Energy in action.

AGL

Annual Environmental Performance Report (AEPR)

Camden Gas Project

July 2010 to June 2011

Table of Contents

Tables

Figures

Appendices

Appendix A - Camden Gas Project Property Details

Appendix B - Bore Licences for Gas Wells

Appendix C - Air Quality Monitoring Results

Appendix D - Assessable Pollutant Results – RPGP

Appendix E - Flare Event Monitoring

Abbreviations

Abbreviation	Description
AEMR	Annual Environmental Management Report
AEPR	Annual Environmental Performance Report
ANZECC	Australia and New Zealand Environment and Conservation Council
APPEA	Australian Petroleum Production and Exploration Association
CBNTAC	Cubbitch Barta Native Title Claimants Aboriginal Corporation
CCC	Community Consultative Committee
CSG	Coal Seam Gas
DA	Development Application
DTIRIS	Department of Trade and Investment, Regional Infrastructure and Services (formerly DII Department of Industry and Investment – formerly DPI Department of Primary Industries)
DoPI	Department of Planning and Infrastructure
EECs	Endangered Ecological Communities
EIS	Environmental Impact Statement
EMAI	Elizabeth Macarthur Agricultural Institute
EMP	Environmental Management Plan
EMS	Environmental Management System
EPL	Environmental Protection Licence
GGL	Gas Gathering Line
LGA	Local Government Area
MSDS	Material Safety Data Sheet
OEH	Office of Environment and Heritage (formerly DECCW Department of Environment, Climate Change and Water)
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
SPE	Society of Petroleum Engineers
SEWPaC	Sustainability, Environment, Water, Populations and Communities (formerly DEWHA Department of Environment, Water, Heritage and the Arts)

Abbreviation	Description
AEMR	Annual Environmental Management Report
TLALC	Tharawal Local Aboriginal Land Council
VLMP	Vegetation and Landscape Management Plan

Executive Summary

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) (formerly Department of Industry and Investment (DII)) for the AGL Camden Gas Project located in the Camden, Campbelltown and Wollondilly Local Government Areas (LGAs) for the period July 2010 to June 2011.

Reporting Requirements

The purpose of the AEPR is to report in accordance with the projects 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; and
    - 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

During the reporting period the field development included the drilling of nine surface to in seam (SIS) wells within Menangle Park, one SIS well within Kay Park. These wells will be progressively connected to the gas gathering line (GGL) network feeding into the Rosalind Park Gas Plant (RPGP). AGL constructed and commissioned approximately 2km of GGL at Menangle Park this reporting period.

AGL was issued 136 Camden Gas Project bore licences from February 2011 to July 2011 by the NSW Office of Water.

The next stage for the Camden Gas Project is the Northern Expansion, to the north-east of the existing development area. This will involve the construction and operation of 12 additional well locations, gas gathering and water lines.

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 methane resource, and to a lesser extent vehicle

emissions. Other air emissions include potential dust emissions associated with construction activities and vehicle movements. No exceedances of any of the pollutant load limits were reported within the 2009/2010 Annual Return.

Erosion & Sediment Control
All activities associated with erosion and sediment control were compliant for the period with no community complaints or reportable incidents recorded.

Surface Water
The Camden Gas Project generates surface water from the following sources:

- Drill mud. A total of 233 KL of drill mud was taken to Worth Recycling
- Gas Plant water (condensed water from the methane gas and contains traces of hydrocarbons). This water flows through a wastewater treatment and separation plant at the RPGP. The treatment plant separates the oil from the water and the clean water is released into the flare pond on site.
- Grey water and septic tank water from the RPGP. A total of 360 KL was disposed to the Sewerage Treatment Plant by Theiss Services.

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

Groundwater Management
During the reporting period, ground water was produced from wells during dewatering, as well as during underboring activities for gas gathering line construction. The total volume of produced water has decreased from last year primarily due to the decrease in the number of wells being dewatered or which had drilling pits emptied and rehabilitated during this reporting period compared with the 2009/2010 reporting period.

It should be noted that 7022 KL of ground water was recycled by Worth Recycling in the 2010/11 reporting period. AGL is in the process of investigating alternative options for beneficial reuse of produced water.

In response to changes in water management legislation substantial monitoring and reporting conditions were placed on AGL's new bore licences issued from February 2011, including requirements for a management plan, higher level monitoring and the reporting of groundwater compliance. During this reporting period AGL has commenced a desk top groundwater-monitoring program to facilitate the future development of the Camden Gas Project.

Previous technical assessment of the groundwater regime has noted that the potential for contamination or depletion of shallow sandstone aquifers of the area, or cross-contamination between aquifers during the production life of a well, is extremely unlikely given the use and construction of gas production wells.

To further assess the groundwater situation within the project area AGL has developed a groundwater investigation and monitoring program in conjunction with Parsons Brinckerhoff (PB), a specialist environmental and engineering consultancy.

Phase 1, a desktop study of the Camden North Area (Phase 1 Groundwater assessment and conceptual hydrogeological model; Northern expansion of Camden Gas Project) was completed in February 2011. Its objective was to characterise the groundwater systems in the Camden north area, assess the value of groundwater resources, describe current monitoring activities and assess likely connectivity between aquifers and coal seams targeted for CSG extraction.

The study confirmed previous reports, finding that, based on available information, groundwater of the area is of limited use as bore yields are low and water quality is variable but typically poor, particularly

in the deep coal seams targeted. These attributes make the water (without blending or treatment) unsuitable for beneficial use. The study isolated four primary aquifers within the region and confirmed that claystone formations between these groundwater levels isolate the aquifers and impede the vertical flow of groundwater, further minimising the possibility of cross-contamination or depletion.

Phase 2 investigations within the northern expansion area are proposed in late 2011 to establish baseline conditions on water levels and quality, and formulate trend information to assist in the protection of shallow aquifers as new CSG wells are constructed. PB will begin drilling dedicated monitoring bores from September 2011 onwards.

AGL's compliance report was submitted to NSW Office of Water (NOW) on 24 August 2011, with AGL returning a nil impact result for the 2010/11 reporting year.

Waste Management
Prior to this reporting period it was a requirement of AGL's Environmental Protection Licence as well as RPGP Consent Conditions that the quantity of hazardous and/or restricted solid and/or liquid waste stored at the premises must not exceed 9,000 L at any one time, the total annual hazardous and/or restricted solid and/or liquid waste generated and/or stored must not exceed 85,000 L and the quantity of liquid waste generated must not exceed 3,000,000 L per year.

Following non-compliance in the 2008/09 reporting period AGL applied to OEH and DoPI for variation in the EPL and Development Consent requirements. Consequently modifications were issued to the Environment Protection Licence (12003) 15 December 2010 and to DA 282-6-2003-I 25 November 2010, which alters the requirements relating to waste generation and storage on site.

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

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

Noise
AGL submitted an Application to Modify a Development Consent to DoPI on 31 May 2010 which included a request to modify Condition 42 to remove the need for continuous monitoring at the Mount Gilead homestead.

On 25 November 2010 AGL received notification that Schedule 4 Clause 42 had been modified to require the submission of an integrated Noise Management Plan for Stage 1 and Stage 2 of the Camden Gas Project by January 2011. The Camden Gas Project Noise Management Sub Plan was prepared in consultation with OEH and includes a detailed noise monitoring protocol for evaluating compliance and reflects the requirements of conditions of the development consent and all other development consents and project approvals which apply to the management and monitoring of noise emissions.

OEH confirmed by correspondence dated 18 November 2010, that the modified consent wording was consistent with the intent of the original consent and that they will keep a copy of the plan for their records.

No exceedances and no complaints were received relating to operational noise from the RPGP during the 2010/11 reporting period.

Some minor occasional exceedances of the noise criteria were recorded during noise assessments of the some of the drilling operations during the reporting period. Two community complaints were received relating to construction noise during the reporting period.

In an effort to maintain compliance with noise limits set within the development consents, the following mitigation measures were implemented as required during the drilling of surface to inseam wells:

- Temporary noise walls were erected on the site perimeters nearest to the closest residence;
- On-site improvements were made to the drill rig;
- Silenced equipment was used wherever available;
- Equipment was orientated to face away from nearby sensitive receivers;
- Operations requiring the use higher noise generating equipment were timed to avoid quieter periods; and
- Face to face consultation was undertaken with potentially affected residents.

Visual Amenity
AGL contracted Ultimate Horticultural Solutions Pty Ltd (UHS) to maintain the native tree planting at the RPGP and access road and to undertake a full site inspection in December 2010, which looked at the effectiveness of the landscape planting for the project. The inspection confirmed that the planting where in good health and maturity rates were considered good.

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

Cultural Heritage
All activities associated with cultural heritage and aboriginal heritage were compliant for the period with no reportable incidents or community complaints recorded.

Hydrocarbons
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.

Public Safety
One public safety related incident was recorded during the reporting period. During a Rig move from the KP06 site to the MP22 site, an overhead power line was struck and taken down on Cummins Road, Menangle Park at approximately 4am, 29 May 2011. It is believed the driver for the contractor did not notice when one of the equipment loads contacted the power line.

Power was cut to one property and the affected resident reported the incident to AGL. The fallen power line was repaired. An oversize permit was in place and roads had been inspected to identify associated hazards prior to the Rig move. The incident was reported to DII (now DTIRIS) at the time.

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

Rehabilitation
Progressive rehabilitation is an ongoing management practice for all areas impacted by the Project.
Four well sites had initial rehabilitation during the reporting period.

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.

Five community complaints regarding environmental concerns were received during the reporting period. Four complaints were received directly by AGL and one complaint was received via the OEH complaints line. The complaints related to traffic, dust and noise. AGL responded to each complaint with mitigation actions to ameliorate impacts where possible and to avoid re-occurrences.

Environmental Non Compliance Issues and Incidents

Non-conformances with the site's Environment Protection Licence are reported in the Annual Return to OEH. The EPL Licence 12003 Annual Return for the period 22/12/09 to 21/12/10 was submitted in February 2011. There were no non-conformances reported for this period.

One potential environmental incident was recorded during the reporting period. The release of non-toxic, non-hazardous foam into the air during a routine maintenance activity occurred at the Sugarloaf 3 well site on 17 May 2011.

In its investigation to determine how the incident happened, AGL found that the soapy mist was released when liquid soap that was being used to clean the well was aerated and not captured in the water storage tank. The Office of Environment & Heritage (OEH) concluded that "there was no significant harm to the surrounding environment from the emission of foamy liquid," but the maintenance equipment "was not being operated in a proper and efficient manner as required by condition 02 of the Environment Protection Licence."

OEH determined that an appropriate regulatory response to this incident was to issue a formal warning to AGL and its employees that environmental performance and statutory compliance must be continually maintained.

Community Liaison

AGL has pro-actively engaged the community, in order to keep residents informed of the Camden Gas Project, 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:

- Consultation with affected landholders;
- Hosting community member and industry stakeholder site tours;
- Distributing community consultation material to the local council offices;
- Letter drops regarding operation issues including drilling of Menangle Park and Kay Park wells;
- Public information stand at Camden Show, April 2011;
- Aboriginal consultation regarding works within the Menangle Park field;
- Landowner advices to affected properties on a regular basis;
- Presentation to the NSW Farmers Federation, April 2011;
- Ongoing consultation with stakeholders regarding the Camden North expansion; and
- Public presentation on CSG and Camden Gas Project to Campbelltown residents, June 2011.

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 July 2010 to June 2011.

On the 1 April 2009 the Camden Gas Project 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.

Sydney Gas first developed the Camden Gas Project, located 65 kilometres (km) south-west of Sydney in the Camden region of NSW, and comprising the first two Petroleum Production Leases (PPL) in New South Wales. Exploration activities in the Camden region commenced in 1998 and since that time an extensive program of geological surveys and exploration drilling has been completed.

The construction of the Ray Beddoe Treatment Plant (RBTP) and successful first gas delivery into the AGL distribution network in May 2001, lead 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 is currently in an expansion phase, including PPL 5 and PPL 6.

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

As part of the progressive development of this gas field, wells have been drilled and proven in Logan Brae, Wandinong, Glenlee, Menangle Park, Rosalind Park, Mt Taurus, Elizabeth Macarthur Agricultural Institute (EMAI), Sugarloaf Farm, Spring Farm and Kay Park. Further works are planned in Menangle Park.

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.

During the reporting period AGL drilled three exploration core holes at Raby, Currans Hill and Elderslie. These core holes will assist in refining future development areas of the project. These exploration core holes are not covered in this report as they are not covered by a Development Consent requiring an AEPR, or Petroleum Production Lease requiring an Annual Environmental Management Report (AEMR) (rather, they are activities carried out under AGL's Petroleum Exploration Licence).

Field development has included the drilling of nine surface to in seam (SIS) wells within Menangle Park, one SIS well within Kay Park during the reporting period. These wells will be progressively connected to the gas gathering line (GGL) network feeding into the RPGP.

AGL constructed and commissioned for use approximately 2km of GGL at Menangle Park this reporting period.

The next stage for the Camden Gas Project is the Northern Expansion, to the north-east of the existing development area. The Northern Expansion Project is the subject of a current application for Project Approval under the *Environmental Planning and Assessment Act 1979.* This is proposed to involve the construction and operation of 12 additional well locations, gas gathering and water lines. During this reporting period AGL has commenced a desk top groundwater-monitoring program to facilitate the future development of this portion of the Camden project.

