and any documents contained in the plan), to the satisfaction of the Director-General. The revised Operational EMP shall be submitted to the Director-General within 6 months of completing the audit.	It was reported that the Operational EMP was written after last audit and submitted to DoPI however evidence to verify submission and timing was not made available for inspection.	The previous EMP (2008) was reviewed and updated. The EMP was waiting the approval of the DG during this reporting period.
PA06_0138, Sch 3 Condition 14	FLORA AND FAUNA The Proponent shall only undertake drilling and fracture stimulation of EM23, EM27, EM33 and EM36, and construction of GGL's and access roads located within the raptor zones outside of the recognised breeding season (June to January) of raptor species nesting in the EMAI's raptor zones.	It is recommended that future drilling and fracture stimulation is conducted outside the recognised breeding season (June to January) of raptor species nesting in the EMAI's raptor zones.	This has been noted for future drilling works and will be implemented for future works.
PA06_0291, Sch 4 Condition 10	During the project, the Proponent shall: a) Make a summary of all environmental monitoring results required under this approval publicly available on the website; and b) Update these results	It was reported that the monitoring results are updated annually and made publicly available on the website. The AGL website is currently not up to date, as required by this condition.	AGL has updated their website which satisfies this condition.

Non Compliance CoC No. Reference	Summary of CoC Requirement	Recommended Action	Status of Actions (July 2012)
	on a regular basis (at least every 6 months) or as required.		

4.4 Air Pollution

4.4.1 Air Pollution Management

Air emissions associated with the Project are oxides of nitrogen (NO_X) and oxides of sulphur (SO_X) associated with compression of the coal seam gas resource, and to a lesser extent vehicle emissions. Other air emissions include potential dust emissions associated with construction activities and vehicle movements.

The management objective with regards to air quality is to adequately protect air quality by controlling the quality and minimising the quantity of air emissions associated with compression of the coal seam gas resource; minimising the quantity of vehicle exhaust emissions; preventing/minimising dust generation during construction, maintenance and operations and rehabilitation activities; and ensuring that any uncontrolled air emissions are reported and acted upon immediately.

Management strategies used to meet the objectives for air quality are detailed in Table 4-2 below.

Table 4-2: 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 required procedures for the protection of air quality.	✓	✓	Environment & Safety Officer
Construction	Greenhouse gas emissions associated with production testing shall be minimised by adopting 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 flared gas 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

CGP Activity	Action	Area		Responsibility
		RPGP	Field	
	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 55.	✓		All personnel

4.4.2 Air Quality Criteria and Monitoring Requirements

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

As this plant was shut down in February 2007, fully decommissioned, rehabilitated and the EPL surrendered in June 2009, 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 Clause 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 Clause 47 which is not an EPL requirement) and are reproduced in Table 4-3 below.

Table 4-3: Air Quality Criteria and Monitoring Requirements - DA-282-6-2003

DA-282-6-2003 - Air Quality Criteria and Monitoring Requirements
Schedule 4. Clause 47 The applicant shall ensure air pollutant emissions do not exceed the following criteria at any privately owned residence: Nitrogen Dioxide: 246 µg/m3 (1 hour average) and 62 µg/m3 (annual average) Sulphur Dioxide: 570 µg/m3 (1 hour average) and 60 µg/m3 (annual average) Sulphuric acid mist: 33 µg/m3 (3 minute average) Methyl mercaptan: 0.84 µg/m3 (3 minute average)
Schedule 4. Clause 48 For each discharge point the applicant shall ensure the concentration of the pollutant discharged does not exceed the concentration limit specified for that pollutant in the table. POINTS 1,2,3: Oxides of Nitrogen (461 mg/m^3) Sulphur Dioxide (7 mg/m^3) Sulphuric acid mist and/or sulphur trioxide (5 mg/m^3) POINT 4: Oxides of Nitrogen (110 mg/m^3) Sulphur Dioxide (35 mg/m^3) Sulphuric acid mist and/or sulphur trioxide (3.5 mg/m^3) POINT 5: Oxides of Nitrogen (13 mg/m^3) Sulphur Dioxide (1042 mg/m^3) Sulphuric acid mist and/or sulphur trioxide (35 mg/m^3)
Schedule 4. Clause 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*).

This development consent has not been modified during this reporting period (Current as of November 2010).

DA 282-6-2003, Schedule 5, CoC 12 and EPL (L2) stipulate load limits for assessable pollutants that must not be exceeded during the reporting period from the RPGP. These are summarised in Table 4-4 below.

Table 4-4: Load Limits for Assessable Pollutants – RPGP

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

Note: DA 282-6-2003 includes the additional load limits relating to water emissions however these have since been removed from the EPL.

Construction and Field Operations – Dust

A number of development consents stipulate requirements relating to dust management. These are summarised in Table 4-5 below.

Table 4-5: Dust Minimisation Requirements

Condition	Requirement
EPL 12003, Operating Condition 6. DA 151-2002, CoC 58; DA 246-8-2002, CoC 25; DA 282-6-2003, CoC 51; DA 75-4-2005, CoC 23; DA 171-7-2005, CoC 9; DA 246-8-2002, CoC 26; DA 282-6-2003, CoC 52; DA 246-8-2002, CoC 27; and DA 282-6-2003 CoC 53. Petroleum Production Lease (PPL) No.2, Condition 7 and PPL No.1, Condition 7. Project Approval 06-137, CoC 7, Project Approval 06-138, CoC 7 and Project Approval 06_0291 CoC 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.

4.4.3 Air Quality Monitoring Results

Rosalind Park Gas Plant – Quarterly Monitoring

Quarterly monitoring reports for the RPGP were prepared for the following dates by EML Air Pty Ltd (EML):

- Quarterly Stack Emission Survey, 6-8 September 2011;
- Quarterly Stack Emission Survey, 8 November 2011;
- Quarterly Stack Emission Survey, 6 March 2012; and
- Quarterly Stack Emission Survey, 14 June 2012.

Monitoring results are provided in Appendix D. All quarterly monitoring results were compliant with the licence conditions of the current EPL 12003 for this period.

EPA (formerly OEH) removed the requirement to undertake emissions monitoring (temperature and residence time) at Point 7 (flare) from the EPL Licence in September 2007.

The DoPI modified Schedule 4, Clause 48 of the DA which is consistent with the Limits contained in the EPL, 25 November 2010. The DA modification also amended Schedule 4, Clause 59, deleting it to remove the requirement to monitor at Point 7 (flare) as per the EPL.

The EPL L3 Limits have not been amended since December 2010. These amendments followed an exceedance of AGL's previous EPL Limits in relation to stack emissions in 2009, correspondence between AGL and the EPA resulted in the L3 concentration limits within the EPL being increased.

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

EML Air Pty Ltd undertook emission testing at the RPGP to determine whether the plant is complying with the air pollutant criteria stipulated in DA 282-6-2003-I, Schedule 4, Clause 47.

Pollutant concentrations were measured at the emission points and compared to the input data used in the modelling for the air impact assessment and confirmed compliance with air emission limits at the RPGP and therefore compliant at the nearest residence for this reporting period.

Rosalind Gas Plant – Assessable Pollutants

Under the EPL for the RPGP, AGL is required to meet load limits for assessable pollutants and to calculate the annual pollutant loads and associated fees. Monitoring to enable the annual pollutant loads to be calculated was conducted by EML and the results included in the 2010/2011 Annual Return (summarised in Appendix E).

It is noted that there is a requirement for four samples to be collected and analysed for a 12month period of continual operations for compressor 2 and compressor 3. In relation to Compressor 2, only 3 of the 4 samples were collected and analysed as the compressor 2 was not operating in the 2nd quarter. Compressor 3 was not operational during the 1st and 4th quarters and only 2 samples were analysed.

No exceedances of any of the pollutant load limits were reported within the 2010/2011 Annual Return.

Rosalind Gas Plant – Continuous Monitoring

The EPL licence requirement (M2.3) and DA-282-6-2003-i Schedule 4 Consent Condition 58 call for continuous monitoring of NOx, temperature, flow rate, moisture and oxygen at Point 1, 2, and 3. During this reporting period and the previous reporting period continuous monitoring was not carried out. This was incorrectly stated in the previous AEPR 2010-2011, for which a correction notice was issued.

Non-conformances with the site's Environment Protection Licence are reported in the Annual Return to the EPA annually. The EPL Licence 12003 Annual Return for the period of 22/12/10-21/12/11 was submitted in February 2012.

Following the Annual Returns submission, it was identified that the Annual Return 2010-2011 had an error. The Annual Return should have reported that *Condition M2.3* of Environmental Protection Licence 12003, which requires continuous monitoring of NOx, temperature, flow rate, moisture and oxygen at Points 1, 2 and 3, was not complied with. This non-compliance was identified by senior management following an internal review of operational procedures and upon discovery, AGL immediately notified the EPA.

AGL takes safety and environmental issues very seriously and recognises that some people may be concerned about the issue of continuous emissions monitoring. AGL is working with the community and other stakeholders to keep them informed of air monitoring results, including the commitment to provide detailed information on the CGP website as it becomes available.

While independent quarterly air emissions monitoring, which has always been performed at the CGP, confirms AGL is well below its emission limits, AGL acknowledges that monitoring should have been performed on a continuous basis. AGL's technical expert has confirmed that there is no evidence of harm to the environment or human health arising from the lack of continuous monitoring data.

AGL took immediate steps to address the issue including the appointment of technical experts PAEHolmes to review the emission monitoring program, conducting monthly independent emission monitoring, repairs and reinstatement of existing continuous emissions monitoring systems, and replacing the continuous monitoring equipment at the RPGP with a custom built CEMS unit on trial.

Full results of the continuous emissions monitoring for the reporting period are kept on file at the RPGP, and monthly summary results are now uploaded to the AGL website, which can be accessed by the general public.

National Pollutant Inventory Reporting

The National Pollutant Inventory (NPI) Report for the RPGP for the 2010/2011 financial year was prepared and submitted 29 September 2011. The NPI for the 2011/12 financial year will be prepared and submitted during the next reporting period.

Construction and Field Operations – Dust Monitoring

During construction and field operations, various measures are implemented to ensure there is no dust generated; including reduced travelling speeds on unsealed roads and use of water carts to suppress dust. Visual inspections of dust conditions are undertaken by site personnel to ensure no dust is generated.

During the reporting period, there was one complaint from the general public relating to dust generation from vehicles travelling on internal access roads. Further details on the complaint are provided in Section 7.1.3 below.

4.4.4 Air Pollution Environmental Performance / Trends

Fine Particulates

Fine particulates are measured in order to calculate the annual pollutant loads and associated fees under the EPL.

For the 22 December 2010 to 21 December 2011 Annual Return period, the calculated annual total load for fine particulates was 391.75 kg/year, less than the 460 kg/year load limit, and less than the annual load limit predicted in the RPGP Environment Impact Statement (EIS). This result was greater than that of the previous year's level of 280 kg/year.

Sulphur Dioxide, Sulphur Trioxide / Sulphuric Acid Mist Emissions

Sulphur Dioxide, Sulphur Trioxide / Sulphuric Acid Mist Emissions are measured quarterly. No exceedances of the sulphur trioxide/sulphuric acid mist emission limits were recorded during the quarterly monitoring of this reporting period. This is consistent with previous AEPR reporting period. Sulphur Dioxide, Sulphur Trioxide / Sulphuric Acid Mist emissions were less than the emission rates predicted in the RPGP EIS.

Hydrogen Sulphide

Hydrogen sulphide is measured annually in order to calculate the annual pollutant loads and associated fees under the EPL. For the 22 December 2010 to 21 December 2011 Annual Return reporting period, the calculated annual load for hydrogen sulphide was 0.342 kg. This was a decrease from the previous reporting period where the annual load calculated was 0.483 kg/year, and less than the annual load limit predicted in the RPGP EIS.

Benzene

Benzene is measured annually in order to calculate the annual pollutant loads and associated fees under the EPL. For the 22 December 2010 to 21 December 2011 Annual Return reporting period, the calculated annual load for benzene was 14.117 kg/year, below the limit of 47 kg/year. This represented an increase from the previous reporting period where 9.786 kg/year was calculated but is still less than the annual load limit predicted in the RPGP EIS.

Odour

Odour emissions from the Carbon Scrubber Vent (EPA monitoring point 6) are monitored on a quarterly basis. During this reporting period the average odour level was 82.25 odour units (ou) with a maximum level of 260 ou recorded in March 2011. This was substantially lower than the previous reporting period where the average odour level recorded was 240 ou and the maximum level recorded was 460 ou. Odour levels were greater than the emission rates predicted in the RPGP EIS.

No complaints relating to odour from the RPGP were received during the reporting period.

Nitrogen Oxides

Nitrogen oxide levels are monitored on a quarterly basis. All monitoring points throughout the reporting period complied with licence limits with the Actual Load totalling 34,571 kg/yr. well below the licensed limit of 103,000 kg/yr. Nitrogen oxides emissions were less than the emission rates and annual load limit predicted in the RPGP EIS.

4.5 Erosion and Sediment

Soil types within all Project areas are assessed both on a regional, as well as 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 management objectives are to:

- To minimise and where possible, prevent soil disturbance and contamination caused by construction;
- To promote and maintain soil stability;
- To ensure there is no long-term erosion on compound areas; and
- To continue to monitor and manage soil erosion on the leased areas consistent with surrounding land and until the area has stabilised.

Management strategies employed to meet the objectives for erosion and sediment are outlined in the Soil and Water Management Sub Plan. A summary of some of the strategies is presented in Table 4-6.

