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**AGL UPSTREAM INVESTMENTS PTY LTD
ROSALIND PARK GAS PLANT
Quarterly Air Monitoring Report**

Reporting Period: 1st Quarter – March 2016

AGL Upstream Investments Pty Ltd

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Foreword

| | |
|---------------------------|--|
| PREMISES | Rosalind Park Gas Plant Lot 35 Medhurst Road GILEAD NSW 2560 |
| LICENCE DETAILS | <u>Environment Protection Licence 12003</u> |
| LICENCEE | AGL Upstream Investments Pty Limited |
| LICENCEE'S ADDRESS | Locked Bag 1837, St Leonards, NSW 2065 |
| MONITORING DATE | 1 st Quarter – 15 March 2016 |
| MONITORING BY | Ektimo |
| ANALYSIS BY | Ektimo (laboratory report number R002497) |
| OBTAINED DATA DATE | 01 April 2016 (Ektimo Report R002497) |
| REPORT DATE | 06 April 2016 |
| REPORT PREPARED BY | Aaron Clifton Environment 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 quarterly monitoring. A separate report is issued for continuous 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 | Quarterly |
| 2 | Exhaust Stack 2 on Compression Engine 2 | Quarterly |
| 3 | Exhaust Stack 3 on Compression Engine 3 | Quarterly |
| 4 | Reboiler Flue | Quarterly |
| 5 | Reflux Column Vent | Quarterly |
| 6 | Carbon Scrubber Vent | Quarterly |

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

AIR MONITORING TEST METHODS – POINTS 1, 2, 3, 4 and 5

| Parameter | NSW EPA Test Method (Sampling Method) |
|---|---------------------------------------|
| Carbon dioxide | TM-24 |
| Dry gas density | TM-23 |
| Moisture | TM-22 |
| Molecular weight of stack gases | TM-23 |
| Nitrogen Oxides | TM-11 |
| Oxygen (O ₂) | TM-25 |
| Sulfuric acid mist and sulphur trioxide (as SO ₃) | TM-3 |
| Sulphur dioxide | TM-4 |
| Temperature | TM-2 |
| Velocity | TM-2 |
| Volumetric flowrate | TM-2 |



AIR MONITORING TEST METHODS – POINT 6

| Parameter | NSW EPA Test Method (Sampling Method) |
|---------------------------------|--|
| Carbon dioxide | TM-24 |
| Dry gas density | TM-23 |
| Moisture | TM-22 |
| Molecular weight of stack gases | TM-23 |
| Odour | OM-7 |
| Oxygen (O ₂) | TM-25 |
| Temperature | TM-2 |
| Velocity | TM-2 |
| Volumetric flowrate | TM-2 |



Air Monitoring Results

| Monitoring Point | Description | Pollutant | Units of measure | Oxygen correction | Sampling method | Monitoring frequency required by licence | Average Concentration | Concentration limit |
|------------------|---------------------|---|----------------------------|-------------------|-----------------|--|-----------------------|---------------------|
| 1 | Compressor Engine 1 | Carbon dioxide | Percent | | TM-24 | Quarterly | No Result* | Not applicable |
| | | Dry gas density | Kilograms per cubic metre | | TM-23 | Quarterly | No Result* | Not applicable |
| | | Moisture | Percent | | TM-22 | Quarterly | No Result* | Not applicable |
| | | Molecular weight of stack gases | Grams per gram mole | | TM-23 | Quarterly | No Result* | Not applicable |
| | | Nitrogen Oxides (as NO ₂ equivalent) | Milligrams per cubic metre | 7% oxygen | TM-11 | Quarterly | No Result* | 461 |
| | | Oxygen (O ₂) | Percent | | TM-25 | Quarterly | No Result* | Not applicable |
| | | Sulfuric acid mist and sulphur trioxide (as SO ₃) | Milligrams per cubic metre | | TM-3 | Quarterly | No Result* | 5.0 |
| | | Sulphur dioxide | Milligrams per cubic metre | | TM-4 | Quarterly | No Result* | 7 |
| | | Temperature | Degrees Celsius | | TM-2 | Quarterly | No Result* | Not applicable |
| | | Velocity | Metres per second | | TM-2 | Quarterly | No Result* | Not applicable |
| | | Volumetric flowrate | Cubic metres per second | | TM-2 | Quarterly | No Result* | Not applicable |