Ongoing environmental management improvements have included:

- Continued enactment of the Camden Gas Project Environmental Management System;
- Continued recycling of produced water for drilling operations;
- Engaging environmental and engineering consultants, Parsons Brinckerhoff, to undertake the development of a groundwater-monitoring program; and,
- Working in partnership with contracting drilling companies to modify drill rig equipment to attenuate noise.

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) (formerly Department of Industry and Investment (DII)) for the AGL Camden Gas Project located in the Camden, Campbelltown and Wollondilly Local Government Areas (LGAs) for the period July 2010 to June 2011.

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 requirement for an AEPR is set out in the following Development Consent Conditions:

- DA No. 15-1-2002i 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. 282-6-2003i dated 16 June 2004, Schedule 5 CoC No. 5;
- DA No. 183-8-2004 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;
- DA No. 171-7-2005 dated 25 March 2006, Schedule 4 CoC No. 4;
- 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, with 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 the 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; and
    - 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 July 2010 to June 2011, in each of the above 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 PPLs 1, 2, 4, 5, and 6 transferred to AGL Upstream Pty Limited by the Director-General, 22 November 2010.

The above PPLs require the preparation of an AEMR in accordance with the DTIRIS guidelines.

This AEPR has been prepared in accordance with the DTIRIS (former DII) 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 AEMRs. Where information required under a heading is not applicable to the Camden Gas Project, the heading has been kept and the applicability stated.

The Plans required by DTIRIS guidelines are not relevant to the operation of the Camden Gas Project. A plan showing the layout of the PPLs is included as Figure 1-1.

1.3 Camden Gas Project Area Details

The details of the each area of the Camden Gas Project are provided in the table in Appendix A.

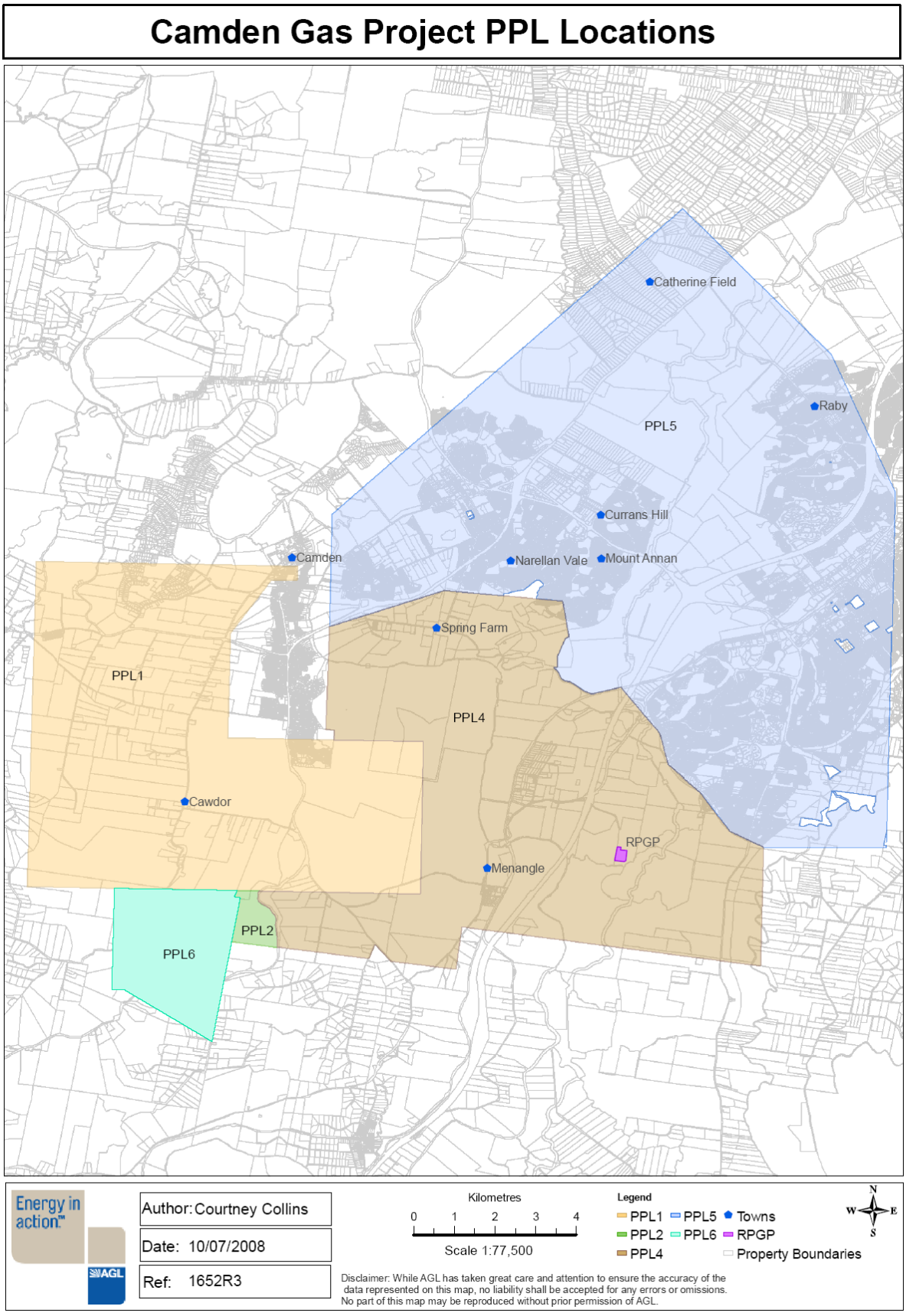


Figure 1-1 PPL Locations

1.4 Project Details and Contacts

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

Table 1-1 Project Details and Contacts

Project Details	
Mine/project name:	Camden Gas Project
Titles / Consents:	Refer to Table 2-2
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
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 2010
AEMR Period End date	June 2011

1.5 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 Camden Gas Project to June 2011.

2.1 Consents, Leases and Licences

Seven Development Applications (DAs), three Project Approvals and one Concept Plan Approval have been approved for the Camden Gas Project under Section 80 of the *Environmental Planning and Assessment Act 1979*. 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 01and 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

Development Application No.	Description of Proposed Development
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 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 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."*

Development Application No.	Description of Proposed Development
	A modification to this DA, approved 2 May 2007 was issued for the following: - relocation of the Rosalind Park Gas Plant access road
	A modification to this DA, dated 4 July 2007, was issued for the following: *-"construction, drilling and operation of 1 surface to in-seam well (EM38) at EM20 and upgrading (twinning) of the gas gathering line between MP14-GL10, GL10-GL05, GL05-GL07 and RP03-RP08"*
	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."*
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."*
	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."

Development Application No.	Description of Proposed Development
	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.
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."*
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 DA were issued 7 January 2011 and 20 April 2011 to include gas gathering lines MP06 – 11 and MP11 – MP23 (viaMP19), and, MP03-05 and MP22 – SL02 respectively.

Development Application No.	Description of Proposed Development
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 3.1 of the AEPR.

The standards, performance measures and statutory requirements with which the Camden Gas Project is required to comply are outlined in the consents, leases and licences listed in Table 2-2 below.

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 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

Requirement	Date of Requirement
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)
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)

Requirement	Date of Requirement
Environment Protection Licence No.12003, issued by the Environment Protection Authority, incorporated into the Department of Environment Climate Change and Water (DECCW now Office of Environment and Heritage), for hazardous, industrial or group A waste generation or storage (>100-500T) and petroleum refining (>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 issued and effective on 15 December 2010.
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 Camden Gas Project bore licences from February 2011 to July 2011 by the NSW Office of Water. These are detailed in the Bore Licence Compliance Report 2010-11 and the Parsons Brinckerhoff Phase 1 Groundwater assessment and conceptual hydrogeological model report.

Bore Licence Compliance Report 2010-11 is the first annual report prepared 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 Camden Gas Project bore licensing for July 2010-June 2011. The licenses were issued from February to July 2011.

Appendix B contains the 136 Bores Licence details of the potentially operational gas production wells that are licensed under the *Water Act (1912)* for the Camden Gas Project.

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 During the Reporting Period

This section provides a description of the operation undertaken at the Camden Gas Project and the status of the project as of June 2011.

3.1 Description of Operations from July 2010 to June 2011

3.1.1 Development

During this reporting period (July 2010 to June 2011), development associated with the Camden Gas Project comprised of the following:

Drilling

Nine new horizontal production wells were drilled (MP23, MP12, MP05A, MP01, MP02, MP03, MP09, MP10, KP06) and drilling was commenced on production well MP22. No wells were fracture stimulated.

The location of the wells is illustrated in Figure 3-1.

Production Lease Transfer

During 2010 AGL changed AGL Gas Production (Camden) Pty Limited to AGL Upstream Investments Pty Limited as part of a streamlining project to simplify its corporate structure by consolidating all of the Upstream Gas assets and businesses into one entity. Transfer of Petroleum Production Lease Nos 1, 2, 4, 5 and 6 from AGL (SG) (Camden) Operations Pty Limited and AGL Gas Production (Camden) Pty Limited to AGL Upstream Investments Pty Limited was registered by the DTIRIS, November 2010.

Gathering Line Installation

Approximately 2 km of GGL was constructed and commissioned across the Menangle Park. The location of the GGL is illustrated in Figure 3-1.

Rosalind Park Gas Plant Compressors

Compressor No.2 operated for 3,328 hours during the reporting period.
Compressor No.3 operated for 6,355 hours during the reporting period.
Compressor No.1 operated for 8,121 hours during the reporting period.

Land Access and Approvals

Petroleum Production Lease NOs 1, 2, 4, 5 & 6 were transferred to AGL Upstream Investments Pty Limited (November 2010).
Rosalind Park Gas Plant Environment Protection Licence No. 12003 was re-issued (December 2010).
Development Consent Modification was received for the modification of RPGP noise monitoring requirements, air emission concentration limits and waste storage and generation volumes (November 2010).
Development Consent Modification was received for the modification of Glenlee rehabilitation requirements.
Development Consent Modification was received for the construction, drilling and operation of surface to in-seam well KP06 (April 2011).

Project approval modification was received for the gas gathering lines MP06-11 and MP11-23 (via MP19) project approval for the Spring Farm and Menangle Park Area (January 2011).
Project approval modification was received for the gas gathering lines MP03 – 05 and MP22 – SL02 (April 2011).

The status of operations as of June 2011 are summarised in Table 3-1. Changes from the previous reporting period are shaded in grey.

Table 3-1 Current Status of Operations (June 2011)

Well Name	Date Completed	Status June 2010
AP01	2000	Drilled
EB01-10	Incomplete	Approved – Not Drilled
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
MT01 02, 03, 04, 06, 07, 08, 09 and 10	2004	Drilled
MT05	2004	Drilled
Ray Beddoe Treatment Plant	2008	Decommissioned and rehabilitated

Well Name	Date Completed	Status June 2010
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, 11, 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
MP02, 03, 09, 10	2011	Drilled
MP22	2011	Drilling in Progress
KP06	2011	Drilled

3.1.2 Exploration

Exploration activities undertaken during the reporting period included the drilling of three exploration core holes (Raby 02, Currans Hill 18 and Elderslie 01) as part of the planning for the future development of the Project. AGL received approval under PEL 2 to undertake a surface exploration program at Elderslie, Raby, Campbelltown and Currans Hill from DTIRIS (April 2010).

3.1.3 Production

Production information is provided to the DTIRIS on a monthly basis in accordance with the project's production lease requirements. This information has not been reproduced here as it is commercially sensitive but can be provided to the DoPI on a commercial in confidence basis upon request.

3.1.4 Land Preparation

Wells recently drilled on Spring Farm, Kay Park and Menangle Park continue to be completed and brought on to production capability. For all other well sites, full rehabilitation of the construction works 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 landholder use.

All 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 Camden Gas Project primarily extracts coal seam gas. Therefore no mining, mineral processing or ore stockpiling is undertaken.