Table 4-6: Management Strategies – Erosion

Activity	Management Strategies	Responsibility
Planning	The workforce induction program shall inform site personnel of the required procedures for sediment and erosion control.	Environment & Safety Officer
Operations	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. Ground disturbance and vegetation clearing shall be minimised. The time between clearing and rehabilitation shall be minimised. Erosion and sediment control measures shall be implemented as per the Soil and Water Management Plan to prevent erosion and water contamination and shall be in place prior to the commencement of works. 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. Erosion and sediment control structures 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). Where erosion does occur, the area shall be stabilised as soon as practicable.	Environment & Safety Officer All personnel

Construction works undertaken during the reporting period consisted of GGL construction works within the Menangle Park site.

To mitigate potential sediment and erosion impacts, the following controls were in place during each construction period:

- AGL's Soil and Water Management Sub Plan, which details sediment and erosion control measures for construction works including construction of new wells;
- Site specific Sediment and Erosion Control Plans were developed for new well sites;
- Regular inspections of sediment and erosion controls were undertaken during construction works to ensure the controls are effective;
- Removal and decommissioning of sediment and erosion controls are fully documented and may only be completed upon approval by AGL's Environmental Operator and/or Field Environment & Safety Officer; and
- Prompt rehabilitation of well sites, access tracks and GGL to minimise soil exposure times.

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

4.6 Surface Water

4.6.1 Surface Water Generation

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 separately stored in-ground tanks for grey water and septic water. A combined total of 376KL of grey water and septic water was transported off site by Thiess Services for disposal at a licensed facility.

4.6.2 Surface Water Management

During the reporting period, activities included the continued operation of the RPGP, drilling of two additional wells and the construction of associated GGL's.

Experience in managing surface water resulted in a reduced number of minor spills and leakages.

Rain water which is not harvested at the RPGP is managed by the site's permanent sediment control pond.

4.6.3 Surface Water – Environmental Performance / Trends

During periods of continued dry weather, town water was delivered to the RPGP to enable the continued use of the amenities and wash bay.

4.7 Groundwater

4.7.1 Groundwater Generation

During the reporting period, water was produced from CSG wells during dewatering and well workovers in Kay Park, Spring Farm, Menangle Park, EMAI and Glenlee fields. The following volumes were generated and recycled or disposed:

- 4727 KL of produced groundwater generated from wells during dewatering and well workovers during this reporting period. This volume is well below the licensed 30 ML (i.e. 30,000 KL) of groundwater allocated to the CGP;
- 1265 KL of produced water from AGL wells was reused for well workovers and drilling operations during the 2011-2012 reporting period. This is more than double the volume of the previous reporting period's reuse water; and
- A combined total of 7292 KL of produced water and RPGP treated water was recycled or disposed during the 2011/12 reporting period at Worth Recycling and Transpacific Industries.

4.7.2 Groundwater Management

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

- The previously prepared Phase 1 desktop *Groundwater Assessment and Conceptual Hydrogeological Model for the Northern Expansion Project* by Parsons Brinkerhoff has progressed to Phase 2. Phase 2 has expanded the study which included the development and implementation of a Water Quality Monitoring Program (Phase 2) for the CGP North expansion area. Installation of monitoring wells is currently underway;
- AGL liaising with NOW and the EPA in relation to groundwater management and licensing conditions;

- A Groundwater Attributes Report has been submitted to the EPA;
- A Groundwater Management Plan, including implementation and broadening of a groundwater monitoring network, was commenced in consultation with NOW and the EPA; and
- A Bore Licence Compliance report is submitted to NOW annually.

AGL is currently undertaking Phase 2 of the Groundwater Assessment and Conceptual Hydrogeological Model for the Northern Expansion Project. The installation of dedicated monitoring bores commenced in late 2011 across the Northern Expansion Project area to establish baseline conditions in the northern area. These bores will primarily observe any natural or induced change over time within the shallow beneficial aquifers of the Northern Expansion Project area by monitoring water levels and water quality prior to, during and after CSG well construction.

Discussions between AGL and the EPA during this reporting period also resulted in the Environment Protection Licence No. 12003 being amended and re-issued in February 2012. The amendments included the addition of *Section 8: Pollution Studies and Reduction Programs* to the licence conditions, this section stipulates Five Pollution Studies and Reduction Programs that each require the submission of a report to the EPA. The reports requested include details of groundwater assessment, groundwater monitoring, provision of spatial information, LDAR, fracture stimulation and well workover assessment information. AGL has complied and submitted the groundwater attributes report on 25 May 2012, satisfying condition U1.1 of EPL 12003. A Groundwater Management Plan was also constructed during the reporting period in consultation with and endorsement by NOW and the EPA to satisfy the Bore Licence Conditions and condition U2 of EPL 12003.

AGL's Bore Licence Compliance Report was submitted to NOW on 19 September 2012, with AGL returning a nil impact result for the 2011/12 reporting year.

4.7.3 Water Monitoring Requirement

The monitoring requirements for water quality, required by DA-282-6-2003-I, are outlined in Table 4-7 below.

It should be noted that these requirements have been removed from the EPL and that there are no limits specified for the following parameters.

Table 4-7: Water Monitoring Requirement

Schedule 4. Clause 69
For each monitoring/discharge point or utilisation area specified (by point number) in the table below, the Applicant must monitor (by sampling and obtaining results by analysis) each parameter specified in Column 1 (Replicated in Section 4.7.4.) *The Applicant must use the sampling method, units of measure and sample at the frequency specified in the respective columns.*
POINT 8 - Total suspended solids, Biochemical oxygen demand, Oil & Grease, Total polycyclic aromatic hydrocarbons, Phenols, Total organic carbon, Total petroleum hydrocarbons, Electrical conductivity, Water level in storage (monthly).

4.7.4 Water Monitoring Results

Water monitoring was undertaken monthly at former EPL Point 8 (flare pond) during the reporting period for the factors listed in the above table. Water samples were analysed by NATA accredited external laboratories, and the results of the monitoring for the reporting period are summarised below:

- The water level in the flare pond remained consistently at 2.2 metres or less;
- Electrical conductivity levels ranged from 6300 µS/cm to 9480 µS/cm;

- Total suspended solids ranged from 15 to 130 mg/L;
- Biochemical oxygen demand levels ranged from 4 to 55 mg/L;
- Oil and grease results were all <5 mg/L;
- Total polycyclic aromatic hydrocarbons results were all <1.0 µg/L;
- Total phenols ranged from <0.05 to 0.06 mg/L;
- Total organic carbon levels ranged from <1 to 75 mg/L; and
- Total petroleum hydrocarbons ranged from <50 to 2150 µg/L.

There are no specified limits for the above listed parameters.

4.7.5 Groundwater – Environmental Performance / Trends

The total volume of produced water generated has increased from last year (from 2805 KL to 4727 KL: an increase of 69%). This is primarily due to the increase in the number of well workovers and the increase in the number of wells that are currently producing during this reporting period compared with the 2010/2011 reporting period.

The total volume of produced water reused for well workovers and drilling has increased from 525 KL in 2010-11 to 1265 KL for the reporting period.

In an attempt to meet the changing CSG industry and to reduce community concerns in relation to groundwater management and performance trends AGL has liaised with NOW and the EPA to expand its groundwater monitoring network for the CGP and Northern Expansion Project areas to capture more groundwater data. AGL is actively working with industry professionals and the appropriate authorities to meet the community's expectations.

During this reporting period AGL was compliant with its Bore Licence conditions and new EPL reporting requirements.

4.8 Waste Management

The management objective with regards to waste is to minimise waste creation and disposal and maximise reuse or recycling.

Management strategies used to meet the objectives for waste management are summarised in Table 4-8.

Table 4-8: Waste Management Strategies

Activity	Action	Area		Responsibility
		RPGP	Field	
General	The employee and contractor induction shall inform all site personnel about correct waste management procedures based on the principles of reduce, reuse and recycle and appropriate disposal.	✓	✓	Project Manager/ Field Environment & Safety Officer
	Waste containers shall be provided at all work sites.	✓	✓	Project Manager
	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
	Activities will be carried out to minimise waste where possible, and any waste generated is disposed in a correct manner.		✓	Project Manager/ Field Environment and Safety Officer

Activity	Action	Area		Responsibility
		RPGP	Field	
Spills	Spills of waste materials shall be dealt with in a prompt and thorough manner, and reported to the Field Safety and Environment Officer.	✓	✓	Environment and Safety Officer/ Land and Compliance Officer
Disposal	General refuse shall be collected and transported to local council approved recycling or disposal sites.	✓	✓	Project Manager/ Field Environment and Safety Officer
	Waste oil, solvents and other toxic material, shall be collected for safe transport offsite for reuse, recycling, treatment or disposal.	✓	✓	Project Manager/ Field Environment and Safety Officer
	Onsite waste disposal is prohibited.		✓	All

Table 4-9 summarises the amount of waste generated and either disposed or recycled during the reporting period.

Table 4-9: Waste Generated and Disposed / Recycled

Waste Stream	Amount Disposed	Amount Recycled
Sewage and grey water from the RPGP site facilities	376 KL	
General waste	102 tonnes	
Drill cuttings		4392 tonnes
Waste oil		36 tonnes
Scrap steel		27 tonnes
Batteries		38 tonnes
Oil filters		1.4 tonnes
Paper		28 tonnes

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

There were no issues of non-compliance or any complaints in relation to waste and waste management during this reporting period.

4.9 Hazardous Materials

The management objective with regards 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 not to cause pollution of the environment (soil, surface water, groundwater, atmosphere).

AGL has developed a Dangerous Goods and Hazardous Materials Sub Plan which outlines the management strategies for achieving this objective.

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

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

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

4.10 Contaminated Land

There is no land identified as contaminated or polluted on any part of AGL operations.

In regard to preventing contamination or pollution, the management objectives are to:

- Avoid contamination of land or water; and
- Minimise risks to health and safety.

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 Table 4-10.

Table 4-10: Management Strategies - Contaminated / Polluted Land

Activity	Management Strategies	Responsibility
Planning	A chemical manifest shall be prepared and detailed procedures for chemical storage and handling, waste management and spill response shall be in place. The workforce induction program shall inform site personnel of the required chemical storage and handling procedures.	Environment & Safety Officer
Operations	All chemicals stored on site shall be entered on the Chemical Manifest. Due to its stenchant characteristics, Odorant is handled in accordance with the strictest of protocols. The storage and handling of fuels and chemicals shall comply with legislation and Australian standards. Hazardous materials shall be transported, stored and handled in accordance with the requirements of relevant legislation and industry standards. Fuels, lubricants and chemicals shall be stored and, where practicable, handled within containment facilities (for example, bunded areas, leak proof trays) designed to prevent the release of spilt substances to the environment. All storage and handling equipment (including transfer hoses) shall be kept in a well maintained condition. All vehicles and equipment shall be adequately maintained so as to minimise drips/leaks of oil and fuel. All spills of fuel, oil or chemicals shall be addressed.	Environment & Safety Officer All personnel

All activities associated with land contamination or pollution was compliant for the period with no reportable incidents or community complaints recorded.

4.11 Threatened Flora and Fauna

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 all individual well sites, access routes, pipeline routes and Project areas.

In general terms, due to AGL's selection criteria, an assessment of the Project area indicates that past activities by others (agriculture in particular), has already significantly disturbed native vegetation within the area.

The disturbance created by the activities involved with the Project is mainly 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 managed or avoided 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 environmental management 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 Table 4-11.

Table 4-11: 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.	Field 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), will be avoided where possible through the site design and layout process.	Field Environment and Safety Officer
	The gas gathering line routes will be selected to use previously or currently disturbed areas of land wherever possible.	Field Environment and Safety Officer/ Project Manager
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.	Field Environment and Safety Officer/ Project 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	Field Environment and Safety Officer/ Project Manager

Activity	Action	Responsibility
	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.	
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.	Field Environment and Safety Officer/ Project Manager

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

During this reporting period AGL developed and implemented a Biodiversity Register that considers the biodiversity of all AGL's assets and projects including the CGP. The register provides a consolidated view of AGL's biodiversity impacts and management strategies for all sites of which AGL has operational control over. The register will improve the information that AGL can provide to stakeholders (CSR analysts, regulators) about AGL's management of biodiversity. This register is consistent with the reporting boundary of AGL's Sustainability Report.

The register includes:

- Information which satisfies the Global Reporting Initiative (GRI) indicators EN 11 to 15, EN25 and EU13;
- Information requested each year by Dow Jones Sustainability Index (DJSI) analysts; and
- Other information relevant to AGL's business activities (e.g. references to key documents, permits, EPBC referrals etc.).

Benefits on the register include:

- Gives a better understanding of AGL's biodiversity risks;
- Help inform scoping of ecological impact assessments
- Identifies opportunities for strategic management of issues;
- Improves sustainability reporting; and
- Provides a consolidated view of all of AGL's biodiversity impacts and management strategies for all sites of which AGL has operational control over.

The register is to be maintained and updated continuously.

4.12 Noxious Weeds

Noxious weeds may be introduced and/or dispersed via personnel vehicles, equipment and plant.

The environmental management objective with regards to weed control is to minimise the introduction, establishment and spread of weeds.

Management strategies employed to meet the objectives for weed control are included within the Rehabilitation and Landscape Management Sub Plan. Some of these measures are outlined in Table 4-12.

