

CAMDEN GAS PROJECT

AIR QUALITY MANAGEMENT SUB PLAN

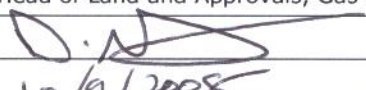
AGL Gas Production (Camden) Pty Limited
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Document Control

Air Quality Management Sub Plan

Approval:

Authorising Officer	David Kelly
Title	Head of Land and Approvals, Gas and Power Development
Signature	
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2	Head of Land and Approvals	David Kelly
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4	Drilling Completions Manager	Janet Michalopoulos
5	Production Operations Manager	Dennis Chia
6	Petroleum Engineer	Michael Meers
7	Field Environment and Safety Officer	Aaron Clifton
8	Land and Compliance Officer	Kevin Rofe
9	Land & Approvals Manager	Siobhan Barry
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11	Rosalind Park Gas Plant	Control Room
12	AGL website	N/A



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1. Introduction

This Air Quality Management Sub Plan (AQMSP) has been prepared to supplement the Environment Management Plan (EMP) for the Camden Gas Project ('the project' or 'CGP').

The Sub Plan has been developed to specifically address and manage potential air quality issues for all the operations of the CGP and it is based on the previously prepared and approved Environment Health and Safety Management Plans and the AGL Energy Life Guard system. More information is available in the EMP.

1.1. Objective

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

1.2. Target

Zero incidents or complaints received regarding uncontrolled air emissions.

1.3. Responsibilities

Personnel responsible for implementing this environmental sub plan include the following:

- › Field Environment and Safety Officer responsible for notifying the DECC (EPA) in the event of a pollution event.
- › Field Environment and Safety Officer responsible for informing site personnel of the required procedures for the protection of air quality via an induction program.
- › Field Environment and Safety Officer, Site Manager and Land & Compliance Officer responsible for checking adherence to operating procedures and delegation of maintenance works on control measures.
- › Field Environment and Safety Officer and Site Manager responsible for monitoring air emissions and dust generation.
- › Field Environment and Safety Officer and Head of Production responsible for reporting air emission monitoring (including to DECC - EPA and NPI reporting).
- › Site Manager responsible for ensuring reasonable and feasible air emissions source controls investigated and installed.
- › Production Supervisor responsible for ensuring all AGL vehicles are properly maintained and serviced.
- › Land & Compliance Officer responsible for landowner consultation with assistance from the Project Manager in addressing and managing complaints in relation to air emissions.
- › All employees and contractors are responsible for managing air emissions, particularly dust, from their work activities and working in a manner so as to minimise dust and air emissions.

2. Requirements

2.1. Key Licence/ Development Consent Requirements

The key licence and development consent requirements relating to air quality management are included in Table 1 below:

Table 1 Key Licence and Development Consent

Reference	Requirement
Petroleum Exploration Licence 2 (PEL 2), Condition 2, 2006.	Operations must be carried out in a manner that does not cause or aggravate air pollution.
Petroleum Production Leases 1 and 2 (PPL 1 and 2), Condition 7.	The leaseholder must take such reasonable precautions as are necessary to abate any dust nuisance.
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 and Project Approval 06-138, CoC 7.	AGL should ensure that activities are carried out in a manner that will minimise the emission of dust, including traffic generated dust:
EPL 12003, O5; DA 151-2002, CoC 52; DA 282-6-2003, CoC 64; and DA 171-7-2005, CoC 9.	AGL shall not cause or permit any offensive odours to be emitted from the site:
DA 282-6-2003, CoC 65.	Detectable methyl mercaptan odour should not be emitted from the premises
EPL 12003, Reporting Condition 1:	Annual return including statement of compliance and monitoring and complaints summary for Rosalind Park Gas Plant to be submitted to the EPA.
EPL 12003, Reporting Conditions 2 and 3	Notification of incidents causing or threatening to cause environmental harm at Rosalind Park Gas Plant to the EPA.
EPL 12003, L3 and DA-282-6-2003, CoC 48:	Specify the concentration of pollutants (NO _x , SO ₂ , Sulphuric acid and sulphur trioxide) permitted to be discharged at each discharge point at Rosalind Park Gas Plant.
DA-282-6-2003, CoC 47	Specifies air pollutant emission criteria for privately owned residences around the Rosalind Park Gas Plant for Nitrogen Dioxide, Sulphur Dioxide, sulphuric acid mist and methyl mercaptan.
EPL 12003, L2	Defines the load limits for assessable pollutants
DA-282-6-2003, CoC 49	Prohibits the discharge of pollutants from Rosalind Park Gas Plant not listed under CoC 48.
DA-282-6-2003, CoC 50	Defines the combustion parameters at Rosalind Park Gas Plant