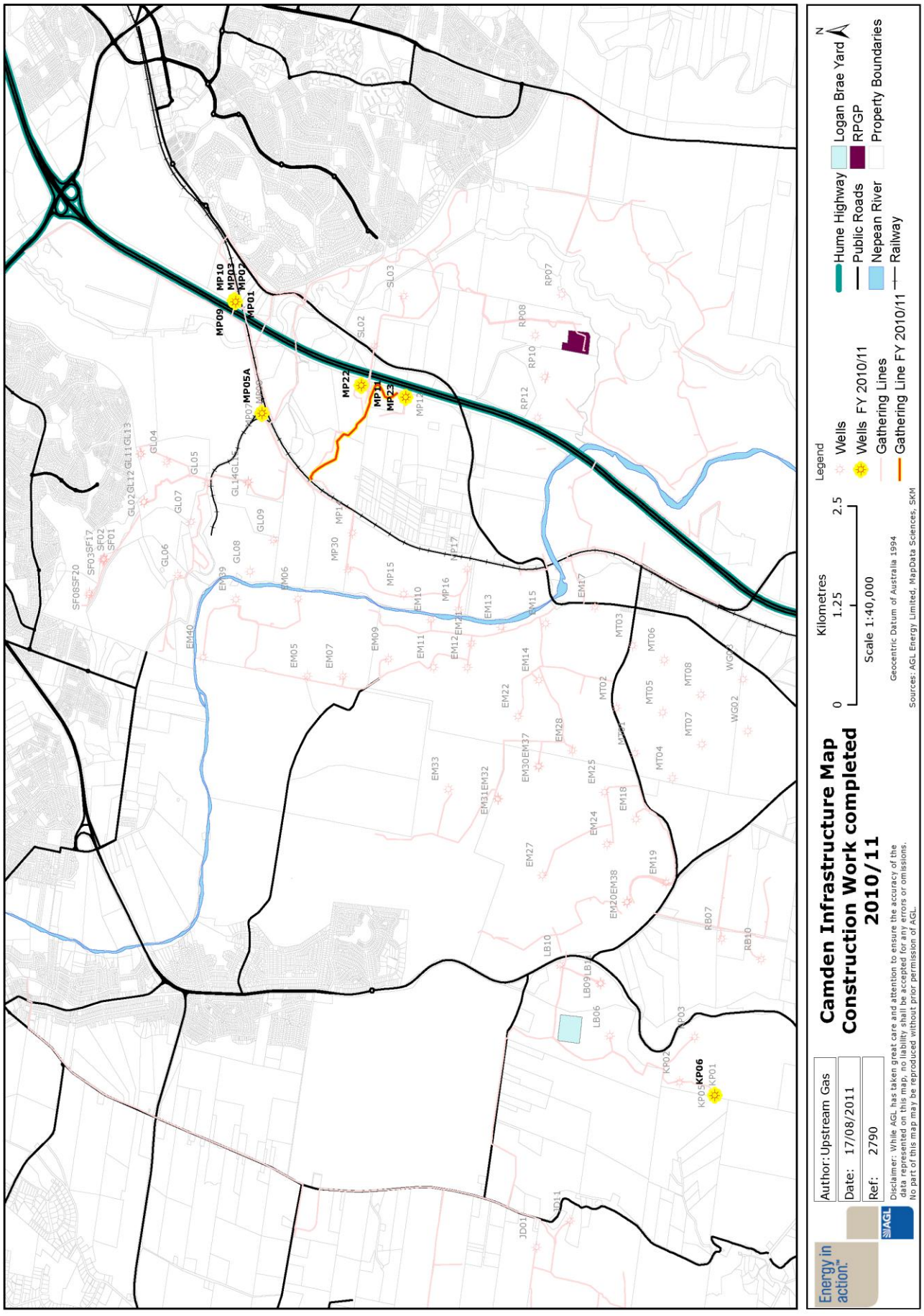
3.1.6 Other Infrastructure Management

A minor extension was undertaken at the Rosalind Park Gas Plant main administration building. There was no other significant infrastructure development associated with the Camden Gas Project during the reporting period.

3.1.7 Production and Waste Summary

A summary of waste produced is included in Section 4.8.

Figure 3-1: Camden Infrastructure Map - Construction work completed 2010/11



4. Environmental Management and Performance

This section of the AEPR outlines the environmental management and performance of the Camden Gas Project. The headings are provided in accordance with the DTIRIS guideline for formatting AEMRs. 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
- 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 Camden Gas Project 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 received comments on the 2008/09 AEPR from DTIRIS (formerly IINSW) on the 6 August 2010 requesting additional details on the progress of the rehabilitation of individual wells. This additional detail for the 2008/09 reporting period was provided to DTIRIS on 2 September 2010. Section 5 of this AEPR includes additional detail on the progress of rehabilitation for individual wells as requested by DTIRIS. No other comments were received from any authorities relating to the 2008/09 AEPR.

AGL had received no feedback on the 2009/10 AEPR at the time of this report.

Table 4-1 summarises the requirements that were assessed as non-compliant or indeterminate during the 2008 independent environmental audit and the status of actions taken in response to the audit recommendations.

Table 4-1 Non compliances identified with environmental standards during 2008 independent audit and implementation status update

CoC No.	Summary of CoC Requirement	Recommended Action	Status of Implementation (July 2011)
DA 262-3-2003i Sch 3 Condition 15 & 17 *and* DA-183-8-2004-i Condition 6 & 8 *and* DA 9-1-05 Condition 7 & 9 *and* DA 75-4-2005 Condition 13 & 15	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 Local Government Area, in a format suitable to each of these Councils, within two months of the completion of the gas wells and gas gathering system.	Ensure compliance with this CoC for any new wells under these DAs. Maintain records so they can be verified during the next audit.	Ongoing - AGL will continue to provide this information to each of the three councils as part of correspondence on the surveying data as wells are completed.
DA 282 Sch 3 Condition 16 & 17 *and* DA-183-8-2004-i Condition 7 & 8 *and* DA 9-1-05 Condition 8 & 9 *and* DA 75-4-2005 Condition 14 & 15	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 this consent, whichever is the later.	Ensure compliance with this CoC for any new wells under these DAs. Maintain records so they can be verified during the next audit.	Ongoing - AGL will continue to provide this information to each of the three councils as part of correspondence on the surveying data as wells are completed.
DA 282-6-2003i Sch 4 Condition 18	Commission and pay the full cost of an Independent Audit of the performance of the mitigation measures implemented to prevent and minimise visual impacts. This includes 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. The requirements of the audit are also listed.	Commission an Independent Audit of the performance of mitigation measures implemented to prevent and minimise visual impacts of the development.	An independent visual and landscape audit was commissioned and undertaken during December 2008. The next independent audit was scheduled for December 2010, however, AGL has not received DoPI approval for the independent auditor.
DA 282-6-2003i Sch 4 Condition 19	Within 2 months of commissioning this audit the Applicant shall submit a copy of the audit report to the Director-General and provide a detailed response to any of the recommendations in the audit report.	Submit a copy of the audit report required under condition 18 to the Director-General.	Once the above mentioned independent audit is undertaken and report issued, AGL will provide this report to the DoPI to meet this requirement.

CoC No.	Summary of CoC Requirement	Recommended Action	Status of Implementation (July 2011)
DA 282-6-2003i Sch 4 Condition 19B	Within 6 months of completion of the landscaping and every 2 years thereafter, unless the Director-General directs otherwise, AGL shall commission and pay the full costs of an Independent Audit of the performance of the mitigation measures against the Landscaping Plan.	Commission an Independent Audit against the landscape planting for the Rosalind Park Access Road.	An independent audit was commissioned and undertaken during November 2008. The next independent audit was scheduled for December 2010, however, AGL has not received DoPI approval for the independent auditor.
DA 282-6-2003i Sch 4 Condition 34	AGL shall prepare and implement a Construction and Well Maintenance Noise Management Protocol to be used for the duration of the project. The condition also details the elements that should be included in the Protocol.	Continue to develop and implement the new noise management sub plan.	The Noise Management Sub Plan was completed and incorporated as part of the Camden Environmental Management System, finalised in September 2008.
DA 262-3-2003i Sch 4 Condition 34A *and* PA06_0138 Sch 3 Condition 2	Compliance with construction noise goals, when measured at the nearest residential receptor.	Ensure that construction / drilling noise monitoring is undertaken at the location and time which is prescribed by the relevant conditions of consent in order to confirm compliance with those conditions.	Noted for future drilling programs.
DA 282-6-2003i Sch 4 Condition 38	AGL shall prepare and implement an operational noise management plan for the whole site. The plan should be submitted to the Director-General within six months of the date of consent. The condition also details the elements that should be included in the Plan.	Continue to develop and implement the new noise management sub plan.	The Noise Management Sub Plan was completed and incorporated as part of the Camden Environmental Management System, finalised in September 2008.
DA 282-6-2003i Sch 4 Condition 40	AGL must submit a noise compliance report to the OEH and the DoPI within one month of commissioning of the Gas Treatment Plant and on an annual basis with the Annual Return required by the OEH's licence to assess the project's compliance with the noise limits.	Consult with the DoPI and OEH regarding changing this condition to a requirement for quarterly attended monitoring reports.	A Noise Compliance Report was submitted to OEH with the 2009/10 Annual Returns.
DA 282-6-2003i Sch 4 Condition 42	Within six months of the date of this consent, the Applicant shall submit a detailed Noise Monitoring Program for the development to the Director-General for approval prior to commissioning. The Noise Monitoring Program must be prepared in consultation with the OEH.	Finalise the Noise Monitoring Program with the OEH.	This condition was modified November 2010, OEH has advised AGL that the noise management plan submitted to them for review is consistent with the intent of the original condition for noise monitoring and reporting requirements.

CoC No.	Summary of CoC Requirement	Recommended Action	Status of Implementation (July 2011)
DA 282-6-2003i Sch 4 Condition 48	In relation to air emissions at RPGP, ensure that the concentration of a pollutant discharged does not exceed the concentration limit specified for that pollutant in the tables provided (the table covers oxides of nitrogen, sulphur dioxide and sulphuric acid mist).	This issue should be resolved in consultation with the OEH. Communicate with the laboratory to ensure detection limits for sulphur trioxide and sulphuric acid mist are within concentration limits wherever possible.	This condition was deleted in the November 2010 modification. EPL variation was gained.
DA 282-6-2003i Sch 4 Condition 59	The Applicant must monitor the flare point emissions by sampling and obtaining results by analysis for each parameter specified.	Seek deletion of this condition from the consent from the DoPI.	This condition was deleted in the November 2010 modification.
DA 282-6-2003i Sch 4 Condition 67	AGL shall undertake the development in a way that minimises the potential surface water impacts of the development.	The criteria for the water quality testing to determine the integrity testing for the pond liner should be defined with reference to the ANZECC guidelines.	Noted. AGL is familiar with the ANZECC guidelines and accordingly continues to monitor the flare pond liner integrity on a routine basis. Minimal water flows have been observed and present no risk of surface water impact.
DA 282-6-2003i Sch 4 Condition 100	The quantity of hazardous and/or industrial and/or Group A waste stored at the premises must not exceed 9000L at any one time	Ensure the EPL variation is gained. Liaise with the DoPI to amend this consent condition in accordance with the amended EPL condition.	This condition was deleted in the November 2010 modification.
DA 282-6-2003i Sch 4 Condition 101	The quantity of hazardous and/or industrial and/or Group A waste generated and/or stored at the premises must not exceed 85,000L per year.	Ensure the EPL variation is gained. Liaise with the DoPI to amend this consent condition in accordance with the amended EPL condition.	As above. EPL variation was issued 15 December 2010.
DA 282-6-2003i Sch 4 Condition 107	AGL shall not bring into the EMAI site, any roadbase material for new access roads to gas well sites EM 1 to EM 4 (inclusive) and gas well site EM 6.	No further action recommended.	No further action required.
DA 282-6-2003i Sch 4 Condition 115	List bushfire measures to implement at the site including provision of a 20 metre asset protection zone managed as an inner protection area, around the perimeter of the Gas Treatment Plant and gas well sites.	Confirm with the NSW Rural Fire Service that in the absence of the 20m asset protection zone, alternative management and control of vegetation is sufficient to meet the RFS' requirements.	AGL continues to manage surrounding vegetation as previously advised. During the previous reporting period, AGL engaged a member of the NSW Fire Brigade to assess the current asset protection zone on behalf of the NSW Rural Fire Service. AGL's present vegetation management practices were considered appropriate to protect the Gas Treatment Plant from risk of bush fire.

CoC No.	Summary of CoC Requirement	Recommended Action	Status of Implementation (July 2011)
DA 282-6-2003i Sch 5 Condition 4 and DA 183-8-2004 Condition 23	The Applicant shall review and update the OEMP annually, or as directed by the Director-General.	As recommended in the previous audit, develop a schedule to ensure the EMS (formerly EHSMPs) is updated annually.	The Environmental Management System includes Section 7 Management Review, which details who is responsible for undertaking a review and when this review is due. The first EMS review commenced during the previous reporting period.
DA 282-6-2003i Sch 7 Condition 7	All works proposed under a Part 3A permit must be designed, constructed and operated so they do not cause erosion or sedimentation and to minimise adverse impacts on aquatic and riparian environments.	No further action recommended.	No further action required.
DA 282-6-2003i Sch 7 Condition 9	Erosion and sediment control measures are required to be implemented prior to any works commencing, and must be maintained for as long as necessary after the completion of works, to prevent sediment and dirty water entering the river system.	No further action recommended.	No further action required.
DA 9-1-2005 Condition 26	The Applicant shall provide landscaping around the well heads using appropriate native species.	AGL to consult with the DoPI as to the reason for this requirement, with a view to having the requirement removed.	AGL submitted an application to the DoP (May 2010) to modify this development consent condition. This condition was modified during the reporting period (November 2010) to a requirement to consult on species with the land owner, which was previously undertaken by AGL.
DA 75-4-2005 Condition 19	Prepare and implement a Construction Noise Management Protocol for construction of the development. The protocol should include a number of elements set out in the condition.	Continue to develop the EMS and sub plans including the Noise Management Plan. Ensure that the above requirements are included in the Noise Management Plan.	The Noise Management Sub Plan was completed and incorporated as part of the Camden Environmental Management System, finalised in September 2008.
PA 06_0137 and PA06_0138 Sch 2 Condition 8	Within 3 months of the commissioning of the wells, AGL shall provide Council with: (a) the Geographical Positioning System (GPS) co-ordinates and digital survey data for the gas well sites and gas gathering system; and (b) the wellhead configuration of each gas well.	Provide the Council with the GPS coordinates and wellhead configuration for each gas well.	The GPS and well configuration data for the reporting period has not been forwarded to each of the three councils at this time. AGL is required to provide this information as soon as possible.
PA 06_0137 Sch 3 Condition 12 *and* PA 06_0138 Sch 3 Condition 13	Within 3 months of commissioning of the project, AGL 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.	After updating the Emergency Plan and developing a new Safety Management System provide a report to indicate compliance with the above requirements.	This report has not yet been produced, but AGL plans to have the report generated and submitted during the current financial year as part of a wider project auditing program.

