

AGL UPSTREAM INVESTMENTS PTY LTD ROSALIND PARK GAS PLANT Monthly Continuous Air Monitoring Report

Reporting Period: April 2016

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Foreword

PREMISES Rosalind Park Gas Plant

Lot 35 Medhurst Road GILEAD NSW 2560

LICENCE DETAILS Environment Protection Licence 12003

LICENCEE AGL Upstream Investments Pty Limited

LICENCEE'S ADDRESS Locked Bag 1837, North Sydney, NSW 2060

REPORTING PERIOD 01 April 2016 to 30 April 2016

DATE of MONITORING Continuous

OBTAINED DATA DATE 04 May 2016

REPORT DATE 06 May 2016

REPORT PREPARED BY Aaron Clifton

Environmental Manager

SUMMARY OF ACTIVITY

Rosalind Park Gas Plant, located approximately 60km south west of Sydney, is a natural gas processing and treatment plant, used to process coal seam natural gas from the Camden Gas Project.

Produced natural gas is cleaned, dehydrated, compressed and odourised before being measured and transported by pipeline about 500 metres into the nearby Moomba to Sydney Natural Gas Pipeline. The premises are covered by Environment Protection Licence 12003 which includes all gas wells, gas gathering, reticulation systems, trunk lines and associated effluent storage areas and work areas of the Camden Gas Project.



This Monitoring Report relates to those air monitoring activities specified in Part 5, Monitoring and Recording Conditions, of the Environment Protection Licence. The Licence conditions stipulate air monitoring is required to be carried out at the locations, at the frequency and using the test methods as set out in the tables below.

This report sets out the results of continuous monitoring summarized on a monthly basis. A separate report is issued for quarterly monitoring.

This report is prepared in accordance with the *Requirements for Publishing Pollution Monitoring Data* (EPA, October, 2013) (**Publication Requirements**).

AIR MONITORING LOCATIONS

Point	Location	Monitoring Frequency
1	Exhaust Stack 1 on Compression Engine 1	Continuous
2	Exhaust Stack 2 on Compression Engine 2	Continuous
3	Exhaust Stack 3 on Compression Engine 3	Continuous

Note: monitoring is only undertaken when the compression engines are running.

AIR MONITORING TEST METHODS - POINTS 1, 2 and 3

Parameter	NSW EPA Test Method (Sampling Method)	Reference Method	
Oxides of Nitrogen	CEM-2	USEPA Performance Specification 2	
Temperature	TM-2	USEPA Method 2	
Moisture content	Method approved by EPA in writing	Calibration by reference to TM-22	
Volumetric Flow Rate	CEM-6	USEPA Performance Specification 6	
Oxygen	CEM-3	USEPA Performance Specification 3	

USEPA Method refers to the US Environmental Protection Agency 2000, Code of Federal Regulations, Title 40, Part 60, Appendix A Methods.

USEPA Performance Specification refers to the US Environmental Protection Agency 2000, Code of Federal Regulations, Title 40, Part 60, Appendix B, Performance Specifications.



Air Monitoring Results

Continuous monitoring results are based on test results obtained over a one-hour averaging period as set out in Schedule 5 of the *Protection of the Environment Operations (Clean Air) Regulation* 2010 (NSW).