2.2. Key Legislative and Regulatory Requirements

The key regulatory requirements relating to air emissions include those listed in Table 2 below:

Table 2 Key Regulatory Requirements

Legislation/ Policy	Relevance
Protection of the Environment Operations Act 1997	<p>It is an offence wilfully or negligently cause any substance to leak, spill or otherwise escape (whether or not from a container) in a manner that harms or is likely to harm the environment.</p> <p>Pollution incidents causing or threatening material harm to be notified to the DECC (EPA).</p> <p>It is an offence to cause or permit the emission of any offensive odour from a premise.</p>
Protection of Environmental Operations (Clean Air) Regulation 2002	<p>Sets maximum limits on emissions from activities and plant for a number of substances, including chlorine, dioxins, furans, smoke, solid particles and sulphur.</p> <p>Imposes operational requirements for certain afterburners, flares, vapour recovery units and other treatment plant.</p>
Protection of the Environment Operations (General) Regulation 1998 (Chapter 3A)	<p>AGL are required to submit air emission data annually for Camden Gas Project (CGP) as part of the National Pollutant Inventory.</p>



3. Management Measures

3.1. Potential Air Emission Sources

Sources of potential air emissions include those from the following sources:

3.1.1. Rosalind Park Gas Plant (RPGP)

Discharges to air at the Rosalind Park Gas Plant (as described and illustrated in EPL 12003, P1 and 'Camden Gas Project Site Plan Location of Emission Points'):

- > Compressor Engine Exhaust Stacks 1, 2 and 3 (Points 1, 2 and 3);
- > TEG Fire Tube (also known as Reboiler Flue Point 4);
- > Reboiler Still Column (also known as Reflux Column Vent Point 5);
- > Carbon scrubber vent discharge stack (also known as Odouriser Carbon Vent Point 6); and
- > Main Flare (also known as Flare Pilot Point 7).

3.1.2. Field Activities

Potential air emissions from field development, maintenance (workover) and production activities include the following:

- > Dust during activities associated with construction, operation and maintenance and rehabilitation;
- > Vehicle emissions during construction, operation and maintenance and rehabilitation; and
- > Fugitive emissions from wells during workover and dewatering.



3.2. Control Measures – Air Quality

CGP Activity	Action	Area	
		RPGP	Field
General	The workforce induction program shall inform site personnel of required procedures for the protection of air quality.	✓	✓
Construction	Greenhouse gas emissions associated with production testing shall be minimised by adopting strict operating procedures.		✓
Construction, Operation and Rehabilitation	Plant and equipment shall be regularly maintained and serviced to limit the amount of pollution generated.	✓	✓
	The volume of flared gas shall be minimised.	✓	✓
	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.		✓
	Activities will be carried out in a manner that does not cause or aggregate air pollution.	✓	✓
Operation	All pollution control equipment is to be maintained in an efficient condition.	✓	
	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.	✓	

4. Monitoring and Reporting

4.1. Monitoring Requirements

Air monitoring requirements for the Rosalind Park Gas Plant are stipulated in the Development Consent DA 282-6-2003i, Schedule 4 Clause 54, 55, 58 & 59 and the Environmental Protection Licence No.12003. The requirements are summarised in Table below:

Table 3 Monitoring Requirements and Limits for the Rosalind Park Gas Plant

Monitoring Point	Parameter	Limit	Frequency
Point 1 Compressor Engine 1 exhaust Stack; and Point 2 Compressor Engine 2 Exhaust Stack; and Point 3 Compressor Engine 3 Exhaust Stack	Nitrogen Oxides	461 mg/m ³	Quarterly & Continuous
	Sulphur dioxide	7 mg/m ³	Quarterly
	Sulphuric Acid Mist and Sulphur trioxide	3.1 mg/m ³	Quarterly
	Carbon dioxide	N/A	Quarterly
	Dry gas density	N/A	Quarterly
	Moisture	N/A	Quarterly & Continuous
	Molecular weight of stack gases	N/A	Quarterly
	Oxygen	N/A	Quarterly & Continuous
	Temperature	N/A	Quarterly & Continuous
	Velocity	N/A	Quarterly
Volumetric flow rate	N/A	Quarterly & Continuous	
Point 4 Reboiler Flue	Nitrogen Oxides	110 mg/m ³	Quarterly
	Sulphur dioxide	35 mg/m ³	Quarterly
	Sulphuric Acid Mist and Sulphur trioxide	1.0 mg/m ³	Quarterly
	Carbon dioxide	N/A	Quarterly
	Dry gas density	N/A	Quarterly
	Moisture	N/A	Quarterly
	Molecular weight of stack gases	N/A	Quarterly
	Oxygen	N/A	Quarterly
	Temperature	N/A	Quarterly
	Velocity	N/A	Quarterly
Volumetric flow rate	N/A	Quarterly	