CoC No.	Summary of CoC Requirement	Recommended Action	Status of Implementation (July 2011)
PA 06_0137 Sch 4 Condition 1 *and* PA 06_0138 Sch 4 Condition 1	Prepare and implement an Operational Environmental Management Plan (OEMP) for the project to the satisfaction of the Director-General.	Continue developing the new EMS and sub plans. Ensure all the requirements under these Project Approvals are included.	The Environmental Management System was completed in September 2008. All requirements of PA 06_0137 and PA 06_0138 are included in this EMS and sub plans.
PA 06_0137 Sch 4 Condition 9 *and* PA 06_0138 Sch 4 Condition 9	From 31 March 2007, and during the life of the project thereafter, the Proponent shall place a copy of the following documents and information (and any subsequent revisions) required under this approval on its website: (a) all current environmental management plans, strategies and programs; (b) all Independent Environmental Audits; (c) all AEPRs; and (d) a summary of all environmental monitoring results required under this consent (to be updated at least every 6 months),	Provide a more detailed summary of monitoring data on the website. This needs to be updated on a six monthly basis.	AGL continues to work towards realisation of this requirement. Required documents, including the Annual Environmental Performance Report 2009/10 and the Independent Environmental Audit Reports for 2006 and 2008 are now on the website.

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 include:

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	Plant and equipment shall be regularly maintained and serviced to limit the amount of pollution generated.	✓	✓	All personnel

CGP Activity	Action	Area		Responsibility
		RPGP	Field	
Rehabilitation	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
	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 4-2 below.

Table 4-2 Air Quality Criteria and Monitoring Requirements - DA-282-6-2003

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 been modified this reporting period (November 2010), deleting Schedule 4 Clause 59 and modifying Clause 48.

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 4-3 below.

Table 4-3 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 4-4.

Table 4-4 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 were prepared for the following dates by EML Air Pty Ltd:

Quarterly Stack Emission Survey, 1 July 2010;
Quarterly Stack Emission Survey, 17-19 August 2010;
Quarterly Stack Emission Survey, 9 & 16 November 2010;
Quarterly Stack Emission Survey, 9 March 2011; and
Quarterly Stack Emission Survey, 7 June 2011.

Monitoring results are provided in Appendix C. All results were compliant with licence conditions.

In December 2010, under EPL 12003 Condition 3, L3, issued 15 December 2010, OEH agreed to raise the limits to:

- 3.5 mg/m^3 for the reboiler unit (Licence Discharge and Monitoring Point 4); and
- 5 mg/m^3 for compressor engines (Licence Discharge and Monitoring Points 1, 2, and 3).

The DoPI modified Schedule 4, Clause 48 of the DA to the same limits, 25 November 2010. The DA modification also amended Schedule 4, Clause 59, deleting it to remove the requirement to monitor at Point 7 (flare).

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

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

EML Air Pty Ltd undertook emission testing 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 nearest residence for the 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 2009/2010 Annual Return (summarised in Appendix B).

It is noted that annual pollutant load limits for arsenic, lead and mercury were not specified for the 2009/2010 Annual Return period as the requirement to assess these pollutants was introduced in May 2009. No exceedances of any of the pollutant load limits were reported within the 2009/2010 Annual Return.

Rosalind Gas Plant – Continuous Monitoring

The licence requirement (M2.1) 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. This was successfully undertaken in 2010/2011.

Full results of the continuous emissions monitoring for the reporting period are kept on file at the RPGP.

National Pollutant Inventory Reporting

The National Pollutant Inventory (NPI) Report for the RPGP for the 2009/2010 financial year was prepared and submitted 30 September 2010. The NPI for the 2010/11 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 were three complaints 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.

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 2009 to 21 December 2010 Annual Return period, the calculated annual total load for fine particulates was 279.86 kg/year, less than the 460 kg/year load limit. This result improved on the previous year's level of 310 kg/year.

Sulphur Dioxide, Sulphur Trioxide / Sulphuric Acid Mist Emissions

No exceedances of the sulphur trioxide/sulphuric acid mist emission limit were recorded during the quarterly monitoring of this reporting period.

As discussed in Section 4.4.3, the EPL and the Development Consent have both been varied to increase the limit to 5 mg/m^3 for Points 1, 2, and 3 and 3.5 mg/m^3 for Point 4.

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 2009 to 21 December 2010 Annual Return reporting period, the calculated annual load for hydrogen sulphide was 0.483 kg. This was a decrease from the previous reporting period where the annual load calculated was 1 kg/year.

Benzene

Benzene is measured annually in order to calculate the annual pollutant loads and associated fees under the EPL. For the 22 December 2009 to 21 December 2010 Annual Return reporting period, the calculated annual load for benzene was 9.786 kg/year, below the limit of 47 kg/year. This represented a decrease from the previous reporting period where 12 kg/year was calculated.

Odour

Odour emissions from the Carbon Scrubber Vent (EPA monitoring point 6) are monitored on a quarterly basis. During the reporting period the average odour level was 239.5 odour units (ou) with a maximum level of 460 ou recorded in November 2010. This was higher than the previous reporting period where the average odour level recorded was 123 ou and the maximum level recorded was 340 ou. No complaints relating to odour from the RPGP were received during the reporting period.

Nitrogen Oxides Generated by Gas Engines

Nitrogen oxide levels are monitored on a quarterly basis. All monitoring points throughout the reporting period complied with licence limits.

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.
- 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 4-5.

Table 4-5 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 included:

- Gas gathering line construction; and
- Construction of 4 well surface locations.

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

- AGL developed a 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; and
- Prompt rehabilitation of well sites, access tracks and gas gathering line to minimise soil exposure times.

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

4.6 Surface Water

4.6.1 Surface Water Generation

The Camden Gas Project generates surface water from the following sources:

- Drill mud. A total of 233 KL of drill mud was taken to Worth Recycling
- Gas Plant water (condensed water from the methane gas and contains traces of hydrocarbons). This water flows through a wastewater treatment and separation plant at the RPGP. The treatment plant separates the oil from the water and the clean water is released into the flare pond on site.
- Grey water and septic tank water from the RPGP. A total of 360 KL was disposed to the Sewerage Treatment Plant by Theiss Services.

4.6.2 Surface Water Management

During the reporting period, activities included continued operation of the RPGP, drilling additional wells and construction of access roads on Kay Park and Menangle Park fields.

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

4.6.3 Surface Water Monitoring Requirement

The monitoring requirements for surface water quality, required by DA-282-6-2003-I, are outlined in Table 4-6 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 4-6 Surface 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. 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*).

4.6.4 Surface Water Monitoring Results

Surface water monitoring was undertaken monthly at former EPL Point 8 (flare pond) during the reporting period for the parameters listed in Table 4-6 above. The results of the monitoring are summarised below:

- The water level in the flare pond remained consistently 2 metres or less.
- Electrical conductivity levels ranged from 5690 to 8910 uS/cm.
- Total suspended solids ranged from 13 to 118 mg/L.
- Biochemical oxygen demand levels ranged from 10 to 37 mg/L.
- Oil and grease results were all <5 mg/L with one reading of 13 mg/L.
- Total polycyclic aromatic hydrocarbons results were all 0 ug/L.
- Total phenols ranged from <0.05 to 0.48 mg/L.
- Total organic carbon levels ranged from 28 to 56 mg/L.
- Total petroleum hydrocarbons ranged from 0 to 770 ug/L.

4.6.5 Surface Water – Environmental Performance / Trends

No water was taken from or discharged from the flarepond during the reporting period.

The water evaporation unit installed during 2008/09 continued to work effectively during the 2010/11 reporting period.

4.7 Groundwater

4.7.1 Groundwater Generation

During the reporting period, water was produced from CSG wells during dewatering, as well as during underboring activities for gas gathering line construction. The following volumes were generated and recycled or disposed:

- 2805 KL of produced water was generated from wells during dewatering. This volume is well below the licensed 30 ML of ground water allocated to the Camden Gas Project.
- 525 KL of produced water from AGL wells was reused (for well construction).
- 5519 KL of produced water combined from wells and holding ponds, and 1503 KL of water from an underbore (Menangle Park) was recycled during the 2010/11 reporting period.
- 46 KL of produced water was disposed to the Campbelltown City Council Sanitary Depot.

The total volume of produced water has decreased from last year primarily due to the decrease in the number of wells being dewatered or which had drilling pits emptied and rehabilitated during this reporting period compared with the 2009/2010 reporting period.

Gas gathering line water (condensed water from the methane gas as it depressurises and cools in the gathering line system) is collected. It was estimated 15 KL of water was taken from the gas gathering line water traps during the reporting period.

It should be noted that 7022 KL of ground water was recycled by Worth Recycling in the 2010/11 reporting period. AGL is in the process of investigating alternative options for beneficial reuse of produced water.

4.7.2 Ground Water Management

In response to changes in water management legislation, substantial monitoring and reporting conditions were placed on AGL's new bore licences issued from February 2011, including requirements for a management plan, higher level monitoring and the reporting of groundwater compliance.

The Camden Project involves the extraction of gas from the Illawarra Coal Measures, approximately 700m below ground level. To isolate the shallow aquifers two casing strings are installed during the drilling of a well. The initial larger diameter casing string is called the surface casing. This API casing string is installed to typically 110 to 130 metres and the casing/open hole annulus is then pressure cemented in place. One of the primary functions of this casing string is to isolate and protect shallow groundwater (although most shallow groundwater in the shales in the Camden area is brackish to salty). The well is then drilled to its total depth and a second smaller diameter casing string is installed. This casing string is referred to as the production casing and is also API certified steel casing. This casing / open hole annulus is then pressure cemented in place from the wells total depth back to surface to isolate deeper aquifers.

Previous technical assessment of the groundwater regime has noted that the potential for contamination or depletion of shallow sandstone aquifers of the area, or cross-contamination between aquifers during the production life of a well, is extremely unlikely given the use and construction of gas production wells. As the entire casing of each well is cemented from top to bottom, connection between the Illawarra coal measures and overlying Hawkesbury Sandstone aquifers is not possible and the potential for cross contamination between aquifers during the production life of a well is therefore extremely unlikely. Given the limited volumes of groundwater generated during well construction and operation, the nature of the containment within the coal measures as well as overlying formations, shallow sandstone aquifer depletion has not been considered an issue.

To further assess the groundwater situation within the project area AGL has developed a groundwater investigation and monitoring program in conjunction with Parsons Brinckerhoff (PB), a specialist environmental and engineering consultancy.

Phase 1, a desktop study of the Camden North Area (Phase 1 Groundwater assessment and conceptual hydrogeological model; Northern expansion of Camden Gas Project) was completed February 2011. Its objective was to characterise the groundwater systems in the Camden north area, assess the value of groundwater resources, describe current monitoring activities and assess likely connectivity between aquifers and coal seams targeted for CSG extraction.

The study confirmed previous reports, finding that, based on available information, groundwater of the area is of limited use as bore yields are low and water quality is variable but typically poor, particularly in the deep coal seams targeted. These attributes make the water (without blending or treatment) unsuitable for beneficial use. The study isolated four primary aquifers within the region and confirmed that claystone formations between these groundwater levels isolate the aquifers and impede the vertical flow of groundwater, further minimising the possibility of cross-contamination or depletion.

Phase 2 investigations within the northern expansion area are proposed in late 2011 to establish baseline conditions on water levels and quality, and formulate trend information to assist in the protection of shallow aquifers as new CSG wells are constructed. PB will begin drilling dedicated monitoring bores from September 2011 onwards.

AGL's compliance report was submitted to NOW on 24 August 2011, with AGL returning a nil impact result for the 2010/11 reporting year. This report, the Phase 1 desktop study, as well as informational advertisements and the NOW annual compliance report are, or will shortly be, available in the public arena.

4.7.3 Groundwater – Environmental Performance / Trends

During the year, a bore licence compliance issue was raised and investigated by the NOW. NOW was concerned that bore licences for individual production wells were not obtained in advance of construction (the previous practice was to apply retrospectively as batches of wells were completed) and the involvement of NSW licensed water bore drillers. This matter was resolved satisfactorily with all existing production wells and those proposed to complete the current program within the main Camden Gas Project area licensed by July 2011. Drilling was suspended on site MP10 in March 2011 until the first of these bore licences was issued and a licensed water bore driller was on site.

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 4-7.