Moisture Percent by EPA Continuous CEM-6 Continuous CEM-6 Continuous CEM-6 Continuous CEM-3 Continuous Compressor Engine 2 Moisture Percent CEM-3 Continuous Temperature Degrees Celsius TM-2 Continuous Method approved by EPA Continuous TM-2 Continuous Method approved by EPA Continuous Compressor Engine 2 was operating for 45 minutes of every one hour period. The remaining 15 minute period was down time for cleaning purposes. See Note 1 See Note 2 See Note	ring lt Description	scription I	Pollutant	Units of measure	Oxygen correction	Sampling method	Monitoring frequency required by licence	Number of times measured during sampling period	Minimum value	Average value	Maximum value	Concentration Limit
Engine 1 Nitrogen (as NO2 equivalent)	Compressor							Compressor Engine				
Temperature Degrees Celsius TM-2 Continuous Method approved by EPA Continuous Volumetric flow rate Compressor Engine 2 Compressor Engine 2 Compressor Engine 2 Compressor Engine 2 Moisture Percent CEM-3 Continuous CEM-3 Continuous CEM-3 Continuous CEM-3 Continuous Compressor Engine 2 operated from 1-11 and 23-30 April 2016. The CEMS of moisture per second Compressor Engine 2 operated from 1-11 and 23-30 April 2016. The CEMS of moisture per second CEM-6 Continuous CEM-7 Continuous CEM-8 Continuous CEM-8 Continuous CEM-9 Continuous CEM-9 Continuous CEM-9 Continuous CEM-1 See Note 1 See Note 1 Note Note 1 and 22-30 April 2016. The cEMS of note 1 and 22-30 April 2016. The cEMS of Note 2 See Note 3 See N	· ·			Milligrams per				, ,				
Temperature Degrees Celsius Method approved by EPA Continuous Compressor Engine 2 Oxygen Percent CEM-3 Continuous Milligrams per Cubic metre 7% oxygen CEM-2 Continuous Method approved by EPA Continuous Method approved by EPA Continuous Method approved by EPA Continuous Compressor Engine 2 Operated from 1-11 13.21 38.75 277.16 13.21 38.75 277.16 13.21 38.75 277.16 Compressor Engine 2 Oxygen Percent Degrees Celsius Moisture Percent Degrees Celsius Moisture Percent CEM-3 Continuous Continuous Compressor Engine 2 Oxygen Percent CEM-3 Continuous Continuous Continuous Continuous Compressor Engine 2 Oxygen Percent Degrees Celsius Moisture Percent CEM-3 Continuous Continuous Compressor Engine 3 Oxygen Percent CEM-3 Continuous Compressor Engine 3 Oxygen Percent CEM-3 Continuous Compressor Engine 3 Oxygen Percent CEM-3 Continuous Compressor Engine 3 Oxygen Percent CEM-2 See Note 2 See No		NO:	D ₂ equivalent)	cubic metre	7% oxygen	CEM-2	Continuous	from 1 to 30 April	-	-	-	461
Moisture Percent by EPA Continuous Volumetric flow rate		Ten	mperature	Degrees Celsius			Continuous	2016.	-	-	-	Not applicable
Volumetric flow rate per second CEM-6 Continuous Oxygen Percent CEM-3 Continuous Compressor Engine 2 Compressor Engine 2 Compressor Engine 2 No2 equivalent) Percent Degrees Celsius TM-2 Continuous Method approved by EPA Volumetric flow rate Oxygen Percent CEM-3 Continuous Tm-2 Continuous Method approved by EPA Continuous CEM-6 Continuous Compressor Engine 2 was operated from 1-11 and 23-30 April 2016. The CEMS of Compressor Engine 2 was operating for 45 minutes of every one hour period. The remaining 15 minute period was down time for cleaning purposes. See Note 1 Compressor Engine 3 Compressor Engine 3 Compressor Engine 3 No2 equivalent) No equivalent) No equivalent) Degrees Celsius TM-2 Continuous CEM-3 Continuous CEM-3 Continuous Compressor Engine 3 operated from 1-11 and 23-30 April 2016. The CEMS of revery one hour period. The remaining 15 minute period was down time for cleaning purposes. See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 1 See Note 2 See Note 3 See Note 3												
rate per second CEM-6 Continuous		Moi	oisture	Percent		by EPA	Continuous		-	-	-	Not applicable
Compressor Engine 2						CEM-6	Continuous		-	-	-	Not applicable
Engine 2 Nitrogen (as NO2 equivalent) Nitrogen (as NO2 equivalent) Percent Noisture Percent Cubic metres per second CEM-2 CEM-2 Continuous Method approved by EPA Continuous CEM-6 Continuous CEM-7 Continuous CEM-8 Continuous CEM-9 Continuous CEM-9 Continuous CEM-9 Continuous CEM-9 Continuous CEM-1 Continuous Compressor Engine 2 was operating for 45 minutes of every one hour period. The remaining 15 minute for cleaning purposes. See Note 1 Continuous Compressor Engine 3 operated from 1-11 and 23-30 April 2016. The CEMS of Compressor Engine 2 was operating for 45 minutes of every one hour period. The remaining 15 minute for cleaning purposes. See Note 1 See Note 2 See N			7.5	Percent		CEM-3	Continuous		-	-	-	Not applicable
NO2 equivalent) cubic metre 7% oxygen CEM-2 Continuous and 23-30 April 2016. The CEMS of Compressor Engine 2 Was operating for 45 minutes of every one hour period. The remaining 15 minute period was down time for cleaning purposes. See Note 1 Oxygen Percent CEM-3 Continuous Oxygen Percent CEM-2 Continuous Oxygen Percent CEM-3 Continuous Oxygen Percent CEM-2 Continuous Oxygen Percent Percent Continuous Oxygen Percent Percent CEM-2 Continuous Oxygen Percent												
Temperature Degrees Celsius TM-2 Continuous Week Degrees Celsius TM-2 Continuous The CEMS of Continuous Week Degrees Celsius TM-2 Continuous Week Degrees Celsius TM-2 Continuous The CEMS of Continuous Week Degrees Celsius TM-2 Continuous Week Degrees Celsius Week Degrees Celsius TM-2 Continuous Week Degrees Celsius TM-2 Continuous Week Degrees Celsius Week Degre	Engine 2				70/	0514.0		- 1	40.04	20.75	277.46	464