Table 4-12: 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.	Field Environment and Safety Officer
Construction - Weeds and Pathogens **Cleaning** **Introduced Pest Species**	On first (and subsequent) entry to the District and prior to entering the construction area all vehicles, equipment and portable infrastructure shall be washed by air or water or demonstrated they are clean (namely, certificate/or other document to show they have been cleaned down), prior to coming to site. This shall be done prior to mobilisation to site. Cleaning 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. Wash down by air or water of a vehicle and/or portable equipment shall be supervised by trained personnel and the vehicles details shall be recorded in a vehicle wash down register to be maintained by the Drilling Contractor. All vehicles shall be certified and registered as clean, before they shall be permitted access to the well site area. Topsoil and vegetation material shall be re-spread in the immediate vicinity of the area of origin to limit the potential spread of weeds and pathogens. All plant and equipment shall be inspected and be free of invertebrates and pest species prior to coming on site. Waste management shall be implemented to avoid attracting vertebrate pests (see Waste Management Sub Plan).	Field Environment and Safety Officer/ Project Manager
Weed control and monitoring	The well site, restored access tracks and gathering line routes shall be inspected for 12 months following the completion of rehabilitation, for evidence of soil settlement, weeds and pest animals. Active weed control shall be required at sites identified as infested for at least one year after construction. Additional appropriate control measures shall be utilised after this time, on the basis of monitoring results. Herbicides are to be used to kill noxious weeds. Drift, drip or run-off to surface waters or non-target species is to be avoided. Personnel using herbicides are to be appropriately trained and qualified.	Field Environment and Safety Officer/ Land and Compliance Officer/ Project Manager

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

- 30th August 2011:KP01, 05, 06 & LB11;
- 8th September 2011: RPGP;
- 16th September 2011: Menangle Park GGL;
- 9th October 2011: Glen Lee Wells;
- 10th October 2011: ARTC;

- 11th October 2011: Menangle Park well MP17;
- 11th and 12th November 2011: RPGP;
- 4th January 2012: SL03, MP11, MP12, GL16, SF20, ARTC;
- 10th January 2012: MP16, WG02;
- 13th January 2012: LB and KP, RPGP access rd.;
- 18th January 2012: RPGP access rd.;
- 19th January 2012: RPGP;
- 20th January 2012: EM wells, Glen Lee and ARTC wells; and
- 26th April 2012: LB Yard.

The main herbicides used were Round Up and Kamba M and Estercide Xtra (selective herbicide). Approximately 37.6 L of herbicides were used during the reporting period.

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

4.13 Blasting

No blasting is undertaken as part of the project.

4.14 Operational Noise

4.14.1 Operational Noise Management

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

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

Any noise complaints are compiled and presented for discussion at the Community Consultation Committee meeting.

The environmental management objectives regarding noise are to:

- To comply with the operations standards for noise control;
- To ensure that there are no unresolved noise-related complaints from the public; and
- Implement 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. Some of these measures are outlined in Table 4-13 below.

Table 4-13: Operational Noise Management Strategies

Activity	Management Strategies	Responsibility
Planning	The workforce induction program shall inform site personnel of the required procedures regarding protection of local amenity.	Environment & Safety Officer

Operations	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. Except in an emergency, operations will not generate noise impacts. Noise generated from the Gas plant shall comply with noise limits set out in the development consent condition 38.	Environment & Safety Officer All personnel

4.14.2 Operational Noise Limits and Monitoring Requirements

The noise limits and monitoring requirements detailed in the Development Applications approved for the project are summarised in Table 4-14 below.

Table 4-14: Operational Noise Monitoring Requirements

DA 15-1-2002 – i
Schedule 3. Clause 38 The Applicant shall comply with the following noise criteria ($L_{Aeq\ 15\ minute}$): RECEIVER A: 40 dBA (Day, Evening and Night) RECEIVER B, C and F: 37 dBA (Day, Evening and Night) RECEIVER D, E and G to M: 37 dBA (Day and Evening), 35 dBA (Night) Any other residential receiver: 35 dBA (Day, Evening and Night) *Note: This development refers to the RBTP, which has been decommissioned and rehabilitated*
DA 282-6-2003-i
Schedule 4. Clause 29 The Applicant shall ensure that noise from the normal operation of the premises, excluding flaring events, must not exceed the noise limits ($L_{Aeq\ 15\ minute}$) in the table below: R1 Medhurst Rd, Gilead: 35dBA (Day, Evening and Night) R7 Mt Gilead, Gilead: 37dBA (Day), 36dBA (Evening and Night) *Note: This Development refers to the operation of the RPGP*
Schedule 4. Clause 40 The Applicant must submit a noise compliance report to the EPA and the Department within one month of commissioning of the Gas Treatment Plant and on an annual basis with the Annual Return required by the EPA's licence to assess the project's compliance with the noise limits in Conditions 29 and 31. The noise monitoring must be conducted in accordance with Condition 42
Schedule 4. Clause 41 Following the first 12 months of continuous noise monitoring, during the life of the Development or as otherwise agreed by the Director-General, the Applicant shall undertake quarterly attended monitoring at the Mt Gilead Homestead to the satisfaction of the Director-General, in accordance with the NSW Industrial Noise Policy and AS 1055: "Acoustics – Description and Measurement of Environmental Noise".
DA 75-4-2005
Schedule 2. Clause 18. Noise from the operation of the development shall not exceed 35dBA ($L_{Aeq\ 15\ minute}$) at any residential or noise sensitive premises during the day, evening or night. The $L_{A1\ (1\ minute)}$ shall not exceed 45 dBA at any residential or noise sensitive premises during the night. *Note: This development refers to the drilling and operation of wells SL01-SL07 and associated gas gathering lines.*

PA 06_0137
Schedule 3. Clause 4 The proponent shall ensure that the noise generated by the project does not exceed 39 dBA during the day and evening and 35 dBA at night at any residential receiver ($L_{Aeq\ 15\ minute}$). The $L_{A1(1\ minute)}$ shall not exceed 45 dBA at night at any residential receiver. Refer to DA for notes relating to this condition. *Note: This development refers to the operation of wells RB03-RB12*
PA 06_0138
Schedule 3. Clause 4 The Proponent shall ensure that the noise generated by the project does not exceed 39 dBA during the day and evening and 35 dBA at night at any residential receiver ($L_{Aeq\ 15\ minute}$). The $L_{A1(1\ minute)}$ shall not exceed 45 dBA at night at any residential receiver. Refer to DA for notes relating to this condition. *Note: This development refers to the operation of wells EM23-EM36*
PA 06_0291
Schedule 3 Clause 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) SF04, 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.*

4.14.3 Operational Noise Monitoring Results

Noise monitoring of newly operational and previously operating gas wells 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 by the Department of Planning's Conditions of Consent (Development Approval DA 246-8-2002i and Project Applications No. 06_0138, 06_0291 and 06_0137). 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 newly operating gas wells and previously operating wells was undertaken on 19th September 2011, 16th May 2012 and8th June 2012 at the following well sites:

- SF17 well surface location (SF01, SF02, SF03 well sites);
- SF20 well surface location (SF05, SF07, SF08, SF09 well sites);
- GL02/ GL12 and GL11/ GL13;
- MP03 well surface location (MP02, MP03, MP09, MP10);
- MP05 well surface location (MP05, MP05A, MP07, MP08 well sites);
- MP22 well surface location (MP11 and MP22 well sites);
- MP23 well surface location (MP12 and MP23 well sites);
- RB07, RB10; and
- EM28, EM20, EM25, EM07, EM17.

All gas wells were monitored under suitable weather conditions and were 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 (formerly OEH) as part of the projects Annual Returns. The DoPI receive a summary of this information as part of this AEPR.

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 acoustic consultants at sites R1 and R7, which represent the residential premises most impacted by noise emanating from the RPGP. Monitoring results for the reporting period are summarised in Table 4-15.

Table 4-15: Summary of Quarterly Noise Monitoring

Noise Monitoring Undertaken	Summary of Results
Attended noise monitoring 16 August 2011 (report dated August 2011)	Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time periods. At R1 noise from the RPGP was just audible during the day, evening and night and was almost constantly masked by other noise such as traffic or fauna. At R7 noise from RPGP was just audible during the day and evening with noise masked by other noise sources such as traffic and fauna. Noise from RPGP was in-audible at all times during night-time due to over extraneous noise such as distant traffic and local fauna noise. Noise levels could not be established for night time for the RPGP operations with other noises recorded between 26-29dBA and inaudible which were below the set criteria.
Attended noise monitoring 24 October 2011 (report dated October 2011)	Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time periods. At R1 noise from the RPGP was inaudible at all times and the L_{Aeq} level could not be established due to masking Hume Highway traffic and surrounding fauna noise. At R7 the RPGP was recorded as in-audible for day and night-time monitoring and just audible during the evening monitoring due to masking of distant Hume Hwy traffic noise and insect/bird noise. Noise levels of 34 dBA were recorded for evening monitoring which were below the criteria.
Attended noise monitoring 23 February 2012 (report dated February 2012)	Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time period. At both locations noise from the RPGP was inaudible except at R7 during the day-time where the RPGP was just audible with a recording of 36dBa. All other locations and monitoring times were inaudible and the L_{Aeq} level could not be established due to masking by Hume Highway traffic noise and intermittent insect and local fauna noise.
Attended noise monitoring 17 May 2012 (report dated May 2012)	Measured noise levels complied with the noise criteria for the sensitive receivers during the day, evening and night time periods. At R1 noise from the RPGP was inaudible at all times and the L_{Aeq} level could not be established due to masking Hume Highway traffic and surrounding fauna noise. At R7 noise from RPGP was just audible during the day, evening and night with noise masked by other noise sources such as traffic and fauna.

4.14.4 Noise - Environmental Performance / Trends

Noise performance at the Rosalind Park Gas Plant

No exceedances and no noise complaints relating to operational noise from the RPGP during the 2011/12 reporting period were identified. This trend is consistent with previous years where there have been no exceedances or noise complaints from the operation of the RPGP. Noise performance is consistent with operational noise predictions in the RPGP Environmental Impact Statement.

Noise Performance – Operations

The CGP continued to meet its noise requirements during the reporting period. No complaints were received relating to noise from operational wells.

4.15 Construction Noise

4.15.1 Construction Noise Management

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 (not applicable for the reporting period);
- Earth moving activities associated with construction of infrastructures i.e. drilling pads, gathering lines, access roads and rehabilitation; and
- Truck movement.

The environmental management objectives regarding construction noise are to:

- To comply with the construction standards for noise control;
- To minimise noise during the construction phase;
- Limit work activities (other than drilling SIS wells) 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
- Best practice noise management measures for Construction works.

Management strategies employed to meet the objectives for noise are outlined in the Noise Management Sub Plan. Some of the measures are provided in Table 4-16.

Table 4-16: Construction Noise Management Strategies

Activity	Management Strategies	Responsibility
Planning	The workforce induction program shall inform site personnel of the required procedures regarding protection of local amenity.	Environment & Safety Officer
Operations	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. Equipment will be maintained and orientated away from sensitive receivers to minimise noise impacts.	Environment & Safety Officer All personnel

Activity	Management Strategies	Responsibility
	Noise walls are to be used where suitable to minimise offsite noise impacts. Notice of works will be provided to relevant affected residents at least 5 days prior to commencing construction activities. Maximise offset distance between noisy equipment and sensitive receivers. Regular consultation with potentially sensitive receivers. Except in an emergency, operations will not generate noise impacts.	

4.15.2 Construction Noise Limits and Monitoring Requirements

The noise limits and monitoring requirements detailed in the Development Applications, Project Approvals and Modifications approved for the project are summarised in Table 4-17. A summary of what activities (if any) were undertaken under each approval is also included in the table below.

Table 4-17: Construction Noise Monitoring Requirements

Approval Criteria	Activities undertaken during the reporting period
PA 06_0137	
Schedule 3. Clause 2 – Construction noise Criteria The proponent shall use its best endeavours to undertake construction activities to comply with Day time noise goal of 54 dBA at any residential receiver. *Note: This development refers to the drilling of wells RB 03- RB 12.*	No construction or drilling activities were undertaken at these wells sites during the reporting period.
PA 06_0138	
Schedule 3. Clause 2 – Construction Noise Criteria The Proponent shall use its best endeavours to undertake construction activities to comply with the construction Day, Evening and Night goals of 54 dBA, 39 dBA and 35 dBA respectively at any residential receiver. *Note: This development refers to the drilling of wells EM23-36*	No construction or drilling activities were undertaken at these wells sites during the reporting period.
PA 06_0291	
Schedule 3 Clause 3 – Construction Noise Goals The Proponent shall use its best endeavours to undertake construction activities to comply with the construction noise goals dB(A)$L_{Aeq(15\ minute)}$ specified below at the nearest residential dwelling: MP02, MP03, MP04: Day (49), Evening (47), Night (41), Sat & Sun (47) MP05, MP06: Day (40), Evening (40), Night (40), Sat & Sun (40) MP11, MP24, MP33: Day (42), Evening (42), Night (40), Sat & Sun (42) MP19 R3: Day (40), Evening (40), Night (40), Sat & Sun (40) MP19 R25: Day (49), Evening (47), Night (41), Sat & Sun (47) MP21, MP22, MP23: Day (49), Evening (47), Night (41), Sat & Sun (47) SF04A: Day (43), Evening (42), Night (37), Sat & Sun (42) SF10, SF17, SF20: Day (43), Evening (41), Night (36), Sat & Sun (43)	MP22 completed drilling activities during this reporting period and was followed by the drilling of MP11. Refer to Section 4.15.3 for discussion of monitoring results.