Table 4-7 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
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 4-8 summarises the amount of waste generated and either disposed or recycled during the reporting period.

Table 4-8 Waste Generated and Disposed / Recycled

Waste Stream	Amount Disposed	Amount Recycled
Sewage and grey water from the RPGP site facilities	360 KL	
General waste	81.34 tonnes	

Waste Stream	Amount Disposed	Amount Recycled
Drill cuttings		3180.96 tonnes
Waste oil		10.876 tonnes
Scrap steel		37.34 tonnes
Batteries		0.13 tonnes
Oil filters		1.2 tonnes
Paper		18 tonnes
Oily rag bins		0.2 tonnes

Prior to this reporting period it was a requirement of the Environmental Protection Licence (12003, L5.2, L5.3 and L5.4) as well as RPGP Consent Conditions that the quantity of hazardous and/or restricted solid and/or liquid waste stored at the premises must not exceed 9,000 L at any one time, the total annual hazardous and/or restricted solid and/or liquid waste generated and/or stored must not exceed 85,000 L and the quantity of liquid waste generated must not exceed 3,000,000 L per year.

Following non-compliance in the 2008/09 reporting period AGL applied to OEH and DoPI for variation in the EPL and Development Consent requirements. Consequently modifications were issued to the Environment Protection Licence (12003) 15 December 2010 and to DA 282-6-2003-I 25 November 2010, which alters the requirements relating to waste generation and storage on site.

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 released 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.

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 in Table 4-9.

Table 4-9 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 were 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 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 4-10.

Table 4-10 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 to appropriate areas away from construction activities by qualified personnel. Trenches shall generally be not be left open overnight on public land. Where this is necessary, bunting shall be installed.	Field Environment and Safety Officer/ Project Manager
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.

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 4-11.

Table 4-11 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 respread 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:

- 15 May 2011 – GL 2, 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 16, 17;
- 1 October 2010 - EM 31/32; and,
- 1 October 2010 - RPGP (Gas Plant).

The main herbicides used were Round Up and Kamba M (selective herbicide). Approximately 3.6 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 4-12 below.

Table 4-12 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 4-13 below.

Table 4-13 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
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".

Schedule 4. Clause 42

Within six months of the date of this consent, the Applicant shall submit an integrated Noise Monitoring Program for Stage 1 and Stage 2 of the development to the Director-General for approval prior to commissioning. The Applicant must comply with the Noise Monitoring Program at all times during operation of the development.

Refer to the DA for details of the required content of the Program.

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.

DA 171-7-2005

Schedule 3 Clause 3.

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.

Refer to DA for notes relating to this condition.

Note: This development refers to the operation of wells EB01-EB10.

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 Noise Monitoring Results

Noise monitoring was not undertaken at the RBTP as the plant ceased operation in February 2007 and was decommissioned and rehabilitated.

Wells EB 01 to EB 10 are yet to be drilled therefore noise monitoring in accordance with DA 171-7-2005 has not been undertaken.

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

Noise compliance reports are submitted annually to the 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 4-14.

Table 4-14 Summary of Quarterly Noise Monitoring

Noise Monitoring Undertaken	Summary of Results
Attended noise monitoring 27 January 2011 (report dated January 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 and almost constantly masked by other noise such as traffic or fauna. At R7 noise from RPGP was just audible or inaudible at all times over extraneous noise such as distant traffic and local fauna noise. Noise levels between 27-30 db(A) were recorded which were below the criteria.
Attended noise monitoring 16 November 2010 (report dated February 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 and the L_{Aeq} level could not be established due to masking Hume Highway traffic noise. At R7 the RPGP was barely audible at times during lulls in distant Hume Hwy traffic noise, air traffic noise and insect/bird noise. Noise levels between 33-36 dB(A) were recorded which were below the criteria.
Attended noise monitoring 4 April 2011 (report dated April 2011)	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 and the L_{Aeq} level could not be established due to masking Hume Highway traffic noise, frequent aeroplane noise and intermittent insect and local fauna noise.

DA 282-6-2003-i Schedule 4 Clause 42 – Noise Monitoring Program

AGL submitted an Application to Modify a Development Consent to DoPI on 31 May, 2010 which included a request to modify Condition 42 to remove the need for continuous monitoring at the Mount Gilead homestead (R7).

On 25 November 2010 AGL received notification that Schedule 4 Clause 42 had been modified to require the submission of an integrated Noise Management Plan for Stage 1 and Stage 2 of the Camden Gas Project by January 2011. The Camden Gas Project Noise Management Sub Plan was prepared in consultation with OEH and includes a detailed noise monitoring protocol for evaluating compliance and reflect the requirements of conditions of the development consent and all other development consents and project approvals which apply to the management and monitoring of noise emissions.

OEH confirmed by correspondence dated 18 November 2010, that the modified consent wording was consistent with the intent of the original consent and that they will keep a copy of the plan for their records.

4.14.4 Noise - Environmental Performance / Trends

Noise performance at the Rosalind Park Gas Plant

No exceedances and no complaints were received relating to operational noise from the RPGP during the 2010/11 reporting period.

Noise Performance – Operations

The Project 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 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 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 and gas plant operations) 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.
- 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 4-15.

Table 4-15 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

Activity	Management Strategies	Responsibility
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. 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.	Environment & Safety Officer All personnel

4.15.2 Construction Noise Limits and Monitoring Requirements

The noise limits and monitoring requirements detailed in the Development Applications and Modifications approved for the project are summarised in Table 4-16. A summary of what activities (if any) were undertaken under each approval is also included.

Table 4-16 Construction Noise Monitoring Requirements

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)	Wells MP12 and MP23 (MP23 surface location), MP05A (MP05 surface location), MP01, MP02, MP03, MP09, MP10 (MP03 surface location) and MP22 were drilled during the reporting period. Refer to Section 4.15.3 for discussion of monitoring results.
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}	KP06 was drilled during the reporting period. Refer to Section 4.15.3 for discussion of monitoring results.
DA 282-6-2003i (Mod 4 July 2007)	
Schedule 4, Clause 34B Noise from the drilling and construction of EM38 shall not exceed the following noise limits at the nearest sensitive receiver: Weekday (7am to 6pm) and Sat (7am-1pm): 54 dB(A)L_{Aeq} Saturday (1pm to 6pm) and Sunday (7am to 6pm): 39 dB(A)L_{Aeq} Evening: 39 dB(A)L_{Aeq} Night: 35 dB(A)L_{Aeq}	No construction or drilling activities were undertaken at this location during the reporting period.
DA 282-6-2003i (Mod 11 April 2008)	
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 MP03 Menangle Park

Continuous noise monitoring was undertaken during drilling operations from 23 November 2010 to 7 January 2011 by SLR Consulting Australia Pty Ltd. Monitoring was undertaken during the Daytime, Evening and Night-time at two receiver locations in the vicinity of MP03 and in conjunction with a noise logger within the drill site from the 1 December tests. Measured noise levels complied with the noise criteria at all locations and monitoring periods.

Well site MP12 Menangle Park

Attended noise monitoring was undertaken by SLR Consulting Australia Ltd to assess compliance of the drilling conducted at MP12 Menangle Park during the period 27 August – 30 September 2010. A summary of the results is provided in Table 4-17 below.

Table 4-17 Summary of noise monitoring at MP12

Date	Monitoring period	Compliance with criteria
27 August – 1 September	Day, evening and night time	There were two minor exceedances of: ▪ 1-2 dBA recorded during the Night-time at location 1
1 September – 9 September*	Day, evening and night time	There were several minor exceedances [see note below] of: ▪ 1 dBA recorded during the Night-time at location 1 ▪ 2-7 dBA recorded during the Daytime at location 2 ▪ 1-7 dBA recorded during the Evening at location 2 ▪ 4-9 dBA recorded during the Night-time at location 2
9 September – 30 September	Day, evening and night time	There were several minor exceedances of: ▪ 2-3 dBA recorded during the Night-time at location 1 ▪ 1 dBA recorded during the Evening at location 2 ▪ 1-5 dBA recorded during the Night-time at location 2

As can be seen from the table above during drilling operations at MP12, minor occasional exceedances of the noise criteria ranging from 1-9 dBA were recorded, predominantly during the night time at location 2. Prior to drilling, all available mitigation measures were implemented as per Table 4-15.

*1-9 September data set was considered significantly influenced by F5 Freeway noise. Following this monitoring, on 09 September a noise logger was placed within the drill site compound to assess drill noise contributions in both locations and provide clearer indication of actual noise contribution from the drill during operation. Subsequent results from 09 September onwards confirmed that the F5 Freeway noise was a significant contributor to earlier non-compliant results.

Well site KP06 Kay Park

SLR Consulting Australia Pty Ltd (SLR Consulting) conducted continuous noise monitoring in relation to drilling operations at KP06 Kay Park for the periods 1 April – 30 April and 1 May to 30 May 2011.

Noise monitoring was undertaken at two sensitive receiver locations in the East and west of KP06. A summary of results is provided in Table 4-18 below.

Table 4-18 Summary of noise monitoring at KP06

Date	Monitoring period	Compliance with criteria
1 April – 30 May	Day, evening and night time	There were occasional minor exceedances of: ▪ 1-2 dBA recorded during the Evening at location 1 ▪ 1-7 dBA recorded during the Night-time at location 1 Location 2 was compliant with the relevant noise goals across all time periods.

As can be seen from the table above during drilling operations at KP06, minor occasional exceedances of the noise criteria ranging from 1-7 dBA were recorded predominantly during the night time at location 1. During the evening periods minor exceedances of 1 dBA were recorded on limited occasions at location 1.

In response to these results AGL mitigated noise by:

- Ongoing face to face consultation with residents at location 1, who were the occupiers of the Kay Park property and were prepared to accept the increased noise levels during drilling;
- installing noise walls on the site perimeters nearest to the closest residence;
- modifications to existing drill rig equipment to reduce source noise from louder operating equipment parts;
- orientation of equipment to emit noise away from the closest residence;
- using silenced equipment wherever available;
- reducing / eliminating louder operations during the Evening and Night periods wherever possible.

4.15.4 Construction Noise – Environmental performance / Trends

Two community complaints were received relating to construction noise during the reporting period. One was received via OEH's complaints line and the other directly through AGL.

One complaint (received on 29 April 2011) concerned noise levels and vibration during the drilling of KP06.

Prior to the OEH complaint AGL had:

- Spoken with the landowner (refer to Location 2 as per Table 4-18) and undertaken all reasonable steps to further minimise noise levels at the residence, including installation of noise walls and placement of equipment;
- Engaged external specialists to assess site noise emissions and recommended additional onsite mitigation measures, such as the installation of an acoustic barrier on the main source of noise – the generator exhaust, which were implemented by AGL;
- Orientation of equipment to emit noise away from the closest residence;
- Using silenced equipment wherever available;

- Reducing / eliminating louder operations during the Evening and Night periods wherever possible; and,
- Conducted continuous noise monitoring at the resident's property boundary, which indicated compliance with noise criteria.

AGL continued to communicate with the resident throughout the remainder of the drilling program including offers for additional mitigation at the residence (including temporary relocation, as suggested by OEH), but the landowner did not accept these mitigation measures.

The second complaint (received 23 February 2011) was from a landowner adjoining the MP03 site. The resident contacted AGL to complain about the dust and recent noise levels at night. AGL's investigation discovered the dust was generated whilst the dust suppression water cart was offsite. The water cart proceeded to work continuously onsite to prevent dust and tighter controls were implemented to minimise offsite time. AGL conducted continuous noise monitoring at the resident's property boundary, which indicated compliance with noise criteria. Drill rig noise levels were reduced through further mitigation.

In an effort to maintain compliance with noise limits set within the development consents, the following mitigation measures were implemented as required during the drilling of surface to inseam wells:

- Temporary noise walls were erected on the site perimeters nearest to the closest residence;
- On-site improvements were made to the drill rig;
- Silenced equipment was used wherever available;
- Equipment was orientated to face away from nearby sensitive receivers;
- Operations requiring the use higher noise generating equipment were timed to avoid quieter periods; and
- Face to face consultation was undertaken with potentially affected residents.

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 4-19 below.

Table 4-19 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 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; (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 Annual Environmental Performance Report. 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)

The two yearly independent visual impact audit and the consequent recommendation regarding internal lighting on compressor 2 were satisfactorily completed during the 2008/09 reporting period. The next independent visual impact audit will take place during the 2011/12 reporting period.

During this and the previous reporting period there was no further requirement for lighting adjustments. There were no complaints 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 log is provided in Appendix E.

Only one full field to flare event occurred during the reporting period, on the 15 October 2010. The event occurred in the mid afternoon and lasted 26 minutes. The event was caused by a power failure. As the event occurred during daylight hours, the visual impact was minimal.

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

The duration of the flare marginally increased during the reporting period by 15 minutes compared to the previous reporting period.

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 and was submitted and approved by the DoPI on 2 July 2004. This AEPR reports the results of the visual impact monitoring.

Monitoring of the implementation of the VLMP as required under Clause 14 was conducted every six months for the first two years by URS during the previous reporting periods with the final round conducted in February 2007.