Temperature Degrees Celsius TM-2 Continuous Method approved by EPA Continuous Moisture Percent CEM-6 Continuous Oxygen Percent CEM-3 Continuous Compressor Engine 2 was operating for 45 minutes of every one hour period. The remaining 15 minute period was down time for cleaning purposes. See Note 1 See Note 1 See Note 1 No.23 0.31 0.53 No.23 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.3		NO:	D ₂ equivalent)	cubic metre	/% oxygen	CEM-2	Continuous		13.21	38.75	2//.16	461
Moisture Percent Method approved by EPA Continuous Method approved by EPA Continuous Continuous Method approved by EPA Continuous CEM-6 Continuous CEM-6 Continuous CEM-6 Continuous CEM-6 Continuous CEM-7 Continuous CEM-8 Continuous CEM-9 Continuous CEM-1 Continuous Compressor Engine 3 Compressor Engine 3 Nitrogen (as Note 1 on the period was down time for cleaning purposes. See Note 1 on the period was do		Ten	mperature	Degrees Celsius		TM-2	Continuous		405.08	507.14	518.22	Not applicable
Moisture Percent by EPA Continuous minutes of every one hour period. The remaining 15 minute period was down time for cleaning purposes. See Note 1 See Note 1 See Note 1 Note that the period was down time for cleaning purposes. See Note 1. See Note 1 See Note 1 See Note 1 Note the period was down time for cleaning purposes. See Note 1. See Note 1 See Note 1 Note the period was down time for cleaning purposes. See Note 1. See Note 1 See Note 1 Note the period was down time for cleaning purposes. See Note 1. See Note 1 See Note 1 See Note 1 Note the period was down time for cleaning purposes. See Note 1. See Note 1 See Note 1 See Note 1 Note the period was down time for cleaning purposes. See Note 1. See Note 1 See Note 1 See Note 1 Note the period was down time for cleaning purposes. See Note 1. See Note 1 See Note 1 See Note 1 Note the period was down time for cleaning purposes. See Note 1. See Note 1 See Note 1 See Note 1 Note the remaining 15 minute period was down time for cleaning purposes. See Note 1 See Note 1 Note the remaining 15 minute period was down time for cleaning purposes. See Note 1 See Note 1 Note the remaining 15 minute period was down time for cleaning purposes. See Note 1 See Note 1 Note the remaining 15 minute period was down time for cleaning purposes. See Note 1 See Note 1 Note the remaining 15 minute period was down time for cleaning purposes. See Note 1 See Note 1 Note the remaining 15 minute period was down time for cleaning 15 minute period was down time for			po. aca. c	203.000 00.0.00			301111111111111111111111111111111111111	was operating for 45	100.00	307.12.	310.22	
Volumetric flow rate Volumetric flow rate Volumetric flow rate CEM-6 CEM-6 Continuous CEM-6 Continuous CEM-6 Continuous CEM-3 Continuous CEM-3 Continuous CEM-3 Continuous CEM-3 Continuous Continuous CEM-3 Continuous Compressor Engine 3 operated from 1-11 and 22-30 April 2016. The CEMS of Compressor Engine 3 was operating for 45 minutes of every one hour period. The output for cleaning purposes. See Note 1 No.23 O.23 O.31 O.53 No.24 Continuous Method approved by EPA Continuous Continuous		Moi	oisture	Percent			Continuous		See Note 1	See Note 1	See Note 1	Not applicable
Oxygen Percent CEM-3 Continuous See Note 1. Oxygen Oxides of Nitrogen (as Note equivalent) Cubic metre 7% oxygen CEM-2 Continuous Operated from 1-11 approved by EPA Continuous October 1. Moisture Percent Oxides of Nitrogen (as Note equivalent) CEM-2 Continuous Operated from 1-11 approved by EPA Continuous October 1. Moisture Percent October Octo						CEM-6	Continuous	remaining 15 minute period was down time	See Note 1	See Note 1	See Note 1	Not applicable
3 Compressor Engine 3 Oxides of Nitrogen (as NO2 equivalent) Cubic metre TM-2 Continuous Oxygen CEM-2 Continuous Compressor Engine 3 Operated from 1-11 and 22-30 April 2016. The CEMS of Compressor Engine 3 Was operating for 45 Moisture Percent Oxygen CEM-2 Continuous Ox												
Engine 3 Nitrogen (as Notitogen (as Notitogen (as NO2 equivalent) cubic metre 7% oxygen CEM-2 Continuous 7% oxygen CEM-2 CONTINUO				Percent		CEM-3	Continuous		0.23	0.31	0.53	Not applicable
Temperature Degrees Celsius TM-2 Continuous Method approved by EPA Continuous Moisture Percent by EPA Continuous Volumetric flow rate per second CEM-6 Continuous The CEMS of Compressor Engine 3 was operating for 45 minutes of every one hour period. The remaining 15 minute See Note 2 See Note 2 See Note 2 Note 2 See Note 2 No				Milligrams per								
Temperature Degrees Celsius TM-2 Continuous Compressor Engine 3 Method approved by EPA Continuous Continuous Was operating for 45 Wolumetric flow rate per second CEM-6 Continuous Continuous Continuous Compressor Engine 3 Was operating for 45 minutes of every one hour period. The remaining 15 minute See Note 2 See Note 2 See Note 2 N		NO:	D ₂ equivalent)	cubic metre	7% oxygen	CEM-2	Continuous		25.69	42.04	74.25	461
Method approved by EPA Continuous Was operating for 45 minutes of every one hour period. The remaining 15 minute See Note 2 See Note 2 See Note 2 Note 2 See Note 2 Note		Ten	mperature	Degrees Celsius			Continuous		444.33	492.37	514.88	Not applicable
Volumetric flow rateCubic metres per secondCEM-6Continuoushour period. The remaining 15 minuteSee Note 2See Note 2See Note 2See Note 2		Moi	oisture	Percent			Continuous	was operating for 45	See Note 2	See Note 2	See Note 2	Not applicable
		Vol	lumetric flow	Cubic metres								
		rate	te	per second		CEM-6	Continuous		See Note 2	See Note 2	See Note 2	Not applicable
for cleaning purposes.		0%	rvaen	Percent		CFM-3	Continuous		0.48	0.55	0.70	Not applicable