Approval Criteria	Activities undertaken during the reporting period
DA 75-4-2005	
Schedule 2, Clause 19 Best endeavours will be made to undertake construction activities so as to comply with a noise goal of $L_{A10\ (15\ minutes)}$ 54 dB(A) when assessed at sensitive locations including residences and schools (particularly to avoid noise impacts during exam or other sensitive times). *Note: This development refers to the drilling of wells SL01-SL07*	No construction or drilling activities were undertaken at these wells sites during the reporting period.
DA 75-4-2005 (Mod 4 July 2007)	
Schedule 2, Clause 18A Noise from the drilling and construction of SL08 and SL09 shall not exceed the following noise limits at the nearest sensitive receiver: Weekday (7am to 6pm) and Sat (7am-1pm): 54 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 44 dB(A)L_{Aeq} Evening: 47 dB(A)L_{Aeq} Night: 41 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at these wells sites during the reporting period.
DA 15-1-2002 (Mod 4 July 2007)	
Schedule 3 Clause 47A Noise from the drilling and construction of AP02 and AP03 shall not exceed the following limits at receivers A1, A2, A3 and A4: Weekday (7am to 6pm) and Sat (7am-1pm): 45 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 40 dB(A)L_{Aeq} Evening: 40 dB(A)L_{Aeq} Night: 30 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at the above wells sites during the reporting period.
DA 246-8-2002-I (Mod 20 April 2011)	
Schedule 3, Clause 19B Noise from the drilling and construction of KP05 and KP06 shall not exceed the following noise limits at the nearest receiver: Weekday (7am to 6pm) and Sat (7am-1pm): 53 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 48 dB(A)L_{Aeq} Evening: 41 dB(A)L_{Aeq} Night: 35 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at the above wells sites during the reporting period.
DA 282-6-2003i (Mod 4 July 2007)	
Schedule 4, Clause 34B Noise from the drilling and construction of EM38 shall not exceed the following noise limits at the nearest sensitive receiver: Weekday (7am to 6pm) and Sat (7am-1pm): 54 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 39 dB(A)L_{Aeq} Evening: 39 dB(A)L_{Aeq} Night: 35 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at this location during the reporting period.

Approval Criteria	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.

4.15.3 Construction Noise Monitoring Results

Well site MP22 Menangle Park (Gas Wells MP22 and MP11)

SLR Consulting Australia Pty Ltd (SLR Consulting) was engaged by AGL Energy Limited to conduct ambient noise monitoring and operator-attended noise monitoring to assess the drilling and construction operations undertaken at the MP22 well surface location at Menangle Park.

Prior to drilling commencing at the MP22 well surface location, SLR Consulting were engaged to determine the current background noise levels, as the site noise goals were previously developed based on background noise data collected in 2006. SLR Consulting reported background noise levels 10 dBA, 7 dBA, 6 dBA and 11 dBA (during the daytime, evening, night-time and Saturday/Sunday periods, respectively) higher than the levels measured in December 2006. The background noise monitoring results reported by SLR Consulting were considered representative of the current background noise environment at the nearest receivers to MP22 and were nominated for noise assessment purposes for drilling activities being undertaken at MP22.

Ambient noise monitoring for the MP22 well surface location assessed the drilling of both gas wells MP22 and MP11, which are located within the MP22 well surface location. Ambient noise monitoring was undertaken from 20 June 2011 until 01 August 2011.

Operator-attended noise monitoring for construction activities was undertaken during the day on the;

- 12th July 2012; and
- 27th July 2012.

Ambient noise monitoring was conducted during drilling operations within the drilling compound in order to calculate and assess compliance against the nominated noise control limits at the nearest sensitive receiver location R1, which is 200 m North of MP22.

In accordance with MP22's SLR Consulting report *"630.02131.30300 MP22 Background Noise Assessment"* dated 22 June 2011 all ambient noise monitoring for drilling activities associated with MP22 was found to be compliant during drilling operations with the nominated site specific noise goals and the NSW Industrial Noise Policy (INP) during daytime, evening and night-time.

Operator-attended noise monitoring for construction activities at MP22 was undertaken to measure the construction noise for the drilling operations at the MP22 well site. Monitoring was undertaken during the Daytime only in order to assess the compliance against the nominated noise control goals at Location R1. R1 is located 250 m North of MP22 and is identified as the nearest sensitive receiver to MP22's drilling operations.

In accordance with SLR Consulting's *"MP22 Background Noise Assessment"* report dated on 22 June 2011, all operator attended noise monitoring for drilling activities associated with MP22 was found to be compliant during drilling operations with the nominated site specific noise goals and the NSW Industrial Noise Policy (INP) at location R1.

4.15.4 Construction Noise – Environmental performance / Trends

One community complaint was received in relation to noise during a rig movement operation at MP22 and MP11 well site. The complaint was made to the supervisor of ITAC (rig moving contractors) on the 4th of August 2011. An unknown resident neighbour approached the contractors regarding the truck movements between 1am and 6am.

The ITAC Supervisor informed the resident, on site at the time of the complaint, that the truck movement was undertaken during these hours due to an RMS (then RTA) road restriction (permit). The resident was also informed that this was the last night the rig movements would be occurring. The resident understood and requested that noise be kept to a minimum for the remainder of the rig movement activities.

4.16 Visual Amenity

4.16.1 Visual Amenity Management

The visual impacts 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 have a significant impact in the event that it occurs at night. The overall approach by AGL has however, progressed to the point where operational flaring was completely minimised during the reporting period due to the connection of most well sites to the plant with telemetry control.

4.16.2 Visual Amenity Monitoring Requirement

The monitoring requirements for visual amenity, required of DA 282-6-2003-i are outlined in Table 4-18 below.

Table 4-18: Visual Amenity Monitoring Requirements

DA 282-6-2003-i
Schedule 4. Clause 10. The applicant shall report on the effectiveness of the lighting controls in the AEPR.
Schedule 4. Clause 11. The Applicant shall record the frequency of the operation of the flare and shall make this information

available for inspection by the DG on request. The records shall include but not be limited to the following:

(a) date and time of each flare event;

(b) duration of each flare event;

(c) whether the flare operated during daylight or night-time hours;

(d) the cause for the operation of the flare;

(e) the number of compressor engines that have been commissioned and operating during the period; and

(f) comparison of the frequency, night-time frequency, duration and estimated light level of each type of flare event with the flare events predicted in Table 2 of the following report: URS (2003) "SGL Proposal Stage 2 Coal Seam Methane Project Visual Assessment of Lighting and Flare" prepared by URS for SGL dated 6 November 2003."

Schedule 4. Clause 13.

The Applicant shall prepare and implement a Vegetation and Landscape Management Plan for the Gas Treatment Plant site and the gas well sites. The plan shall include, but not necessarily be limited to:

(a) reasonable measures to protect mature trees as part of the well drilling, gas gathering system and Treatment Plant Site construction activities;

(b) a landscape strategy detailing the design and proposed planting of trees and shrubs to be undertaken;

(c) ensuring that tree and shrub species used for landscaping of the site are indigenous to the locality;

(d) details of a program to ensure that all landscaped areas are maintained in a tidy, healthy state;

(e) measures intended to maximise the screening of infrastructure from views from the Mt Gilead property through planting and other measures;

(f) Details of the visual appearance of all new buildings, structures and facilities (including paint colours and specifications). New buildings shall be constructed so as to present a neat and orderly appearance and to blend as far as practicable with the surrounding landscape;

(g) details of any necessary irrigation system to ensure that adequate supplies of water are made available to all landscaping on site, the trees between the site and Menangle Creek and the trees located on the southern boundary of the Gas Treatment Plant site;

(h) details of any necessary methods to be employed in the establishment of trees on cut batters in the event that the excavated surface is not conducive to the planting of vegetation of the type displayed in the Landscape Design;

(i) Provision for assessing and regularly monitoring the health of the trees in the Menangle Creek 7riparian 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;

(j) reasonable measures to ensure that mature trees within the riparian corridor along Menangle Creek are retained and protected;

(k) details of proposed screening works including supplementary planting along the border of the site with Menangle Creek;

(l) reasonable measures to minimise the impacts of the gas wells on the cultural heritage landscape of the EMAI;

(m) details of a monitoring program to assess the effectiveness of all visual impact mitigation measures, particularly the measures used to minimise the visual impacts on the Mount Gilead Homestead; and

(n) Reporting the results of the visual impact monitoring in the AEPR. The monitoring results will specifically identify any remedial measures required.

The Vegetation and Landscape Management Plan must be submitted and approved by the Director-General prior to commencement of construction on the Gas Treatment Plant site.

Schedule 4. Clause 14.

As part of an independent audit required under condition 18, the Vegetation and Landscape Management Plan must make provision for ensuring that landscaping of the Gas Treatment Plant site and surrounds is maintained in an adequate condition by providing details of a monitoring program. Monitoring must be carried out pursuant to the monitoring program every 6 months for the first two years from the commencement of planting and thereafter every 2 years by an independent and suitably qualified and experienced arborist whose appointment has been approved for the purposes of this condition by the Director-General. The monitoring program must include the following features:

(a) Identification of mature trees surrounding the site which afford screening of the Gas Treatment Plant from Mt Gilead Homestead;

(b) Provision for assessing and regularly monitoring the health of landscaping on the site and the trees in the Menangle Creek riparian zone adjacent to the Gas Treatment Plant site. The objective of the monitoring is to determine the health of the trees and to recommend measures (if required) to improve the health of the trees;

(c) Description of the health of each tree identified under condition (a);

(d) Recommendation of reasonable measures to ensure that mature trees within the riparian corridor along Menangle Creek are retained and protected, including trees that lie within the transmission line easement to the East of the site;

(e) Recommendation of any watering or fertilising that needs to be implemented to maintain the landscaping and surrounding trees;

(f) Recommendation of how to manage the landscaping to promote the maximisation of growth to maturity.

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, Clause 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.

Modification to DA 282-6-2003 I dated 2 May 2007 (access road construction)

Schedule 4, Clause 19A

The Applicant shall prepare and implement a Landscape Planting Plan for the relocated access road to the satisfaction of the DG. This plan must be submitted to the DG for approval prior to commencement of construction, and include:

(a) details of the landscaping measures along the road and visual bund;

(b) measures to manage and maintain the landscaping; and

(c) Describe the construction rehabilitation measures.

Schedule 4, Clause 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.

4.16.3 Effectiveness of Lighting Controls (Schedule 4 Clause 10)

Distinctive Landscape Planners were approved to undertake the two yearly independent audit Landscaping and lighting of the RPGP. Ground-truthing for lighting performance identified that the RPGP was in accordance with objectives of development consent.

Recommendations for lighting performance identified one location which required adjustment of directional light wash, to reduce the visible impact from the current light location, angle and source. All other areas identified as visible in the assessment were considered acceptable and well within the desired scope and noted that continued growth of landscaped areas would further reduce current visibility.

The audit of VLMP is considered complete and successful. There were no further requirements for lighting adjustments and no complaints were received relating to lighting controls during the reporting period.

4.16.4 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 F.

Only one full field to flare event occurred during the reporting period, on the 12th March 2012. The event occurred in the late hours on the night and early hours of the morning and lasted 93 minutes. The event was caused by a blocked instrument transmitter causing plant shutdown and resulting in a Programmable Logic Controller (PLC) fault.

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

As reported in the previous AEPR there was a single full field flare event for this reporting period at the RPGP. The duration of the flare event increased slightly during this reporting period, with the flare duration being approximately 1 hour longer that the previous year's flare event.

4.16.5 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 DoPI on 2 July 2004. This AEPR reports the results of the visual impact monitoring.

Condition 14, Schedule 4 of DA 282-6- 2003-i requires AGL to now have the approved Vegetation Landscape Management Plan (VLMP) independently monitored every two years. The first biennial report was completed by Corkery Consulting in November 2008. The next biennial audit was due to be undertaken in December 2010. Distinctive Landscape Planners were engaged during the last reporting period and required DoPI approval. Approval of Distinctive Landscape Planners was only received from DoPI during this reporting period to undertake the independent audit.

Distinctive Landscape Planners undertook and completed a Landscape and Lighting Audit Report of the Vegetation and Landscape Management and Lighting of the RPGP in March 2012 to assess the performance of the mitigation measures (including those contained in the VLMP's) implemented to prevent and minimise the visual impacts of the RPGP. The report specifically relates to assessment and recommendations in relation to lighting performance and visual impacts from the RPGP and the nearest sensitive receiver, the Mount Gilead residence.

This audit report follows on from the 2008 biennial report and includes recommendations to be implemented to ensure the continuing health and growth of the VLMP and reviews the actions carried out by AGL in response to the 2008 audits recommendations.

4.16.6 Independent Audit of Vegetation and Landscape Management Plan (Schedule 4 Clause 18)

The first, biennial report was completed by Corkery Consulting in November 2008. The next biennial audit was due to be undertaken in December 2010. Distinctive Landscape Planners were engaged by AGL during the last reporting period and required DoPI approval in order to undertake the next audit. Approval of Distinctive Landscape Planners was only received from DoPI during this reporting period. Distinctive Landscape Planners completed their Landscape and Lighting Audit in March 2012. A summary of the 2012 audits recommendations are presented in Table 4-19 below. Recommendations of *"no additional work required"* have not been reproduced below.

Table 4-19: Visual Impact Assessment 2012 Recommendations Status

Landscape Zone	Visual Audit Recommendations (Distinctive Landscape Planners - March 2012)
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.
A2	No signs of insect attack. Well established plantings. Minor pruning undertaken and required to power lines
B3	Planting requires on-going fertiliser and treatment due to poor establishment in this area only
D1	Re-mulching sloping bank for on-going support of planting establishment
E1	No further works required. Continue on-going maintenance should be undertaken.

In summary, assessment of the Vegetation Landscape Management Plan was reported as follows:

- Extensive and detailed monitoring and reporting has been carried out directly by AGL as well as the maintenance contractor, with progress inspection reports undertaken by Ultimate Horticultural Solutions in August 2009, March 2010, February 2011 and October 2011. This documentation assisted Distinctive Landscape Planners in their assessment;
- The Landscape performance in general has shown excellent performance and is now considered well established. This established landscape provides layered screening, dense canopy growth and delivers effective and maturing screening to the Mt Gilead Homestead;
- Climatic conditions after the drought have resulted in excellent growth and structural development of groves trees. The visual screen achieved is evident both on site and from the Mt Gilead Homestead. The landscape planting plan has provided suitable plant selections for new screening works, with positioning and layout providing excellent screening to the internal areas of the site;

- The landscape planting plan did document the retention of several existing trees within and close to the south of the gas plant. These trees now pose a potential safety risk to on site workers (as documented in CPE Trees Services Arboricultural Assessment Monitoring Report, dated 16th February, 2012 which was undertaken on behalf of Distinctive Landscape Planners for the 2012 Audit Report). Recommendation by CPE was remove dead wood to trees within this zone/area as part of continuing management; and
- Some landscape areas do require new mulching works to assist in further establishment of the tree plantings.