An audit of the implementation of the VLMP for the RPGP was undertaken in November 2008 by Corkery Consulting. A summary of the results of the previous monitoring was provided in the 2008/09 AEPR. The next two-yearly audit was due to be undertaken in November 2010 and the findings reported in the 2010/11 AEPR, however, AGL has not received DoPI approval of the independent auditor contracted to conduct the audits at the end of this reporting period.

The general recommendations of the 2008 audit and an update of the status of implementation are provided in Table 4-20 below. Specific recommendations relating to each zone were also provided but have not been reproduced below.

Table 4-20 Summary of general recommendations of RPGP VLMP implementation audit and update of implementation status

Recommendation in URS 2007 Report	Assessment of Implementation (Corkery Consulting Nov. 2008)	AGL Status of Implementation (June 2010)	AGL Status of Implementation (June 2011)
Continue to monitor health of plantings and replace dead plants as required. In the interests of efficiency it is recommended that dead plants be replaced once a	The site inspection and review of maintenance records indicate that replacement planting has been carried out by AGL.	During the reporting period, there was no need for replacement planting.	No replacement planting has been undertaken during this reporting period.

Recommendation in URS 2007 Report	Assessment of Implementation (Corkery Consulting Nov. 2008)	AGL Status of Implementation (June 2010)	AGL Status of Implementation (June 2011)
combined total of ten dead plants are identified in all landscaped areas.			
Engage a qualified landscape contractor to carry out twice annual (early Spring and early Autumn) inspections for insect damage and treatment with insecticide as required.	The AGL Maintenance Record spreadsheet indicates that no insect spraying has been carried out since 2006. Areas that require insect control are described in Table 1 (of Corkery Consulting Report).	During August 2009 AGL engaged specialist contractors to treat all trees for insect damage. There has been a notable improvement in the health of trees following this treatment. A follow up inspection is planned for Spring 2010 as a preventative measure.	A follow up inspection was carried out during December 2010 and indicates a concrete, overall improvement in the health of trees and a reduction in insect activity. Follow up inspections will be conducted as a preventative measure.
Continue active insect control including weed and grass control around seedlings and mulch where necessary to suppress grass growth.	Trees have grown beyond seedling size and mulch has been spread where necessary. Weed and grass control has continued through grass cutting as described in Appendix A (of Corkery Consulting Report). Areas that require insect control are described in Table 1 (of Corkery Consulting Report).	AGL has continued to manage grass and weed growth around the trees during the reporting period, using specialist contractors. Insect control was also undertaken for all trees as discussed above.	AGL has continued to manage grass and weed growth around the trees during the reporting period, using specialist contractors. Insect control was also undertaken for all trees as discussed above.
The removal of tree guards can be trialled on well-established plantings defined as greater than 1.5 m tall and with a basal stem diameter of greater then 30mm. These should be monitored for losses due to ringbarking and if any deaths occur guards should be replaced and maintained.	Tree guards have been removed from some larger trees where they are no longer required; additional tree guards can now be removed from large trees identified during the site inspection.	All tree guards have now been removed with the exception of Area K, which still has cattle grazing in the same area.	All remaining tree guards have been removed from larger plantings with some remaining around smaller, replacement plantings.
Continue use of Maintenance Log Book and provide URS prior to 6- monthly Landscape Monitoring site inspections.	The maintenance record spreadsheet is being maintained by AGL.	All activities during the reporting period were recorded within the maintenance record spreadsheet.	All activities during the reporting period were recorded within the maintenance record spreadsheet.
Continue watering program for replanted areas as required to maintain growth.	Watering is being carried out as required but larger, well-established trees do not require ongoing watering.	No watering was required during the reporting period as the trees are now well established. AGL also maintains a rainfall record for the site.	No watering was required during the reporting period as the trees are now well established. AGL also maintains a rainfall record for the site.

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

Distinctive Landscape Planners completed the first independent audit in December 2008. The two yearly audit was due to be undertaken in December 2010. A consultant has been engaged but DoPI approval for the independent auditor has not been received. Detailed maintenance records have been maintained and a monitoring report concluded for the use of the auditor once approval has been received.

A summary of the findings of the 2008 audit is presented in Table 4-21 along with an update of the status of implementation. Recommendations of "no additional work required" have not been reproduced below.

Table 4-21 Visual Impact Assessment 2008 Recommendation Status

Land - scape Zone	Performance Targets	Assessment	Recommendation	AGL Status of implementation (June 2010)	AGL Status of implementation (June 2011)
A1	Screening of Gas plant to western boundary, using staggered rows of Eucalyptus sp. and understorey plantings	Staggered growth consistent with natural environment evident.	No additional works required. Maintain access corridor to boundary for fire safety and site security.	Access continues to be maintained along the western boundary. Trees are showing improved growth and are being maintained to ensure they retain screening value whilst not introducing risk to the operation of the gas plant.	Access continues to be maintained along the western boundary. Trees are showing improved growth and are being maintained to ensure they retain screening value whilst not introducing risk to the operation of the gas plant.
B3	Screening of Workshop	Staggered growth consistent with natural environment evident. Lack of significant growth in trees due to heavy soil compaction	Mulching to base of trees required.	Trees have now started to show significant growth since insect control treatment was given.	Tree growth has improved and continues to be monitored. Further mulching and maintenance is ongoing.
E1	Group planting screening to North eastern extent of workshop	Staggered growth consistent with natural environment evident. Nurse trees need interplanting of understorey for continued future screening	Interplant *E. molucana* and *E. tereticornis* for future screening.	Trees have now started to show significant growth since insect control treatment was given.	Tree growth has improved and continues to be monitored. Further mulching and maintenance is ongoing.
E2	Group Planting screening to North eastern extent of workshop	Staggered growth consistent with natural environment evident. Nurse trees need interplanting of understorey for continued future screening	Interplant *E. molucana* and *E. tereticornis* for future screening	Trees have now started to show significant growth since insect control treatment was given.	Tree growth has improved and continues to be monitored. Further mulching and maintenance is ongoing.
J	Screening to flare	Staggered growth consistent with natural environment evident. Lack of significant growth in this area.	Mulching to planting area to assist in vegetation establishment	Trees have now started to show significant growth since insect control treatment was given.	Tree growth has improved and continues to be monitored. Further mulching and maintenance is ongoing.

Land - scape Zone	Performance Targets	Assessment	Recommendation	AGL Status of implementation (June 2010)	AGL Status of implementation (June 2011)
K	South eastern corner of site, screening sediment pond and flare wall	Staggered growth consistent with natural environment evident with protective barriers in place to prevent further goat damage	Ongoing monitoring to assess selective removal of wire barriers as plant material matures.	Ongoing	Ongoing
LA1-LA4	Additional Landscape works to the completed access road	Inconsistent preparation of soil works, mounding and planting with areas not adequately prepared showing significantly less vigour and success in establishment	Replicate soil preparation, planting and mulching techniques to large earth mound (LA4) to all planted areas of the access road. Undertake supplementary planting and control of grass growth works as indicated in Corkery Consulting report.	Ongoing	Ongoing

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 on 21 May 2007.

Clause 19B requires that an independent audit be undertaken within 6 months of completion of the landscaping and every two years thereafter. The independent audit was combined with the independent audit of the VLMP required under Clause 18 and was undertaken in December 2008 by Distinctive Landscape Planners. Refer Table 4-21 for recommendations from the 2008 audit and implementation status.

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 two yearly audit was due to be undertaken in December 2010, however, approval of the auditing consultant engaged has yet to be received from the DoPI.

Specific recommendations relating to each zone were made in the Report provided by Corkery Consulting in 2008 and are reproduced in Table 4-22. An update of the status of implementation is also provided in the table.

Table 4-22 Summary of recommendations of Access Road VLMP implementation and update of implementation status

Drawing	Recommendation	AGL status of Implementation (June 2010- June 2011)
LA-1	Additional tree and shrub planting should be carried out to ensure a minimum width of 4 rows in PZ's 1.2, 1.4 and 1.7 shown on drawing LA-1. Plants in PZ's 1.1. 1.3, 1.5, 1.6 & 1.8 should be maintained in accordance with the Contract Specification. Control of grass growth around the base of trees and shrubs needs to be more effective; this should involve wood chip mulch, weed matting or controlled spraying in accordance with the specification. Carry out inspections of planting at least every 3 months to detect any insect attack; if detected then immediately carry out spraying or other appropriate control measures.	Maintenance of all trees was continued during the reporting period, including regular inspections, control of grass growth, weed control, insect control and replacement planting as required. All maintenance activities are recorded within the maintenance record spreadsheet.
LA-2	The tree and shrub planting carried out by AGL along the southern edge of the access road east of PZ 2.1 should be maintained in accordance with the Contract Specification. Planting in PZ 2.1 & PZ 2.2 should be maintained in accordance with the Contract Specification. Control of grass growth around the base of trees and shrubs needs to be more effective; this should involve wood chip mulch, weed matting or controlled spraying. Carry out inspections of planting at least every 3 months to detect insect attack; if detected then carry out spraying or other appropriate control measures immediately.	Maintenance of all trees was continued during the reporting period, including regular inspections, control of grass growth, weed control, insect control and replacement planting as required. All maintenance activities are recorded within the maintenance record spreadsheet.
LA-3	Planting in PZ's 3.1, 3.2, 3.4, 3.5, 3.6, 3.7, 3.8 should be maintained in accordance with the Contract Specification. Additional planting should be carried out in PZ 3.3 using E. tereticornis and E. crebra to achieve the area coverage indicated on drawing LA-3. Additional planting is not considered necessary in PZ 3.4 due to the gully landform. Control of grass growth around the base of trees needs to be more effective. Trees and shrubs needs to be more effective; this may involve wood chip mulch, weed matting or controlled spraying Carry out inspections of planting at least every 3 months to detect insect attack; if detected then carry out spraying or other appropriate control measures immediately	Maintenance of all trees was continued during the reporting period, including regular inspections, control of grass growth, weed control, insect control and replacement planting as required. All maintenance activities are recorded within the maintenance record spreadsheet.
LA-4	Planting in PZ's 4.1 to 4.5 should be maintained in accordance with the Contract Specification Additional planting in PZ 4.6 is not considered necessary as the growth of trees and shrubs on the earth mounding (PZ's 4.1 to 4.5) is considered to be effective in providing the visual screening required Control of grass growth around the base of trees and shrubs needs to be more effective; this may involve wood chip mulch, weed matting or controlled spraying Carry out inspections at least every 3 months to detect insect attack; if detected then carry out spraying or other appropriate control measures immediately	Maintenance of all trees was continued during the reporting period, including regular inspections, control of grass growth, weed control, insect control and replacement planting as required. All maintenance activities are recorded within the maintenance record spreadsheet.

AGL contracted Ultimate Horticultural Solutions Pty Ltd (UHS) to maintain the native tree planting at the RPGP and access road. UHS conducted a full site inspection in August 2009 and again in December 2010, which looked at the overall results of the planting project, growth and mortality rates,

insect activity and the effectiveness of the insect management program and the impact of prevailing weather conditions in particular rainfall. In summary the 2010 site inspection found that:

- Trees and shrubs have matured as expected given climatic and site conditions and growth rates were considered good;
- Growth rate differences between plantings in the 'Cut' and 'Fill' areas remain but have diminished greatly;
- All species are maturing well;
- Minor insect damage was noted on several Eucalypt species, however, the presence of insect pests was negligible and the previous systemic insecticide application concluded to be still effective;
- No dead plants/trees were observed;
- Tree guards/bags need to be removed from well established plantings (i.e. those plantings that have reached at least 1.5m in height; and,
- Grass inside tree bags needs to be controlled.

The UHS report made the following maintenance recommendations:

- Continue regular slashing of grass around plantings to minimise competition from weeds and grasses;
- Chemically control weeds and grasses in densely planted areas to reduce maintenance costs and eliminate competition;
- Crown lift lower limbs to allow easier access for improved maintenance activities;
- Remove tree guards / bags from mature plantings (i.e. those planting that have reached 1.5m or greater in height);
- Remove grass from inside tree guards/bags on less mature plantings to minimise competition; and,
- Rectify damaged tree guards/bags around smaller plantings.

Maintenance activities implemented during the reporting period are discussed below.

4.16.8 Visual Impact Amenity Performance / Trends

The following maintenance activities were undertaken during the reporting period for trees previously planted around the RPGP, as well as trees planted adjacent to the Rosalind Park access road:

- Grass was mowed regularly;
- Weeds were sprayed on numerous occasions;
- Tree guards were removed around some trees and other tree guards were repaired;
- No new trees were required to be planted during the reporting period to replace dead trees;
- Trees were pruned to maintain required height and support health;
- Continued monitoring of plant health and survival; and,
- The keeping of a Maintenance Log Book.

During the next reporting period, AGL plans to continue to undertake the following measures to ensure continued health of the tree plantings.

- Engage 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;
- The removal of tree guards on well-established plantings defined as greater than 1.5 m tall and with a basal stem diameter of greater than 30 mm; and,
- Continue use of the Maintenance Log Book.

4.17 Aboriginal Heritage

Ongoing 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 4-23.

Table 4-23 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

Aboriginal heritage activities conducted during the reporting period are summarised below.