Monitoring Point	Parameter	Limit	Frequency
Point 5 Reflux column vent	Nitrogen Oxides	13 mg/m ³	Quarterly
	Sulphur dioxide	1042 mg/m ³	Quarterly
	Sulphuric Acid Mist and Sulphur trioxide	35 mg/m ³	Quarterly
	Carbon dioxide	N/A	Quarterly
	Dry gas density	N/A	Quarterly
	Moisture	N/A	Quarterly
	Molecular weight of stack gases	N/A	Quarterly
	Oxygen	N/A	Quarterly
	Temperature	N/A	Quarterly
	Velocity	N/A	Quarterly
	Volumetric flow rate	N/A	Quarterly
	Point 6 Scrubber vent discharge stack	Carbon dioxide	N/A
Dry gas density		N/A	Quarterly
Moisture		N/A	Quarterly
Molecular weight of stack gases		N/A	Quarterly
Odour		N/A	Quarterly
Oxygen		N/A	Quarterly
Temperature		N/A	Quarterly
Velocity		N/A	Quarterly
Volumetric flow rate		N/A	Quarterly
Point 7 Flare Pilot	N/A	N/A	N/A

DA 282-6-2003, Schedule 5, CoC 12 and EPL (L2) stipulate load limits for assessable pollutants which must not be exceeded during the reporting period from the premises. Note assessable pollutants are pollutants which affect the licence fee payable for the licence. These are summarised in Table 4 below for the Rosalind Park Gas Plant.

Table 4 Load Limits for Assessable Pollutants for the Rosalind Park Gas Plant

Assessable Pollutant	Load Limit (kg)
Benzene	47
Benzo(a) pyrene	0.27
Fine Particulates	460
Hydrogen Sulfide	1.6
Nitrogen Oxides	103,000
Nitrogen Oxides – summer	
Sulphur Oxides	3,000
Volatile Organic Compounds	33,000
Volatile Organic Compounds - summer	

The sampling methodologies are outlined in the EPL (M2.1) and DA 282-6-2003, CoC 55.

Monitoring of air emissions for the National Pollutant Inventory is required under the POEO (General) Regulation 1998 (Chapter 3A).

Quarterly monitoring is conducted by Stephenson Environmental Management Australia.

The Continuous emissions monitoring system for each of the RPGP Compressors 1, 2 and 3 functions through continuous sampling and analysis of engine exhaust while each of the compressors operate. This analysed data is then communicated to the RPGP control room where it is monitored to ensure ongoing compliance with NOx emissions.

4.2. Reporting Requirements

Air emission reporting requirements include the following:

- › EPL 12003, Reporting Condition 1: Annual return including statement of compliance and monitoring, load based licence calculations and complaints summary for Rosalind Park Gas Plant to be submitted to the EPA.
- › EPL 12003, Reporting Conditions 2 and 3: Notification of incidents causing or threatening to cause environmental harm at Rosalind Park Gas Plant to the EPA.
- › DA 282-6-2003 CoC 63: Quarterly Air Emissions Reports to be submitted to the DECC (formerly the EPA)
- › Annual National Pollutant Inventory (NPI) reporting.
- › Summary of air monitoring results and trends in CGP Annual Environmental Performance Report (AEPR).

4.3. Records

Records related to this environmental sub plan include:

- › Monitoring records as described in EPL 12003, M1.
- › National Pollutant Inventory records.
- › Continuous Emissions Monitoring data for RPGP Compressors 1, 2 and 3;
- › Quarterly Air Emissions Monitoring data for RPGP;
- › National Greenhouse and Energy Reporting data;
- › Records of complaints related to air pollution as described in EPL 12003, M4.
- › Inspection checklists completed by the Field Environment and Safety Officer, Site Manager or Land & Compliance Officer.
- › Records of any reports to authorities relating to incidents causing or threatening to harm the environment as a result of air emissions.
- › Records of annual returns to the EPA that include a statement of compliance and monitoring and complaints summary.

All records required to be kept by the EPL will be in a legible form, kept for at least 4 years and produced to any authorised officer of the DECC who asks to see them.



5. Administrative

5.1. Site Specific Plans

Currently not applicable

5.2. Attachments

EPL 12003 and P1 'Camden Gas Project Site Plan Location of Emission Points'
National Pollutant Inventory Emission Estimation Manual for Combustion in Boilers.

5.3. Definitions

Currently not applicable

5.4. Life Guard References

AGL Health, Safety and Environment Policy
LG-HSE-CG-070: Air Pollution and Odours