4.16.7 Landscape Planting Plan (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 an independent audit be undertaken within 6 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 2008.

Corkery Consulting undertook the required monitoring of the implementation of the VLMP in November 2008 and the findings summarised in the 2008/09 AEPR. The next biennial audit was due to be undertaken in December 2010, however, approval of the auditing consultant engaged wasn't received from the DoPI until 2012.

A summary of Distinctive Landscape Planners 2012 audit recommendations are presented in Table 4-20.

Table 4-20: Summary of recommendations of Access Road VLMP

URS Drawing No. Ref	2012 Observations (Distinctive Landscape Planners)	Visual Audit 2012 Recommendations (Distinctive Landscape Planners)
LA-01	Clustered and Layered tree groupings as per plan. Well established grass cover and evidence of routine mowing.	Performance of landscape recommends continuing current maintenance program for on-going landscape maintenance. Removals of Acacia sp. Nurse trees to be undertaken systematically at end of typical lifespan and as trees fail. No replacement planting will be required.
LA-02	Planting to top of ridge in poorer soil than surrounding landscape and not as well established: - Clustered and layered tree groupings as per plan - Well established grass cover and evidence of routine mowing for fire reductions measures Trees established with growth in excess of 3 metres consistent and even growth.	Performance of landscape recommends continuing current maintenance program for on-going landscape maintenance. Removal of Acacia sp. Nurse trees to be undertaken systematically at end of typical lifespan and as trees fail No replacement planting will be required.
LA-03	Clustered and layered tree groupings as per plan. Well established grass cover and evidence of routine mowing for fire reductions	Performance of landscape recommends continuing current maintenance program for on-going landscape maintenance. Removal of Acacia sp. Nurse trees to be undertaken systematically at end of

URS Drawing No. Ref	2012 Observations (Distinctive Landscape Planners)	Visual Audit 2012 Recommendations (Distinctive Landscape Planners)
	measures. Trees established with growth in excess of 3 metres consistent and even growth.	typical lifespan and as trees fail No replacement planting will be required.
LA-04	Clustered and layered tree groupings as per plan. Well established grass cover and evidence of routine mowing for fire reductions measures. Trees established with growth in excess of 3 metres consistent and even growth.	Performance of landscape recommends continuing current maintenance program for on-going landscape maintenance. Removal of Acacia sp. Nurse trees to be undertaken systematically at end of typical lifespan and as trees fail No replacement planting will be required.

Insect Attack and Control Recommendations of planted trees

There are no significant pests and diseases now present with natural control and a balance within the tree groupings being established. On-going maintenance of the landscape will ensure continued success of the tree plantings. No further works are required at time of report.

Monitoring of Mature Trees

The maintenance records by AGL are thorough and complete. An additional Tree progress report from the horticultural contractor, Ultimate Horticultural Solutions Pty Ltd in October 2011 documents and monitors the tree planting progress.

This combination of records and documentation has ensured the success of the planting works. It has also ensured that the landscape implementation and monitoring has been well recorded for historical maintenance reporting.

4.16.8 Visual Impact Amenity Performance / Trends

It was concluded by Distinctive Landscape Planners in the Landscape and Lighting Audit Report 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. 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 within this section above.

The audit of the VLMP monitoring report is considered complete and successful.

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 active insect control including weed and grass control around trees and mulch where necessary to suppress grass growth; and
- Continued update of the Maintenance Log Book.

4.17 Aboriginal Heritage

On-going aboriginal archaeological assessments are conducted over each new drilling program as part of the Environmental Impact Assessment process.

The conclusion from these studies is that the Project area generally represents an area considered to be of low archaeological potential. Despite this, evidence of Aboriginal occupation of the area has been identified during surveys conducted for this Project.

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. Some of these measures are summarised in Table 4-21.

Table 4-21: Management Strategies - Aboriginal Heritage

Activity	Management Strategies	Responsibility
Planning	The workforce induction program shall inform site personnel of the required procedures for protection of cultural heritage. Flagging and fencing shall be place around known sites in the vicinity of the proposed areas of disturbance prior to construction commencing.	Environment & Safety Officer
Operations	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. If in an area where monitoring is required and a previously unrecorded archaeological item is identified by the archaeologist, all ground disturbing activities shall cease and the Project Manager informed. The archaeologist will assess the item/s or site and provide a report to the Environment & Safety Officer with recommendations. This report will be submitted to National Parks and Wildlife Service for assessment. No work will commence without approval from NPWS and the Project Manager. Should any Aboriginal sites or objects be unearthed during works, these activities should temporarily cease within the immediate vicinity of the find locality, be relocated to other areas of the site (allowing for a curtilage of at least 50m), and the Office of Environment & Heritage should be contacted and permission sought for the *Tharawal Local Aboriginal Land Council* and the *Cubbitch Barta Native Title Claimants Aboriginal Corporation* to record/salvage these items.	Environment & Safety Officer All personnel

4.17.1 Aboriginal Heritage Activities

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

During this reporting period AGL began a review of its current Aboriginal Cultural Heritage Management Plan for the CGP, this predominately involved an update of the document to reflect amended agency names. This plan is proposed to be completed during the next reporting period.

4.17.2 Aboriginal Heritage Management Performance / Trends

There were no activities associated with aboriginal heritage and therefore no reportable incidents or community complaints recorded.

4.18 European Heritage

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 and reproduced in Table 4-22.

Table 4-22: Management Strategies - European Heritage

Activity	Action	Area		Responsibility
		RPGP	Field	
Pre-Activity	Select locations of wells, access roads and gas gathering lines to avoid items of heritage significance where possible by redesign or relocation of proposed infrastructure and/ or activities.		✓	Field Environment and Safety Officer
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.	✓	✓	Field Environment and Safety Officer/Gas Plant Manager
Construction, Operation, Rehabilitation	Maintain existing vegetation which provides screening of works and minimise removal of vegetation where possible.		✓	Field Environment and Safety Officer
Construction, Operation, Rehabilitation	Implement the recommendations of heritage assessments, where relevant.	✓	✓	Field Environment and Safety Officer/Gas Plant 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, and an archaeologist from the NSW Heritage Office is to be contacted, and an appropriate course of action implemented.	✓	✓	Field Environment and Safety Officer/Gas Plant Manager/Land and Compliance Officer

4.18.1 European Heritage Activities

No European Heritage Activities were carried out by AGL during the 2011-2012 reporting period.

4.18.2 European Heritage Management Performance/ Trends

No activities associated with cultural heritage were undertaken for this period with no reportable incidents or community complaints recorded.

4.19 Spontaneous Combustion

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

4.20 Bushfire

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 so as 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 the flare pond containing water.

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 and are reproduced in Table 4-23.

Table 4-23: Management Strategies – Bushfire

Activity	Management Strategies	Responsibility
Planning	The induction program shall inform personnel of the required bushfire management procedures. AGL shall maintain regular liaison with local emergency services organisations. Regular liaison with landholders shall be conducted regarding the nature and schedule of operational activities.	Environment & Safety Officer
Operations	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. All vehicles shall carry fire extinguishers. All machinery shall be maintained and operated to comply with relevant fire safety standards. Defective machinery shall be shut down until the defect is rectified and the machine made safe for operations. The event of a fire shall be limited through the employment of fire prevention mechanisms.	Environment & Safety Officer All personnel

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

4.21 Mine Subsidence

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

4.22 Hydrocarbon Contamination

Spills of fuel, oil or chemicals 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; 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. Some of these measures are summarised in Table 4-24.

Table 4-24: Management Strategies - Hydrocarbon Contamination

Activity	Management Strategies	Responsibility
Planning	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. The workforce induction program shall inform site personnel of the required spill prevention and response procedures.	Environment & Safety Officer
Operations	All fuel, oils and chemicals shall be stored and handled in accordance with Australian Standards. Spills shall be stopped at source as soon as practicable. Spilt material shall be contained to the smallest possible area. Spilt material shall be recovered as soon as possible, using appropriate equipment. Contaminated soil, or spill recovery materials (such as kitty litter and absorbent pads) shall be disposed of at appropriately licensed facilities. Spill response equipment shall be maintained on-site and replaced as required. Containment and recovery equipment shall include, but not be limited to absorbent materials (for example, pads and straw bales), shovels and sand bag sacks and protective clothing (for example, gloves, overalls, and boots).	Environment & Safety Officer All personnel

During the reporting period, there were a limited number of hazards reported relating to very minor hydrocarbon spills and leaks. All spills and leaks were of minor non-reportable quantity and cleaned up immediately to prevent offsite impact.

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

4.23 Methane Drainage / Ventilation

Methane drainage is the process employed to recover Coal Seam Gas (CSG) for production. As such, it represents AGL's core business and is detailed under production.

4.24 Public Safety

Public safety is assured through compliance with:

- Operational Protocols;
- Traffic Management Plans; and
- Site and Infrastructure Security.

One public safety related incident was recorded during the reporting period. On the 30th January 2012 a private drilling contractor was installing communication utility lines without completing a 'Dial before you dig'. The contractor accidently punctured one of AGL's CGP underground low pressure gas gathering pipelines on a private property located at Glenlee.

The drilling contractor was not engaged by AGL in anyway and was carrying out underground directional drilling (also called "underbore") adjacent to AGL's underground gas pipeline for telecommunication purposes when the incident occurred.

The incident was informed to AGL by the drilling contractor via the 24hr/7day public information telephone number. The incident was confirmed through a flow rate alarm activated at the RPGP and the SCADA System was then utilised to review gas well production trends and identify the general field location of where the incident may have occurred. The approximate location of the incident was established and AGL field production personnel were sent to the Glenlee field to confirm the precise location of the incident. All necessary wells were shut in and the damaged section of GGL was isolated.

AGL's Emergency Response Plan was immediately engaged to minimise the quantity of gas released. Based on gas flow rates at this time AGL estimated that 95GJ (2602m^3) of gas was vented to the atmosphere during this period.

The appropriate entities were promptly notified by AGL of the incident.

There were no other public safety related reportable incidents or community complaints recorded during the reporting period.

4.25 Safety and Risk Management

4.25.1 Safety and Risk Management Monitoring Requirement

The monitoring requirements for incident reporting, required of the Development Application approval conditions, are outlined in Table 4-25.

Table 4-25: Incident Reporting Monitoring Requirements

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

PA 06_0137, PA 06_0138 & PA 06_0291
Schedule 4. Clause 2 Within 7 days of detecting an exceedance of the goals/limits/performance criteria in this approval or an incident causing (or threatening to cause) material harm to the environment; the Proponent shall report the exceedance/incident to the Department (and any relevant agency). The report shall: (a) describe the date, time, and nature of the exceedance/incident; (b) identify the cause (or likely cause) of the exceedance/incident; (c) describe what action has been taken to date; and (d) Describe the proposed measures to address the exceedance/incident.

4.25.2 Incident Reporting

For the previous reporting period an incident was reported in relation to the Sugarloaf 3 well site which occurred on 17 May 2011. The incident was reported to the EPA (formerly OEH), DTIRIS, the Sydney Catchment Authority (SCA), DoPI (landowner), and the Broughton Anglican College (adjoining neighbour). AGL received a letter of warning from the EPA (formerly OEH), dated 4th August 2011, in relation to the incident, which was within this reporting period. The event was not within this AEPR reporting period.

Upon the EPA's (formerly OEH) review of the information provided and the circumstances surrounding the incident a formal warning was determined to be the appropriate regulatory response and was received by AGL during this reporting period.

During this reporting period there was an incident that occurred at AGL's Spring Farm 09 (SF09) well site. The release of produced water at SF09 occurred after hours on the 13 November 2011, while the well was shut in for a well workover. At the time of the incident no onsite activities were being undertaken and the site was under the supervision of a security guard.

The security guard reported this incident to AGL, and the on-call field operator was immediately sent to site to assess the incident. Water was observed to be leaking from the BOP.

AGL estimate that no more than 1000 litres of water leaked onto the well site and that all of this water was contained to the well site shale pad. The water had an electrical conductivity of approximately 8,500uS/cm and pH of approximately 8.9 which is typical of produced water from the coal seam.

Although the incident caused no harm to the environment or would have any further impacts to the surrounds, AGL reported the incident to each of the EPA, the DTIRIS, and the Camden Community Consultative Committee.

A number of corrective actions have been fully implemented to prevent this incident from reoccurring.

4.26 Environmental Training

During the reporting period, staff, were provided with internal and external environmental training in or the following;

- Incident Management Response Presentation (October 2011) – Presented by FreeHills Australian-based international law Firm;
- NSW Environmental Law Update (November 2011) – Presented internally by AGL Staff; and
- NSW Planning Regime Workshop (October 2011) – Presented internally by AGL Staff.

5 Rehabilitation

5.1 Rehabilitation Overview

All 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 all surface infrastructure will be removed prior to full site restoration being undertaken.

The management objectives for rehabilitation are to:

- Minimise potential for soil erosion and sedimentation;
- Minimise impact on existing drainage patterns;
- Minimise weed establishment;
- Restore fauna habitats;
- Minimise the visual impact of the well site; and
- Minimise adverse impacts of the well site on other existing land use.

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 Table 5-1.