Spring Farm / Menangle Park

Site Relocation

Four previously identified Aboriginal Archaeological sites at well site location (WSL) MP03 were inspected (October 2010) and artefacts from two sites relocated and fencing erected for their protection. The site inspection and relocation was undertaken by Biosis Research, Tharawal Local Aboriginal Land Council (TLALC), and Cubbitch Barta Native Title Claimants Aboriginal Corporation (CBNTAC).

Cultural Heritage excavations

Cultural Heritage Test pit excavations were undertaken at Menangle Park for the proposed Gas Gathering Line (GGL) from MP22 to the existing GGL. Biosis Research conducted the excavations (February 2011) over an identified area of Aboriginal archaeological sensitivity to determine the site contents, boundaries and cultural significance prior to commencing construction of the gas gathering line. The excavations were conducted in conjunction with Tharawal Local Aboriginal Land Council

(TLALC) and Cubbitch Barta Native Title Claimants Aboriginal Corporation (CBNTAC). All artefacts uncovered were analysed and are to be dealt with in the manner decided by the consultant bodies. 12 aboriginal artefacts and 1 new aboriginal archaeological site were identified during excavations.

No previously unidentified items of Aboriginal cultural heritage significance were uncovered elsewhere during construction activities.

4.17.2 Aboriginal Heritage Management Performance / Trends

All activities associated with aboriginal heritage were compliant for the period with 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 4-24.

Table 4-24 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. (Note: a list of relevant documents is provided in Section 4.1 of this EHMSP)	✓	✓	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

Spring Farm / Menangle Park

No European Heritage Activities were carried out by AGL during the 2010-11 reporting period; however, some (92) European Heritage artefacts were located during the enactment of the Biosis Aboriginal archaeological salvage excavations (February 2011). Biosis' report was not yet complete at the end of the reporting period, however, an s146 notification was forwarded to the DoPI 11 February 2011 regarding the potential relics and a rubbish dump located in the vicinity of SHR item, Glenlee. In accordance with the recommendations of the relevant authorities, the location of the Bottle Dump will be added to the LEP.

4.18.2 European Heritage Management Performance/ Trends

In performance terms:

- The continued development of areas on the EMAI met all Development Consent requirements for heritage protection.
- There were no other European heritage items and/or archaeological sites identified during other field surveys.

All activities associated with cultural heritage were compliant for the 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 an 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 4-25.

Table 4-25 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

Activity	Management Strategies	Responsibility
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 4-26.

Table 4-26 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 to 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. During a Rig move from the KP06 site to the MP22 site, an overhead power line was struck and taken down on Cummins Road, Menangle Park at approximately 4am, 29 May 2011. It is believed the driver for the contractor did not notice when one of the equipment loads contacted the power line.

Power was cut to one property and the affected resident reported the incident to the AGL Menangle Park facility. The fallen power line was repaired. An oversize permit was in place and roads had been inspected to identify associated hazards prior to the Rig move. The incident was reported to DII (now DTIRIS) at the time.

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 4-27.

Table 4-27 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, 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, 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

One potential environmental incident was recorded during the reporting period. The release of non-toxic, non-hazardous foam into the air during a routine maintenance activity occurred at the Sugarloaf 3 well site on 17 May 2011 and was reported to the OEH, the Department of Trade & Investment, Regional Infrastructure and Services (DTIRIS); the Sydney Catchment Authority (SCA); the Department of Planning and Infrastructure (DoPI) (landowner); and, Broughton Anglican College (adjoining neighbour).

On 17 May 2011, an AGL gas operations workover team conducted routine maintenance at its Sugarloaf 3 well, located near Campbelltown approximately one kilometre away from the Glen Alpine residential area. The team used water, soap and air to clean sand and coal debris out of the path used by gas and water to flow out of the well. This is a routine well maintenance activity which may be carried out every two to four years.

During this maintenance activity, the water, soap and air were circulated down the well to clear debris. The water, soap, air and debris was then returned to the surface to be captured by a tank on the surface. An open top tank with a separator (degasser) was located 15 to 20 metres from the well to capture the returns from the well. The degasser's function is to separate the fluid from the air or gas. The fluid is directed into the tank through a pipe which is connected to the wellhead, while the air and gas are directed up to vent. The separator is a safety device to ensure that gas or air is dispersed and vented to atmosphere reducing the safety hazard. Located between the separator and well is a choke manifold with valves that can be adjusted to manage the flow from the well. The amount of liquid soap mixed with water in this process varies, but is usually about two to three litres of liquid soap mixed with about 1000 litres of water. Water and air are recovered from the well and captured in a tank via a pipe. In this instance, the workover crew detected a large amount of produced water in the well, and increased the proportion of soap to lighten the water and increased its flow to the surface. This resulted in excessive foaming that created white soapy mist being released from the degasser.

The workover crew believed the soap foam released was harmless, so no immediate action was taken to stop the release of foam from the top of the degasser. White soapy mist was released for two to five minutes and dissipated into the air or fell within 40 metres of the well. Immediately following the incident, AGL took several steps to ensure that no further release occurred during the maintenance activities.

In its investigation to determine how the incident happened, AGL found that the soapy mist was released when liquid soap that was being used to clean the well was aerated and not captured in the water storage tank.

After carrying out an investigation in conjunction with the SCA, DTIRIS and DoPI, the OEH also concluded that "there was no significant harm to the surrounding environment from the emission of foamy liquid," but the maintenance equipment “was not being operated in a proper and efficient manner as required by condition 02 of the Environment Protection Licence.”

OEH determined that an appropriate regulatory response to this incident was to issue a formal warning to AGL Upstream Investments. OEH issued a formal letter to serve as a warning to AGL Upstream Investments and its employees that environmental performance and statutory compliance must be continually maintained. AGL accepted the finding and deeply regrets the incident.

Following the incident, AGL voluntarily submitted water and soil samples to the independent laboratory to address any community concerns over the soapy mist release. The analysis of the area surrounding the water storage tank also showed:

- The tank’s water quality was typical of produced water;
- No benzene, toluene, ethylbenzene or xylenes (known as BTEX) were present in soil or water samples; and
- Soil salinity and surfactant levels did not increase.

According to independent analysis performed by ALS Laboratories, the soapy mist caused no impact to the surrounding environment.

AGL has taken steps to ensure the incident should not be repeated:

- Modifications were made to the degasser, installing a bypass that will accommodate the flowback of the soap foam into the mud tank.
- AGL Senior leaders have communicated with all field based employees and contractors, the importance of ensuring AGL activities do not have any visual impact on the community. Work Procedures are being updated to reflect the modified degasser and choke back requirements.
- Work Procedures are being updated to limit and specify the volumes of soap to be used when cleaning a well.
- Non non-hazardous, non-dangerous goods defoamer will be used on all future workovers to ensure foam is not blown from the mud tank.

4.26 Environmental Training

During the reporting period, staff were provided with external environmental training on Sampling Procedures for Coal Seam Gas Waters, delivered by Parsons Brinckerhoff.

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

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

Activity	Action	Responsibility
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 ongoing 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 ongoing 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	38	32	6	0	1	30	5*
2	5	4	0	0	0	1.5	0
4	94	92	2	1	0	66.6	0.3*
5	5	0	0	0	0	0	0
6	0	0	0	0	0	0	0

*denotes gas gathering lines which have been fully decommissioned including purging and removal of all surface equipment, but have been left in situ.

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

Table 5-3 Rehabilitation works completed for 2010/11

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	1	0	0	0	0	0	0
4	4	4	0	0	0	3.1	0
5	5	0	0	0	0	0	0
6	0	0	0	0	0	0	0

5.1.2 Well Sites

All well sites are located in cleared farmland or in areas within cleared 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 with the retained subsoil;
- Any tracks or hardstand areas, or areas of compacted ground not required for ongoing use ripped. Fences have been retained at the landholder's discretion;
- Wherever recoverable, stockpiled topsoil has been respread 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 Camden Gas Project 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 Camden 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 Camden Gas Project.

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.

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

Table 5-4 outlines rehabilitation works proposed for 2011/12 by PPL.

Table 5-4 Rehabilitation works proposed 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	2	8	0	0	0	0	0
5	0	5	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 site;
- Rehabilitation of the EM 26 holding dam;
- Rehabilitation of KP06 well site;
- Rehabilitation of the MP22, MP23 and MP03 well sites; and,
- Rehabilitation of the MP03 gas gathering lines (to be constructed 2011/12).

5.5 Further Improvements

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

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 ongoing 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 Camden Gas Project 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 actioned is outlined in the following Development Consents as well as the EPL for the Rosalind Park Gas Plant:

- 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 OEH 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

Five community complaints regarding environmental concerns were received during the reporting period. Four complaints were received directly by AGL and one complaint was received via the OEH complaints line.

Table 7-1: Environmental Complaint Details

Complaint	Date	Action Taken
Menangle Park resident complained during the rig move from MP12 to MP05A due traffic from the rig move causing road congestion on Cummins Road.	October 2010	AGL contacted the resident and explained the RTA restrictions for the rig move, and provided an update on the operations. The matter was resolved to the satisfaction of the resident.
A resident near to the MP03 site contacted AGL with concerns about the dust caused by vehicles travelling along MP03 access road.	October 2010	The water cart was en-route at the time of the complaint and worked continuously from then onwards.
An adjoining landowner to the MP03 site contacted AGL to complain about the dust and recent noise levels at night.	February 2011	AGL's investigation discovered the dust was generated whilst the dust suppression water cart was offsite refilling. The water cart continued to work continuously onsite to prevent dust and tighter controls were implemented to minimise offsite time. Continuous noise monitoring confirmed compliance with noise criteria. Drill rig noise levels were reduced through further equipment modification.
An adjoining landowner to the KP06 complained via the OEH complaints line about noise levels and vibration during drilling of KP06.	April 2011	AGL had engaged external noise consultants to undertake continuous noise monitoring at the residents property boundary prior to the complaint to ensure compliance with noise criteria. AGL had also implemented additional recommended actions and possible noise mitigation steps prior to the complaint. AGL continued to communicate with the resident throughout the remainder of the drilling program including offers for additional mitigation at the residence (as suggested by OEH), but these mitigation measures were not accepted.
A neighbour to the MP22 site contacted AGL to complain about dust levels during the rig move to MP22.	May 2011	The water cart was already working at the time of the complaint but was redirected to the area of concern. Dust levels were generated as result of heavy vehicle movements not vehicle travelling speeds. Dust suppression water carts will continue to be a standard mitigation measure during all major heavy vehicle movements and their intensity will be increased to suit road and weather conditions.

7.1.4 Complaint Trend

The number of complaints received in 2010/11 has increased in comparison with the previous reporting period where two 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 Camden Gas Project, 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:

- 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 Camden Gas Project. .

The committee consists of:

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

It is noted that the Development Consent Conditions require two representatives from a recognised environment group. These positions were vacant at the time of this report. The conditions also require four community members: the pending DoPI approval of a third community representative leaves the CCC requiring one further community member at the end of this reporting period.

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

Following the Sugarloaf 3 foam release incident, AGL has undertaken the following consultation measures:

- Reported the incident to:
    - the Office of Environment & Heritage (OEH);
    - the Department of Trade & Investment, Regional Infrastructure and Services (DTIRIS);
    - the Sydney Catchment Authority (SCA);
    - the Department of Planning and Infrastructure (DOPI) (landowner) whose property hosts the well; and
    - Broughton Anglican College (adjoining neighbour)
- Discussed the incident with the Resources and Energy Minister Chris Hartcher;
- Sent a letter and hosted a Camden Gas Project site visit to MP Jeremy Buckingham, MLC;
- Discussed the incident with the CCC;
- Released media statements; and
- Communicated details of the incident at its operational safety meeting and reemphasised its “Step Back Policy” which gives anyone on an AGL site the authority to stop an activity that he or she deems unsafe or environmentally unacceptable

7.3.1 Community Consultation

Community Consultative Committee (CCC)

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

- No.25 – 15 July 2010;
- No.26 – 14 October 2010;
- No. 27 – 25 November 2010;
- No. 28 – 10 March 2011; and,
- No. 29 – 16 June 2011.

All actions raised during the meetings have been closed out.

Other Consultation

The following consultation processes have also been undertaken for the Camden Gas Project:

- Letter drops regarding operation issues including drilling of Menangle Park and Kay Park wells;
- Public information stand at Camden Show, April 2011;
- Aboriginal consultation regarding works within the Menangle Park field;
- Landowner advices to affected properties on a regular basis;
- Presentation to the NSW Farmers Federation, April 2011;
- Ongoing consultation with stakeholders regarding the Camden North expansion; and
- Public presentation on CSG and Camden Gas Project to Campbelltown residents, June 2011.

7.4 Audits and Visits

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

- Site visits by Campbelltown Council;
- Site visits to the Sugarloaf site by OEH, DTIRIS and Sydney Catchment Authority in response to the Sugarloaf 03 incident;
- Camden Gas Project site visit by MP Jeremy Buckingham in response to the Sugarloaf 03 incident;
- Visit by Minister Christopher Hartcher – Minister for Resources and Energy;
- The NSW Fire Brigade and NSW Rural Fire Service attended RPGP for a series of familiarisation visits;
- Visit by Hunter Thoroughbred Breeders Association; and,
- Visit by Environmental Property Services Pty Ltd as part of preparation of this AEPR.