Air Monitoring Results

Ektimo has been engaged by AGL to undertake independent monitoring each month. Results for monitoring undertaken by Ektimo (Report R002545) on 07April 2016 are as follows:

Monitoring Point	Description	Pollutant	Units of measure	Oxygen correction	Sampling method	Average result
1	Compressor Engine 1	Oxides of Nitrogen (as NO ₂ equivalent)	milligrams per cubic metre	7% oxygen	TM-11	No Result*
		Temperature	degrees Celsius		TM-2	No Result*
		Moisture	percent		TM-22	No Result*
		Volumetric flow rate	cubic metres per second		TM-2	No Result*
		Oxygen	percent		TM-25	No Result*
2	Compressor Engine 2	Oxides of Nitrogen (as NO ₂ equivalent)	milligrams per cubic metre	7% oxygen	TM-11	18
		Temperature	degrees Celsius		TM-2	484
		Moisture	percent		TM-22	20
		Volumetric flow rate	cubic metres per second		TM-2	1.1
		Oxygen	percent		TM-25	<0.4
3	Compressor Engine 3	Oxides of Nitrogen (as NO ₂ equivalent)	milligrams per cubic metre	7% oxygen	TM-11	47
		Temperature	degrees Celsius		TM-2	460
		Moisture	percent		TM-22	19
		Volumetric flow rate	cubic metres per second		TM-2	0.92
		Oxygen	percent		TM-25	0.6

^{*}Due to mechanical issues, Compressor Engine 1 was not operating on 07 April 2016.



Notes:

 In accordance with Section 3.4.1 of the EPA Publication Requirements, the following data points have not been included for Monitoring Point 2 (Compressor #2 exhaust stack) as AGL knows that the data has been unable to be collected or is incorrect.

Date	Approximate total hours	Pollutant	Justification
1-11 and 23- 30 April 2016	413	Volumetric Flow Rate, Moisture	Data unable to be collected due to component failure. AGL has been unable to repair the failed component and is trialing alternative monitoring methods in consultation with the EPA.

 In accordance with Section 3.4.1 of the EPA Publication Requirements, the following data points have not been included for Monitoring Point 3 (Compressor #3 exhaust stack) as AGL knows that the data has been unable to be collected or is incorrect.

Date	Approximate total hours	Pollutant	Justification		
			Data unable to be collected due		
1-11 and 22- 30 April 2016	435	Volumetric Flow Rate, Moisture	to component failure.		
			AGL has been unable to repair		
			the failed component and is		
		Moisture	· ·		
			methods in consultation with		
			the EPA.		