Table 5-1: 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.	Field 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).	Field Environment and Safety Officer / Gas Plant Supervisor/ Land & Compliance Officer
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.	Field Environment and Safety Officer/ Project Manager
Initial Rehabilitation	All waste materials and equipment shall be removed from the area once backfilling and tie-ins are completed. 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. Waste management shall be implemented to avoid attracting vertebrate pests (see Waste Management Sub Plan). Sediment control measures shall be implemented where necessary to prevent erosion and water	Field Environment and Safety Officer/ Project Manager

Activity	Action	Responsibility
	contamination. (See Soil and Water Management Sub Plan). Areas to be rehabilitated shall be graded to reinstate pre-existing surface contours and natural drainage patterns. All fences which were cut and replaced by gates during operations shall be repaired to at least the equivalent pre-operations condition, unless permanent gates or other arrangements are agreed with the landholder. Initial rehabilitation of the well construction compound and gas gathering lines is to be consistent with the established character of surrounding land. All flagging and bunting installed for environmental or safety reasons shall be removed.	
Stockpiles	Cleared vegetation shall be stockpiled separately for subsequent re-spreading within the compound during site rehabilitation (See Soil and Water Management Sub Plan). Disturbed areas shall be progressively rehabilitated as soon as practicable.	Field Environment and Safety Officer/ Project Manager
Construction - Weeds and Pathogens **Cleaning** **Introduced Pest Species**	On first (and subsequent) entry to the District and prior to entering the construction area all vehicles, equipment and portable infrastructure shall be washed by air or water or demonstrated they are clean (namely, certificate/or other document to show they have been cleaned down), prior to coming to site. This shall be done prior to mobilisation to site. Cleaning 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. Wash down by air or water of a vehicle and/or portable equipment shall be supervised by trained personnel and the vehicles details shall be recorded in a vehicle wash down register to be maintained by the Drilling Contractor. All vehicles shall be certified and registered as clean, before they shall be permitted access to the well site area. Topsoil and vegetation material shall be re-spread in the immediate vicinity of the area of origin to limit the potential spread of weeds and pathogens. All plant and equipment shall be inspected and be free of invertebrates and pest species prior to coming on site. Waste management shall be implemented to avoid attracting vertebrate pests (see Waste Management Sub Plan).	Field Environment and Safety Officer/ Project Manager
Weed control and monitoring	The well site, restored access tracks and gathering line routes shall be inspected for 12 months following the completion of rehabilitation, for evidence of soil settlement, weeds and pest animals. Active weed control shall be required at sites identified as infested for at least one year after construction. Additional appropriate control measures shall be utilised after this time, on the basis of monitoring results. Herbicides are to be used to kill noxious weeds. Drift,	Field Environment and Safety Officer/ Land and Compliance Officer/ Project Manager

Activity	Action	Responsibility
	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.	
Final Rehabilitation	For each property a rehabilitation plan shall be developed to include requirements for reseeding and fertiliser as approved by the landholder. 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. Earthworks, vegetation clearing and soil disturbance would be limited to the construction and operational footprint as appropriate. Existing vegetation will be maintained wherever possible. If removal of the gas gathering system is required, the excavated trench would be backfilled and rehabilitated, including contouring and revegetation. Revegetation is to be undertaken as soon as works are complete. Revegetating would include broadcast of seed and on-going maintenance and monitoring activities. All private tracks used during operations will be returned to their pre-operations state, or to a condition agreed by the landholder.	Field Environment and Safety Officer/ Land and Compliance Officer/ Project Manager

5.1.1 Rehabilitation of Disturbed Land

Specific rehabilitation activities associated with the Project may be subdivided into three main components:

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

Progressive rehabilitation is an on-going management practice for all areas impacted by the Project. Table 5-2 shows a summary of the rehabilitation works completed since the project was commenced.

Table 5-2: 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	39	33	6	0	1	30	5*
2	5	5	0	0	0	1.5	0
4	94	91	2	1	0	66.6	0.3*
5	5	5	0	0	0	0	0.1

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)
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.

Table 5-3 summarises the rehabilitation works that were completed during the reporting period.

Table 5-3: Rehabilitation works completed for 2011/12

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	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0
4	1	4	0	0	0	0	0
5	0	5	0	0	0	0	0.1
6	0	0	0	0	0	0	0

Rehabilitation during this reporting period consisted of:

- Final rehabilitation of the EM 26 holding dam;
- Rehabilitation of KP06 well site;
- Rehabilitation of the MP22 (MP11 and MP22 wells), MP23 (MP12 and MP23 wells) and MP03 well surface locations (MP01, MP02, MP03, MP09, MP10 wells); and
- Rehabilitation of the MP03 GGL's.

5.1.2 Well Sites

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

Long-term operation of the wells requires the retention of a cleared area around each wellhead. The cleared area beyond this point required during drilling and construction has been rehabilitated in the following manner:

- Any remaining debris or equipment removed;
- All sumps utilised during drilling operations backfilled to natural surface level with the retained subsoil;
- Any tracks or hardstand areas, or areas of compacted ground not required for on-going use ripped. Fences have been retained at the landholder's discretion;
- Wherever recoverable, stockpiled topsoil has been re-spread across the surface; and
- Consultation is undertaken with the landholder to determine what seed is used for revegetation.

Upon depletion of the field, the wells will be plugged and abandoned in accordance with the requirements of the DTIRIS and all surface structures removed.

All wellhead assembly and near surface casing to a depth of approximately 1 metre will be removed, backfilled and rehabilitated. The cleared area around each wellhead will be lightly ripped and be returned to the landholder for pastoral use or be revegetated with broadcast seed of compatible species to the surrounding dominant species.

Rehabilitation of the CGP works has been progressed as each field develops. This process has been accelerated by the use of impervious plastic liners in all drill pits. The removal of waters is quicker and there is no need to wait for desiccation.

5.1.3 Gas Gathering System

Rehabilitation of the gas gathering system occurs at the time of construction. The rehabilitation of the area disturbed consisted of the following steps:

- Placement of retained subsoil into the trench;
- Spreading of retained topsoil across the disturbed working area;
- Where the surrounding land use was pasture, consultation with the landowner was undertaken to determine what, if any, cover crop would be required;
- Where the previous land use was an access track or fence line, revegetation was limited to areas beyond the track that were disturbed during the construction. Where the route crossed fences or roads / tracks, they were repaired and re-instated; and
- Where clearing of vegetation had occurred, felled material was redistributed over the rehabilitated area.

Whilst the gas gathering system is operating, external specialist consultants are engaged to undertake annual gas leakage audits of the entire gas gathering system network to a sensitivity of 10ppm to ensure that the gas gathering system is operating without leaks.

Upon depletion of the field and the completion of the Project, 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 in position for future beneficial use and to prevent further disturbance. This method is subject to consultation with the landowner.

It is considered that removal of the buried component of the gas gathering system would be counterproductive and result in an unnecessary disruption to the environment and local community.

Should removal of the gas gathering system be required, the excavated trench would be backfilled and rehabilitated, including contouring and revegetating.

5.1.4 Buildings and Auxiliary Facilities

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

5.1.5 Other Infrastructure

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

5.2 Rehabilitation Trials and Research

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

During this reporting period, AGL undertook one Research and Development Project (R&D Project) that investigated an efficient manner of processing drill fines from the EM26 water storage pit for transport and disposal as waste or for recycling.

Historically the pit was utilised as part of management of drill fluids and produced water within the CGP. When the pit was emptied during the previous reporting period, it was identified that approximately 900 cubic metres of drill fines had accumulated at the bottom of the pit and was too wet for solid waste transport.

AGL has since spent the time to design and develop a Research and Development Project (R&D Project) that investigates new environmentally-friendly methods to remove the liquid-laden drill fines from the pit, to treat the liquid laden drill fines to create spadable products for safe transport offsite for recycling or disposal.

This involved the trialling and testing mixtures of various products with drill fines to produce spadable discharge for recycling. AGL has not previously undertaken this type of waste processing treatment and this project represents the development of new processes and knowledge.

5.3 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 all 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.

5.4 Rehabilitation Activities Proposed in Next AEPR Period

The following Table 5-4 outlines rehabilitation works proposed for 2012/13 by PPL.

Table 5-4: Rehabilitation works proposed for 2012/13

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	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
4	1	2	0	0	0	0	0

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)
5	0	0	0	0	0	1	0
6	0	0	0	0	0	0	0

Rehabilitation activities proposed during the next AEPR period include:

- Rehabilitation of the SF20 well surface location (SF05, SF07, SF08, SF09 wells); Rehabilitation of proposed well site MP25; and
- Rehabilitation of the MP03 GGL's (to be constructed in 2012/13).

5.5 Further Improvements

Over the forthcoming reporting period, AGL will continue to develop the CGP to ensure that all areas of operations strive to advance and work in accordance with the CGP EMS and AGL's *Life Guard* system, a Health, Safety and Environment Management System based on ISO 14001: 2004.

AGL proposes to update the existing EMP and associated documents during the next reporting period.

5.6 Closure 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.

6 Project Commitments Register

During the reporting period, AGL maintained the electronic compliance tracking database, Mipela, which includes a register of all Project Approval Conditions with an on-going monitoring or reporting requirement. Email reminders are automatically generated and sent to persons responsible prior to the due date. Following completion of the monitoring / reporting requirement, actions completed are logged. Reports can be generated indicating status of actions. This new system has allowed management to better track the status of compliance with the requirements of Project Approval Conditions.

7 Stakeholder Engagement

This Section of the AEPR discusses community relation issues, including environmental complaints and actions from the Community Consultation Committee.

7.1 Environmental Complaints

7.1.1 Stakeholder Management

A complaint handling procedure has been set in place for the CGP operations. AGL has a 24 hour contact telephone number which allows the community to raise any issues or concerns that relate to the operations of the Project.

The details of this are included on signs at all property entries and well site compounds as well as on notifications to landowners.

All complaints are entered into a complaints database whereupon AGL staff 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.

7.1.2 Complaints Register Requirements

This section provides a summary of the environmental complaints received and management actions taken to address any issues. The requirement for a complaints register to be maintained and complaints action's is outlined in the following Development Consents as well as the EPL 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 75-4-2004 Schedule 2, Clause 59.

The requirements detailed in the above Development Consents correlate 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 be 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 EPA or the Director-General upon request. The Applicant shall also make 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.

7.1.3 Summary of Environmental Complaints

Two community complaints regarding environmental concerns were received during this reporting period. One complaint was received directly by AGL and one complaint was received via the EPA complaints line.

Table 7-1: Environmental Complaint Details

Complaint	Date	Action Taken
A Menangle Park resident approach the Supervisor of ITAC (AGL's Rig Movement Contractors) to make a complaint in relation to the noise generated by the movement of trucks between the hours of 1am and 6am at the Menangle Park entry to MP22's site.	August 2011	The ITAC Supervisor informed the resident, at the time of the complaint, that movement of the drilling rig was undertaken during these hours due to a RMS (previously RTA) road restriction (permit) for wider roads. The neighbor understood and requested that noise be kept to a minimum. The Supervisor also advised that it was the last night that the movements were occurring. Rig movement was continued until successful.
A resident near the MP22 site contacted AGL on their complaints line and left a voicemail. His voicemail was to notify AGL that there was significant dust on the access road to both MP22 and MP12 well sites and that there was no sufficient dust suppression being undertaken. He also notified AGL that he would be lodging a formal complaint via the EPA Complaints Line. The resident lodged a complaint via the EPA complaints line also.	September 2011	The Environmental Officer was immediately notified and arranged a water truck to act immediately upon the dust suppression. The truck arrived onsite shortly after notification. And continued dust suppression for the remainder of the dust causing activities. AGL also notified the employees and contractor's onsite to be mindful of vehicle movements, speed and dust generated on that access track and to work with the water truck to ensure sufficient watering was taking place throughout the day. The road surface was also upgraded to reduce dust.

7.1.4 Complaint Trend

The number of complaints received in 2011/12 has decreased in comparison with the previous reporting period where five environmental complaints were received.

7.2 Community Consultative Committee

7.2.1 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 171-7-2005 Schedule 4, Clause 11;
- 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 correlate with only minor differences in wording between the different approval documents.

In summary the Development Consents require that a Community Consultative Committee 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.

7.3 Community Liaison

AGL has pro-actively engaged the community, in order to keep residents informed of the CGP, and ensure that community interests are 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
- Distributing community consultation material to the local council offices.

A great deal of consultation has taken place in person directly with each landowner. This has ensured that their interests can be quickly understood and specifically addressed.

The CCC was formed in early 2003, as a forum to oversee the environmental performance of the CGP.

The committee consists of:

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

It is noted that the Development Consent Conditions require two representatives from a recognised environment group. These positions were vacant during the last reporting period and part of this reporting period.

In January 2012 two new community members were approved by the DoPI and appointed to the CCC.

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

7.3.1 Community Consultation

7.3.2 Community Consultative Committee (CCC)

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

- No. 30: 29 September, 2011;
- No. 31: 16 February, 2012;
- No. 32: 17 May, 2012; and
- No.32E: 28 June, 2012.