During the reporting period, an Independent Environmental Audit was also commenced for the period 2008-2010. A final copy of the audit report had not been issued at the close of this reporting period.

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 OEH. The EPL Licence 12003 Annual Return for the period 22/12/09 to 21/12/10 was submitted in February 2011. There were no non-conformances reported for this period.

For inclusion in the next Annual Return is one environmental non compliance matter relating to the release of non-toxic, non-hazardous foam into the air during a maintenance activity which occurred at the Sugarloaf 3 well site on 17 May 2011. Section 4.25.2 outlines this incident in detail.

8.1.2 Non Compliances Identified During Independent Environmental Audit

An Independent Environmental Audit was undertaken by URS in August 2008. The next two-yearly independent environmental audit was commenced in January 2011, but a final copy of the audit report had not been issued at the close of this reporting period

Non conformances identified during the 2008 independent environmental audit are listed in Table 4-1 along with the status of the implementation of the actions to address these non-compliances.

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
	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

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

Area	Well Numbers	Property Lot Number	Deposited Plan No.	DA No.
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 & MP23 (MP23 site)	1	598067	
	MP04*	31	1100981	
	MP05, MP05A, MP07 & MP08	1	790254	
	MP33*	1	249393	
	MP24*	2	236059	

Area	Well Numbers	Property Lot Number	Deposited Plan No.	DA No.
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 - Bore Licences for Gas Wells

Licence No.	Local Well No.	Field
10BL603867	EM02	EMAI
10BL603868	EM03	EMAI
10BL603869	EM04	EMAI
10BL603870	EM05	EMAI
10BL603871	EM06	EMAI
10BL603872	EM07	EMAI
10BL603873	EM08	EMAI
10BL603874	EM09	EMAI
10BL603875	EM10	EMAI
10BL603876	EM11	EMAI
10BL603877	EM12	EMAI
10BL603878	EM13	EMAI
10BL603881	EM14	EMAI
10BL603882	EM15	EMAI
10BL603883	EM16	EMAI
10BL603884	EM17	EMAI
10BL603885	EM18	EMAI
10BL603886	EM19	EMAI
10BL603887	EM20	EMAI
10BL603888	EM21	EMAI
10BL603889	EM22	EMAI
10BL603890	EM23	EMAI
10BL603891	EM24	EMAI
10BL603892	EM25	EMAI
10BL603893	EM27	EMAI
10BL603897	EM28	EMAI
10BL603898	EM30	EMAI
10BL603899	EM31	EMAI
10BL603900	EM32	EMAI
10BL603901	EM33	EMAI
10BL603902	EM34	EMAI

Licence No.	Local Well No.	Field
10BL603903	EM37	EMAI
10BL603905	EM39	EMAI
10BL603906	EM40	EMAI
10BL603911	GL02	Glenlee
10BL603912	GL04	Glenlee
10BL603913	GL05	Glenlee
10BL603914	GL06	Glenlee
10BL603915	GL07	Glenlee
10BL603917	GL08	Glenlee
10BL603918	GL09	Glenlee
10BL603919	GL10	Glenlee
10BL603920	GL11	Glenlee
10BL603921	GL12	Glenlee
10BL603922	GL13	Glenlee
10BL603924	GL14	Glenlee
10BL603925	GL15	Glenlee
10BL603926	GL16	Glenlee
10BL603927	GL17	Glenlee
10BL603928	JD01	Johndilo
10BL603929	JD04	Johndilo
10BL603930	JD05	Johndilo
10BL603931	JD06	Johndilo
10BL603932	JD07A	Johndilo
10BL603933	JD11	Johndilo
10BL603934	JS01	Joe Stanely
10BL603935	JS03	Joe Stanely
10BL603936	JS04	Joe Stanely
10BL603937	KP01	Kay Park
10BL603938	KP02	Kay Park
10BL603939	KP03	Kay Park
10BL603940	KP05	Kay Park
10BL603941	LB05	Logan Brae
10BL603942	LB06	Logan Brae

Licence No.	Local Well No.	Field
10BL603952	LB07	Logan Brae
10BL603953	LB09	Logan Brae
10BL603954	LB11	Logan Brae
10BL603955	MH01	Mahon
10BL603956	MP05	Menangle Park
10BL603957	MP07	Menangle Park
10BL603958	MP08	Menangle Park
10BL603959	MP13	Menangle Park
10BL603960	MP14	Menangle Park
10BL603961	MP15	Menangle Park
10BL603962	MP16	Menangle Park
10BL603963	MP17	Menangle Park
10BL603964	MP30	Menangle Park
10BL603965	MT01	Mt Taurus
10BL603976	MT02	Mt Taurus
10BL603978	MT03	Mt Taurus
10BL603981	MT04	Mt Taurus
10BL603989	MT05	Mt Taurus
10BL603990	MT06	Mt Taurus
10BL603991	MT07	Mt Taurus
10BL603992	MT08	Mt Taurus
10BL603993	MT09	Mt Taurus
10BL603994	MT10	Mt Taurus
10BL604007	RB06	Razorback
10BL604008	RB07	Razorback
10BL604009	RB08	Razorback
10BL604010	RB09	Razorback
10BL604011	RB10	Razorback
10BL604012	RB11	Razorback
10BL604013	RB12	Razorback
10BL604014	RP02	Rosalind Park
10BL604015	RP07	Rosalind Park
10BL604016	RP08	Rosalind Park

Licence No.	Local Well No.	Field
10BL604017	RP09	Rosalind Park
10BL604031	RP10	Rosalind Park
10BL604032	RP12	Rosalind Park
10BL604033	SF01	Spring Farm
10BL604034	SF02	Spring Farm
10BL604035	SF03	Spring Farm
10BL604036	SF17	Spring Farm
10BL604037	SL02	Sugarloaf
10BL604038	SL03	Sugarloaf
10BL604039	SL09	Sugarloaf
10BL604040	WG01	Wandinong
10BL604041	WG02	Wandinong
10BL604042	WG03	Wandinong
10BL604043	WG04	Wandinong
10BL604044	WG05	Wandinong
10BL604045	WG06	Wandinong
10BL604131	EM38	EMAI
10BL604582	MP10	Menangle Park
10BL604597	KP06	Kay Park
10BL604582	MP01	Menangle Park
10BL604582	MP02	Menangle Park
10BL604582	MP03	Menangle Park
10BL604582	MP09	Menangle Park
10BL604572	MP11	Menangle Park
10BL604673	MP22	Menangle Park
10BL604888	MP25	Menangle Park
10BL604877	MP18	Menangle Park
10BL604876	MP33	Menangle Park
10BL604874	MP24	Menangle Park
10BL604881	SF01	Spring Farm
10BL604882	SF02	Spring Farm
10BL604883	SF03	Spring Farm
10BL604884	SF05	Spring Farm

Licence No.	Local Well No.	Field
10BL604885	SF07	Spring Farm
10BL604886	SF08	Spring Farm
10BL604887	SF09	Spring Farm
10BL604878	MP05a	Menangle Park
10BL604879	MP12	Menangle Park
10BL604880	MP23	Menangle Park

Appendix C - Air Quality Monitoring Results

Air Quality Monitoring Results – Rosalind Park Gas Plant

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	5	313	339	356	N/A
Nitrogen Oxides	mg/m^3 @7%O_2	4	5	300	360	420	461
Sulphur Dioxide	mg/m^3	4	5	BLD*	BLD	BLD	7
Oxygen (O2)	%	4	5	12.2	13.1	13.9	N/A
Volumetric Flowrate	m^3/s	4	5	2.9	3.0	3.1	N/A
Molecular Weight of Stack Gases	g/g-mole	4	5	29.3	29.38	29.4	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	5	<0.012	0.08	0.19	5.0
Dry gas density	Kg/m^3	4	5	1.31	1.31	1.31	N/A
Velocity	m/s	4	5	24	26.75	29	N/A
Moisture	%	4	5	7.3	10.2	14	N/A
Carbon Dioxide	%	4	5	4.2	4.68	5.2	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	2	313	387.5	462	N/A
Nitrogen Oxides	mg/m^3 @7%O_2	4	2	160	180	200	461
Sulphur Dioxide	mg/m^3	4	2	BLD	BLD	BLD	7
Oxygen (O2)	%	4	2	0.5	0.65	0.8	N/A
Volumetric Flowrate	m^3/s	4	2	0.88	0.89	0.9	N/A
Molecular Weight of Stack Gases	g/g-mole	4	2	30.	30.05	30.1	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	2	0.12	0.66	1.2	5.0
Dry gas density	Kg/m^3	4	2	1.34	1.34	1.34	N/A
Velocity	m/s	4	2	20	22	24	N/A
Moisture	%	4	2	14	14	14	N/A
Carbon Dioxide	%	4	2	11.4	11.9	12.4	N/A

*Compressor 2 was only operating during rounds of monitoring due to limited gas production.

BLD: Below Limit of Detection

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	3	339	421	455	N/A
Nitrogen Oxides	mg/m^3 @7%O_2	4	3	150	166	180	461
Sulphur Dioxide	mg/m^3	4	3	BLD*	BLD	BLD	7
Oxygen (O_2)	%	4	3	0.6	1.23	2.4	N/A
Volumetric Flowrate	m^3/s	4	3	0.72	0.78	0.86	N/A
Molecular Weight of Stack Gases	g/g-mole	4	3	29.9	30	30.2	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	3	<0.18	0.053	0.059	5.0
Dry gas density	Kg/m^3	4	3	1.33	1.34	1.35	N/A
Velocity	m/s	4	3	18	20.3	24	N/A
Moisture	%	4	3	13	14.3	17	N/A
Carbon Dioxide	%	4	3	10.7	11.5	12.8	N/A

*Compressor 3 was only operating during rounds of monitoring due to limited gas production.

BLD: Below Limit of Detection

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	5	231	264	294	N/A
Nitrogen Oxides	mg/m^3 @7%0_2	4	5	100	107.4	110	110
Sulphur Dioxide	mg/m^3	4	5	BLD*	BLD	BLD	35
Oxygen (O_2)	%	4	5	13	14.06	15.8	N/A
Volumetric Flowrate	m^3/s	4	5	0.007	0.066	0.095	N/A
Molecular Weight of Stack Gases	g/g-mole	4	5	29.2	29.4	29.7	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	5	0.037	0.1	0.2	3.5
Dry gas density	Kg/m^3	4	5	1.30	1.31	1.32	N/A
Velocity	m/s	4	5	2.3	3.3	3.9	N/A
Moisture	%	4	5	3.5	5.28	8.1	N/A
Carbon Dioxide	%	4	5	3	4.22	5	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	5	81	88	98	N/A
Nitrogen Oxides	mg/m^3 @7%0_2	4	5	BLD	BLD	BLD	13
Sulphur Dioxide	mg/m^3	4	5	0.24	1.02	1.8	1042
Oxygen (O2)	%	4	5	0.4	2.54	5.6	N/A
Volumetric Flowrate	m^3/s	4	5	0.004	0.005	0.007	N/A
Molecular Weight of Stack Gases	g/g-mole	4	5	29.4	29.8	30.2	N/A
Sulphuric Acid and sulphur trioxide	mg/m^3	4	5	0.16	4.076	13	35
Dry gas density	Kg/m^3	4	5	1.31	1.33	1.34	N/A
Velocity	m/s	4	5	1.8	1.94	2.2	N/A
Moisture	%	4	5	48	54.8	59	N/A
Carbon Dioxide	%	4	5	7	9.94	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	5	13.85	23	31	N/A
Oxygen (O2)	%	4	5	20.9	20.9	20.9	N/A
Volumetric Flowrate	m^3/s	4	5	0.15	0.165	0.18	N/A
Molecular Weight of Stack Gases	g/g-mole	4	5	29	29	29	N/A
Odour	ou	4	5	11	226.6	460	N/A
Dry gas density	Kg/m^3	4	5	1.29	1.29	1.29	N/A
Velocity	m/s	4	5	5.9	6.22	6.7	N/A
Moisture	%	4	5	0.7	1.02	1.5	N/A
Carbon Dioxide	%	4	5	0.1	0.1	0.1	N/A

Appendix D - Assessable Pollutant Results – RPGP

Load Limits for Assessable Pollutants – RPGP

Assessable Pollutant	Assessable Load (kg)	Load Limit (kg)
Arsenic	0.049	No limit stipulated
Benzene	9.786	47
Benzo(a) pyrene	0.02	0.27
Fine Particulates	279.86	460
Hydrogen Sulphide	0.483	1.6
Lead	0	No limit stipulated
Mercury	0.004	No limit stipulated
Nitrogen Oxides	36,822	103,000
Nitrogen Oxides – summer	9206	No limit stipulated
Sulphur Oxides	0.296	3,000
Volatile Organic Compounds	109	33,000
Volatile Organic Compounds - summer	27	No limit stipulated

Appendix E - Flare Event Monitoring

The RPGP flare log is provided in this Appendix from July 2010 to June 2011.

Date	**Time**	**Duration (minutes)**	**Light (Day, Dusk, Night, Dawn)**	**No. Compressor on line**	**Cause of Flare Occurrence**
15/10/10	14.56.20 hrs- 15.22.00 hrs	26	Day	None	External Power Failure