All CCC meeting minutes are available from the CGP project website.

http://www.agk.com.au/camden/index.php/community-matters/

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 7-2: CCC Meeting Action Items (1 July 2011 to 30 June 2012)

Action Item	Responsible	Status
Meeting 30 - 29 September 2011		
AGL to send copy of SL03 report to CCC member on CD	AGL	Complete
AGL to find source of information provided on water study and confirm to CCC member	AGL	Complete
Chairperson to see if DoP could attend a future CCC meeting	Chairperson	Complete
AGL to seek and provide confirmation if fracture stimulation moratorium applies to all existing projects, or new ones.	AGL	Complete
CCC member to provide copy of report on groundwater	CCC member	Complete

Action Item	Responsible	Status
monitoring technology to AGL		
AGL to seek information on previous exploration well near Varoville House and review, and where possible provide approved information to CCC member	AGL	Complete
AGL to prepare presentation materials for distribution at the start of CCC meetings	AGL	Complete
Chairperson to circulate further information regarding Hunter CCC proposed visit to Camden	Chairperson	Complete
Meeting 31 - 16 February 2012		
AGL to seek clarification regarding statement within Phase 1 Groundwater Report	AGL	Complete
AGL and CCC to seek further information regarding previous exploration well near Varoville House	AGL/ CCC member	Complete
AGL to provide summary of the current methods AGL use to report incidents to the community	AGL	Complete
Meeting 32 - 17 May 2012		
Chairperson to follow up if informal response can be provided from the DTIRIS	Chairperson	Complete
AGL to provide an update at the future CCC meetings to all members to provide the current well information for the Camden Project.	AGL	Complete
A glossary of acronyms to be provided by AGL with each set of minutes.	AGL	Complete
EPA to provide link with definition of a reportable incident to AGL to distribute with minutes	AGL/ EPA	Complete
AGL extended an invitation to all CCC members to the next Camden Open Day on Saturday 26 May. Members to provide names and emails of any parties who may be interested in attending future Open Days.	AGL/ CCC	Complete
AGL to provide a presentation at a future meeting, on what AGL is providing to Windsor for water, including the process involved, any water that has been rejected, and what testing is undertaken.	AGL	Incomplete (scheduled for 1st quarterly meeting 2013)
AGL to distribute link to CSIRO groundwater report on the Camden website with minutes	AGL	Complete
AGL to distribute legislative changes to requirements to notify pollution incidents, prepare PIRMP and publish monitoring results with minutes	AGL	Complete
AGL to distribute numerous industry reports with minutes	AGL	Complete
Meeting 32E - 28 June 2012		
AGL to send DoPI confirmation that no final decision has been made on the boundaries for the Southern Highlands SRLUP (in response to query by CCC member at previous meeting) with minutes	AGL	Complete
GL to send viewable maps with minutes	AGL	Complete
Chairperson to write letter to DoPI re future project modifications. AGL will make all modifications public, by website, submissions and any requirement for public exhibition.	AGL/ Chairperson	Complete

7.3.3 Other Consultation

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

- Public Information Stand at the Campbelltown Show (September 2011);
- Public Information Stand at the Camden Show (March 2012);
- Letter drops to affected residents regarding the flaring operations at MP03 Well (May 2012);
- Councillors of Camden Council were briefed on the CGP and developments (May 2012);
- AGL's Camden Website updated is regularly http://agk.com.au/camden/index.php/news/
- Advertorials placed in the Macarthur Chronicle and Camden Advisor to update the community on the project, emissions monitoring and general operations update;
- Discussions between AGL and the EPA in relation to the re-issue of the EPL 12003 for the RPGP in 2012;
- The RPGP Environment Protection Licence No. 12003 was re-issued (February 2012) after consultation between EPA and AGL; and
- On-going consultation with stakeholders regarding the CGP North expansion.

7.4 Audits and Visits

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

- Camden Council staff were briefed on the CGP developments and a site visit of the Spring Farm producing wells with Camden Council (April 2012);
- Project Open Days for the CGP were held for the Community in November 2011, March 2012 and May 2012;
- Hunter CCC visited the CGP (November 2011);
- EPA site visit of RPGP and production well facilities; and
- DTIRIS site visits to workover rig and rehabilitated core hole site.

8 Summary of Environmental Non-Compliance Issues and Actions

8.1 Identification of Environmental Non Compliance Issues

It is a requirement to include in the AEPR a review of the requirements of the Environmental Standards (listed in Section 2.1 of this AEPR). AGL reviews the requirements of Environmental Standards through the following process:

- Review during Annual Return process; and
- Independent Audit every two years.

8.1.1 Annual return

Non-conformances with the site's Environment Protection Licence are reported in the Annual Return to EPA. The EPL Licence 12003 Annual Return for the period 22/12/10 to 21/12/11 was submitted in February 2012. There was one non-conformance reported within this Annual Return (2010-2011) for an incident that occurred within the previous AEPR reporting period at the Sugarloaf Well Site (SL03). This incident was non-compliant with the Licence condition O2 and is outline above in Section 4.25.2

Non-compliance in relation to *Licence Requirement M2.3* was not reported within the recently submitted 2010-2011 Annual Return. Following this Annual Return's submission it was identified that the Annual Return 2010-2011 was erroneous. The Annual Return should have reported that *Condition M2.3* of Environmental Protection Licence 12003, which requires continuous monitoring of NOx, temperature, flow rate, moisture and oxygen at Points 1, 2 and 3, was not complied with. This non-compliance was identified by senior management following an internal review of operational procedures and upon discovery, AGL immediately notified the EPA. Further details are outlined in Section 4 under subheading *Rosalind Park Gas Plant – Continuous Monitoring*.

8.1.2 Non-Compliances Identified During Independent Environmental Audit

An Independent Environmental Audit was undertaken by URS in August 2008. The next biennial independent environmental audit (2010) for the period of 1 July 2008 and 30 June 2010 was commenced in January 2011, and the audit report was issued in August 2011.

Non-conformances identified during the 2010 independent environmental audit are listed in Table 4-1 above along with the status of the implementation of the actions to address any incidences of non-compliance.

8.1.3 Non Compliances Identified during this AEPR's Preparation

It has been noted during the preparation of this AEPR that a number of development consents have been outstanding as non-compliant for the previous two independent audits.

The following table provides a summarised review of the relevant non-complying development conditions of consent that have been identified in the last two remaining biennial Independent audits, and at the time of this AEPR remain outstanding or require further action or proof of enactment.

Table 8-1: Trend of outstanding non-compliances identified in the Independent Audit Reviews for 2008 and 2010.

Non Compliance CoC No. Reference	Summary of General CoC Requirement	Recommended Action or Comment	Status of Actions (July 2012)
Approved Development Applications			
DA282-6-2003i, Sch 3 Condition 16 **DA183-8-2004i, Sch 2 Condition 7** **DA9-1-2005, Sch 2 Condition 8** **DA75-4-2005, Sch 2 Condition 14**	The Applicant shall provide Camden Council, Campbelltown City Council and Wollondilly Shire Council with the wellhead configurations of each gas well within two months of the gas well being completed or two months from the date of the consent, whichever is the later.	It is recommended that well head configurations be compiled for new and existing wells and provided to local councils and records of transaction be retained.	On-going AGL to provide this information to Local Councils. AGL will obtain records of transactions and keep on file in the future.
DA282-6-2003i, Sch 3 Condition 17 **DA183-8-2004i, Sch 2 Condition 8** **DA9-1-2005, Sch 2 Condition 9** **DA75-4-2005, Sch 2 Condition 15**	The Applicant shall provide written notification to the Director-General that it has fulfilled the requirements of the above two conditions (DA282-6-2003i Conditions 15 and 16) or (DA183-8-2004i Conditions 6 and 7) or (DA9-1-2005 Conditions 7 and 8) or ((DA9-1-2005 Conditions 13 and 14), within two weeks of the information being provided to the Councils.	It is recommended that written notification is provided to the DoPI upon completion of the requirements of the above two conditions.	On-going AGL to provide this information to the Director General (DG).
Project Approvals			
PA06_0137, Sch 2 Condition 8 **PA06_0138, Sch 2 Condition 8**	NOTIFICATION Within 3 months of the commissioning of the wells, the Proponent shall provide Council with: a) the Geographical Positioning System (GPS) co-ordinates and digital survey data for the gas well sites and gas	It is recommended that GPS coordinates and digital survey data is compiled with well head configurations for new and existing wells and provided to local councils and records of transaction be retained.	GPS details and digital survey data was provided to each of the three local councils in November 2011. Wellhead configurations have not yet been provided.

Non Compliance CoC No. Reference	Summary of General CoC Requirement	Recommended Action or Comment	Status of Actions (July 2012)
PA06_0291, Sch 2 Condition 13	gathering system, in a format suitable to the Council; and b) the wellhead configuration of each gas well. PA06_0291 also states: The Proponent shall provide a copy of this information to the landowner on request.		

Appendix A - 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

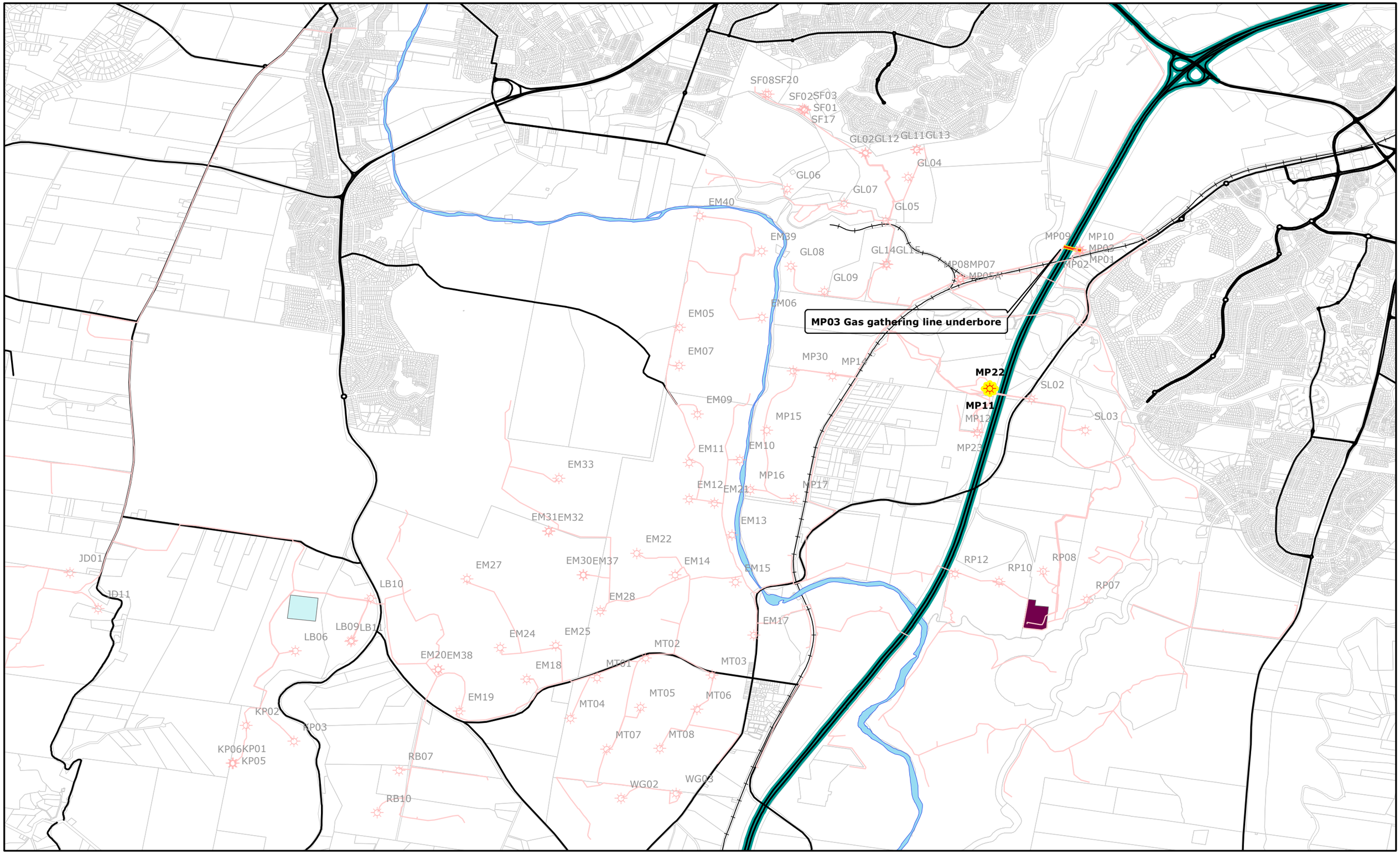
Area	Well Numbers	Property Lot Number	Deposited Plan No.	DA No.
	Rosalind Park Gas Plant	PT35	230946	282-6-2003i (Mod 2 May 2007)
	Gas gathering system	2 & 3 PT35 58	622362 230946 632328	282-6-2003i (Mod 26 August 2004)
Sugarloaf	SL 01*, SL02, SL 03	2	842735	75-4-2005
	SL 04*, SL 06*, SL 07*	3	1007066	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 1 4 11 2 54	1081753 1007608 1007608 1081753 1076817 864754	PA 06_0291
Menangle Park	MP01 – 03, 09, 10 (MP03 site)	7	253700	PA 06_0291
	MP06*	2 X	790254 378264	
	MP11	2	737485	
	MP19*, MP22	8	249530	
	MP21*, MP12 &	1	598067	

Area	Well Numbers	Property Lot Number	Deposited Plan No.	DA No.
	MP23 (MP23 site)			
	MP04*	31	1100981	
	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 1 Menangle Road reserve 63 64 2 12 1001 1002	253700 790254 378264 19853 737485 249530 598067 584016 628052 253700 1100981 249530 249530 790254 253700 No.447 No. 475 236059 236059 249393 Between rail overpass and the Nepean River Bridge 1104486 1104486 842735 249530 734435 734436	PA 06_0291 (Mod 3 20 Apr 2011)

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

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

Appendix B – Camden Infrastructure Map for FY2011-2012



Energy in action.™

AGL

Author:	Upstream Gas
Date:	10/09/2012
Ref:	2790R1

Camden Infrastructure Map Construction Work completed 2011/12

Kilometres

0 1.25 2.5

Scale 1:40,000 @A3

Geocentric Datum of Australia 1994

Sources: AGL Energy Limited, MapData Sciences, SKM

Legend

- Wells
- Wells FY 2011/12
- Gathering Line
- Gathering Line FY 2011/12
- Hume Highway
- Public Roads
- Nepean River
- Railway
- Logan Brae Yard
- RPGP
- Property Boundaries

N

Appendix C - Bore Licences for Potentially Operational Gas Wells

Licence No.	Field	Local Well No.	Licence No.	Field	Local Well No.
10BL603867	EMAI	EM02	**10BL603953**	Logan Brae	LB09
10BL603868	EMAI	EM03	**10BL603954**	Logan Brae	LB11
10BL603869	EMAI	EM04	**10BL603955**	Mahon	MH01
10BL603870	EMAI	EM05	**10BL603956**	Menangle Park	MP05
10BL603871	EMAI	EM06	**10BL603957**	Menangle Park	MP07
10BL603872	EMAI	EM07	**10BL603958**	Menangle Park	MP08
10BL603873	EMAI	EM08	**10BL603959**	Menangle Park	MP13
10BL603874	EMAI	EM09	**10BL603960**	Menangle Park	MP14
10BL603875	EMAI	EM10	**10BL603961**	Menangle Park	MP15
10BL603876	EMAI	EM11	**10BL603962**	Menangle Park	MP16
10BL603877	EMAI	EM12	**10BL603963**	Menangle Park	MP17
10BL603878	EMAI	EM13	**10BL603964**	Menangle Park	MP30
10BL603881	EMAI	EM14	**10BL603965**	Mt Taurus	MT01
10BL603882	EMAI	EM15	**10BL603976**	Mt Taurus	MT02
10BL603883	EMAI	EM16	**10BL603978**	Mt Taurus	MT03
10BL603884	EMAI	EM17	**10BL603981**	Mt Taurus	MT04
10BL603885	EMAI	EM18	**10BL603989**	Mt Taurus	MT05
10BL603886	EMAI	EM19	**10BL603990**	Mt Taurus	MT06
10BL603887	EMAI	EM20	**10BL603991**	Mt Taurus	MT07
10BL603888	EMAI	EM21	**10BL603992**	Mt Taurus	MT08
10BL603889	EMAI	EM22	**10BL603993**	Mt Taurus	MT09
10BL603890	EMAI	EM23	**10BL603994**	Mt Taurus	MT10
10BL603891	EMAI	EM24	**10BL604007**	Razorback	RB06
10BL603892	EMAI	EM25	**10BL604008**	Razorback	RB07
10BL603893	EMAI	EM27	**10BL604009**	Razorback	RB08
10BL603897	EMAI	EM28	**10BL604010**	Razorback	RB09
10BL603898	EMAI	EM30	**10BL604011**	Razorback	RB10
10BL603899	EMAI	EM31	**10BL604012**	Razorback	RB11
10BL603900	EMAI	EM32	**10BL604013**	Razorback	RB12
10BL603901	EMAI	EM33	**10BL604014**	Rosalind Park	RP02
10BL603902	EMAI	EM34	**10BL604015**	Rosalind Park	RP07
10BL603903	EMAI	EM37	**10BL604016**	Rosalind Park	RP08
10BL603905	EMAI	EM39	**10BL604017**	Rosalind Park	RP09
10BL603906	EMAI	EM40	**10BL604031**	Rosalind Park	RP10

10BL603911	Glenlee	GL02
10BL603912	Glenlee	GL04
10BL603913	Glenlee	GL05
10BL603914	Glenlee	GL06
10BL603915	Glenlee	GL07
10BL603917	Glenlee	GL08
10BL603918	Glenlee	GL09
10BL603919	Glenlee	GL10
10BL603920	Glenlee	GL11
10BL603921	Glenlee	GL12
10BL603922	Glenlee	GL13
10BL603924	Glenlee	GL14
10BL603925	Glenlee	GL15
10BL603926	Glenlee	GL16
10BL603927	Glenlee	GL17
10BL603928	Johndilo	JD01
10BL603929	Johndilo	JD04
10BL603930	Johndilo	JD05
10BL603931	Johndilo	JD06
10BL603932	Johndilo	JD07A
10BL603933	Johndilo	JD11
10BL603934	Joe Stanley	JS01
10BL603935	Joe Stanley	JS03
10BL603936	Joe Stanley	JS04
10BL603937	Kay Park	KP01
10BL603938	Kay Park	KP02
10BL603939	Kay Park	KP03
10BL603940	Kay Park	KP05
10BL603941	Logan Brae	LB05
10BL603942	Logan Brae	LB06
10BL603952	Logan Brae	LB07

Key

	Proposed well as at 30 June 2012
	Duplicate licence
	Plugged and abandoned well
#	Pad location only

10BL604032	Rosalind Park	RP12
10BL604033	Spring Farm	SF01
10BL604034	Spring Farm	SF02
10BL604035	Spring Farm	SF03
10BL604036	Spring Farm	SF17 #
10BL604037	Sugarloaf	SL02
10BL604038	Sugarloaf	SL03
10BL604039	Sugarloaf	SL09
10BL604040	Wandinong	WG01
10BL604041	Wandinong	WG02
10BL604042	Wandinong	WG03
10BL604043	Wandinong	WG04
10BL604044	Wandinong	WG05
10BL604045	Wandinong	WG06
10BL604131	EMAI	EM38
10BL604582	Menangle Park	MP10
10BL604597	Kay Park	KP06
10BL604623	Menangle Park	MP01
10BL604624	Menangle Park	MP02
10BL604625	Menangle Park	MP03
10BL604626	Menangle Park	MP09
10BL604672	Menangle Park	MP11
10BL604673	Menangle Park	MP22
10BL604888	Menangle Park	MP25
10BL604877	Menangle Park	MP18
10BL604876	Menangle Park	MP33
10BL604874	Menangle Park	MP24
10BL604881	Spring Farm	SF01
10BL604882	Spring Farm	SF02
10BL604883	Spring Farm	SF03
10BL604884	Spring Farm	SF05
10BL604885	Spring Farm	SF07
10BL604886	Spring Farm	SF08
10BL604887	Spring Farm	SF09
10BL604878	Menangle Park	MP05A
10BL604879	Menangle Park	MP12
10BL604880	Menangle Park	MP23

Appendix D - Air Quality Monitoring Results

8.1.4 Air Quality Monitoring Results – Rosalind Park Gas Plant (as reported for 2010-11 Annual Returns)

EPA Monitoring Point 1							
Pollutant	**Unit**	**No. of Samples Required**	**No. of Samples Collected**	**Lowest Sample**	**Mean of Samples**	**Highest Sample**	**Licence Limit**
Temperature	Degrees Celsius	4	4	334	342	348	N/A
Nitrogen Oxides	mg/m^3 @7%O_2	4	4	260	355	440	461
Sulphur Dioxide	mg/m^3	4	4	BLD*	BLD*	BLD*	7
Oxygen (O_2)	%	4	4	12.3	12.67	13.3	N/A
Volumetric Flow rate	m^3/s	4	4	2.4	2.85	3	N/A
Molecular Weight of Stack Gases	g/g-mole	4	4	29.3	29.4	29.6	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	4	0.012	0.178	0.49	5.0
Dry gas density	Kg/m^3	4	4	1.31	1.3125	1.32	N/A
Velocity	m/s	4	4	22	25.5	27	N/A
Moisture	%	4	4	8.3	11.8	14	N/A
Carbon Dioxide	%	4	4	4.3	5.15	6.0	N/A

*BLD: Below Limit of Detection

EPA Monitoring Point 2							
Pollutant	**Unit**	**No. of Samples Required**	**No. of Samples Collected***	**Lowest Sample**	**Mean of Samples**	**Highest Sample**	**Licence Limit**
Temperature	Degrees Celsius	4	3	313	395.33	465	N/A
Nitrogen Oxides	mg/m^3 @7%O_2	4	3	190	213.33	250	461
Sulphur Dioxide	mg/m^3	4	3	BLD*	BLD	BLD	7
Oxygen (O_2)	%	4	3	0.7	0.76	0.8	N/A
Volumetric Flow rate	m^3/s	4	3	0.57	0.82	0.99	N/A
Molecular Weight of Stack Gases	g/g-mole	4	3	29.9	29.96	30	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	3	0.039	0.216	0.49	5.0
Dry gas density	Kg/m^3	4	3	1.34	1.34	1.34	N/A
Velocity	m/s	4	3	15	20.66	27	N/A
Moisture	%	4	3	14	15	16	N/A
Carbon Dioxide	%	4	3	11.2	11.3	11.4	N/A

*BLD: Below Limit of Detection

Notes: Compressor 2 was not operational during the 2nd Quarter and therefore only 3 samples were analysed.

EPA Monitoring Point 3							
Pollutant	**Unit**	**No. of Samples Required**	**No. of Samples Collected***	**Lowest Sample**	**Mean of Samples**	**Highest Sample**	**Licence Limit**
Temperature	Degree Celsius	4	2	410	415.5	421	N/A
Nitrogen Oxides	mg/m^3 @7%O_2	4	2	150	160	170	461
Sulphur Dioxide	mg/m^3	4	2	BLD*	BLD	BLD	7
Oxygen (O_2)	%	4	2	0.5	0.6	0.7	N/A
Volumetric Flow rate	m^3/s	4	2	0.69	0.705	0.72	N/A
Molecular Weight of Stack Gases	g/g-mole	4	2	29.9	29.95	30	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	2	0.048	0.053	0.058	5.0
Dry gas density	Kg/m^3	4	2	1.33	1.335	1.34	N/A
Velocity	m/s	4	2	18	18	18	N/A
Moisture	%	4	2	13	14.5	16	N/A
Carbon Dioxide	%	4	2	11.1	11.25	11.4	N/A

*BLD: Below Limit of Detection

Notes: Compressor 3 was not operational during the 1st and 4th Quarters and therefore only 2 samples were analysed.

EPA Monitoring Point 4							
Pollutant	**Unit**	**No. of Samples Required**	**No. of Samples Collected**	**Lowest Sample**	**Mean of Samples**	**Highest Sample**	**Licence Limit**
Temperature	Degree Celsius	4	4	206	262.75	294	N/A
Nitrogen Oxides	mg/m^3 @7%0_2	4	4	100	107.5	110	110
Sulphur Dioxide	mg/m^3	4	4	BLD*	BLD	BLD	35
Oxygen (O_2)	%	4	4	13.5	13.8	14	N/A
Volumetric Flow rate	m^3/s	4	4	0.076	0.083	0.088	N/A
Molecular Weight of Stack Gases	g/g-mole	4	4	29.3	29.375	29.4	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	4	0.038	0.165	0.49	3.5
Dry gas density	Kg/m^3	4	4	1.31	1.31	1.31	N/A
Velocity	m/s	4	4	3	3.2	3.5	N/A
Moisture	%	4	4	3.5	4.175	5.6	N/A
Carbon Dioxide	%	4	4	4.3	4.4	4.6	N/A

*BLD: Below Limit of Detection

EPA Monitoring Point 5							
Pollutant	**Unit**	**No. of Samples Required**	**No. of Samples Collected**	**Lowest Sample**	**Mean of Samples**	**Highest Sample**	**Licence Limit**
Temperature	Degrees Celsius	4	4	88	91.75	98	N/A
Nitrogen Oxides	mg/m^3 @7%0_2	4	4	BLD	BLD	BLD	13
Sulphur Dioxide	mg/m^3	4	4	0.24	0.28	0.32	1042
Oxygen (O_2)	%	4	4	0.2	0.625	1.1	N/A
Volumetric Flow rate	m^3/s	4	4	0.0043	0.0046	0.005	N/A
Molecular Weight of Stack Gases	g/g-mole	4	4	29.8	29.9	30	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	4	0.42	1.4775	3.3	35
Dry gas density	Kg/m^3	4	4	1.33	1.335	1.34	N/A
Velocity	m/s	4	4	1.8	1.8	1.8	N/A
Moisture	%	4	4	53	61.25	69	N/A
Carbon Dioxide	%	4	4	10.5	11	11.6	N/A

*BLD: Below Limit of Detection

EPA Monitoring Point 6							
Pollutant	**Unit**	**No. of Samples Required**	**No. of Samples Collected**	**Lowest Sample**	**Mean of Samples**	**Highest Sample**	**Licence Limit**
Temperature	Degrees Celsius	4	4	18	25	30	N/A
Oxygen (O_2)	%	4	4	20.9	20.9	20.9	N/A
Volumetric Flow rate	m^3/s	4	4	0.13	0.145	0.15	N/A
Molecular Weight of Stack Gases	g/g-mole	4	4	29	29	29	N/A
Odour	ou	4	4	11	82.25	260	N/A
Dry gas density	Kg/m^3	4	4	1.29	1.29	1.29	N/A
Velocity	m/s	4	4	5.2	5.67	5.9	N/A
Moisture	%	4	4	0.43	0.902	1.5	N/A
Carbon Dioxide	%	4	4	BLD	BLD	BLD	N/A

*BLD: Below Limit of Detection

Appendix E - Assessable Pollutant Results – RPGP

8.1.5 Load Limits for Assessable Pollutants – RPGP

Assessable Pollutant	Assessable Load (kg)	Load Limit (kg)
Arsenic	0.00365	No limit stipulated
Benzene	14.117	47
Benzo(a) pyrene	0.01	0.27
Fine Particulates	391.75	460
Hydrogen Sulphide	0.342	1.6
Lead	0	No limit stipulated
Mercury	0.00003	No limit stipulated
Nitrogen Oxides	34,571	103,000
Nitrogen Oxides – summer	8,643	No limit stipulated
Sulphur Oxides	0.037	3,000
Volatile Organic Compounds	13	33,000
Volatile Organic Compounds - summer	3.28	No limit stipulated

Appendix F - Flare Event Monitoring

The RPGP flare log is provided in this Appendix from July 2011 to June 2012.

Date	Time	Duration (minutes)	Light (Day, Dusk, Night, Dawn)	No. Compressor on line	Cause of Flare Occurrence
12/03/2012	2335 hrs. - 0108 hrs.	93	Night	One	Blocked instrument transmitter causing plant shutdown and resulting in PLC fault.