*Due to mechanical issues, Compressor Engine 1 was not operating during the 1st quarter 2016.



| Monitoring Point | Description | Pollutant | Units of measure | Oxygen correction | Sampling method | Monitoring frequency required by licence | Average Concentration | Concentration limit |
|------------------|---------------------|---|----------------------------|-------------------|-----------------|--|-----------------------|---------------------|
| 2 | Compressor Engine 2 | Carbon dioxide | Percent | | TM-24 | Quarterly | 11.9 | Not applicable |
| | | Dry gas density | Kilograms per cubic metre | | TM-23 | Quarterly | 1.34 | Not applicable |
| | | Moisture | Percent | | TM-22 | Quarterly | 20 | Not applicable |
| | | Molecular weight of stack gases | Grams per gram mole | | TM-23 | Quarterly | 30.0 | Not applicable |
| | | Nitrogen Oxides (as NO ₂ equivalent) | Milligrams per cubic metre | 7% oxygen | TM-11 | Quarterly | 16 | 461 |
| | | Oxygen (O ₂) | Percent | | TM-25 | Quarterly | 0.5 | Not applicable |
| | | Sulfuric acid mist and sulphur trioxide (as SO ₃) | Milligrams per cubic metre | | TM-3 | Quarterly | 0.25 | 5.0 |
| | | Sulphur dioxide | Milligrams per cubic metre | | TM-4 | Quarterly | <5.4 | 7 |
| | | Temperature | Degrees Celsius | | TM-2 | Quarterly | 480 | Not applicable |
| | | Velocity | Metres per second | | TM-2 | Quarterly | 30 | Not applicable |
| | | Volumetric flowrate | Cubic metres per second | | TM-2 | Quarterly | 1 | Not applicable |



| Monitoring Point | Description | Pollutant | Units of measure | Oxygen correction | Sampling method | Monitoring frequency required by licence | Average Concentration | Concentration limit |
|------------------|---------------------|---|----------------------------|-------------------|-----------------|--|-----------------------|---------------------|
| 3 | Compressor Engine 3 | Carbon dioxide | Percent | | TM-24 | Quarterly | 11.8 | Not applicable |
| | | Dry gas density | Kilograms per cubic metre | | TM-23 | Quarterly | 1.34 | Not applicable |
| | | Moisture | Percent | | TM-22 | Quarterly | 19 | Not applicable |
| | | Molecular weight of stack gases | Grams per gram mole | | TM-23 | Quarterly | 30.0 | Not applicable |
| | | Nitrogen Oxides (as NO ₂ equivalent) | Milligrams per cubic metre | 7% oxygen | TM-11 | Quarterly | 37 | 461 |
| | | Oxygen (O ₂) | Percent | | TM-25 | Quarterly | 0.6 | Not applicable |
| | | Sulfuric acid mist and sulphur trioxide (as SO ₃) | Milligrams per cubic metre | | TM-3 | Quarterly | 0.093 | 5.0 |
| | | Sulphur dioxide | Milligrams per cubic metre | | TM-4 | Quarterly | <5.4 | 7 |
| | | Temperature | Degrees Celsius | | TM-2 | Quarterly | 477 | Not applicable |
| | | Velocity | Metres per second | | TM-2 | Quarterly | 25 | Not applicable |
| | | Volumetric flowrate | Cubic metres per second | | TM-2 | Quarterly | 0.85 | Not applicable |



| Monitoring Point | Description | Pollutant | Units of measure | Oxygen correction | Sampling method | Monitoring frequency required by licence | Average Concentration | Concentration limit |
|------------------|---------------|---|----------------------------|-------------------|-----------------|--|-----------------------|---------------------|
| 4 | Reboiler Flue | Carbon dioxide | Percent | | TM-24 | Quarterly | 4.3 | Not applicable |
| | | Dry gas density | Kilograms per cubic metre | | TM-23 | Quarterly | 1.31 | Not applicable |
| | | Moisture | Percent | | TM-22 | Quarterly | 7.6 | Not applicable |
| | | Molecular weight of stack gases | Grams per gram mole | | TM-23 | Quarterly | 29.4 | Not applicable |
| | | Nitrogen Oxides (as NO ₂ equivalent) | Milligrams per cubic metre | 7% oxygen | TM-11 | Quarterly | 98 | 110 |
| | | Oxygen (O ₂) | Percent | | TM-25 | Quarterly | 13.7 | Not applicable |
| | | Sulfuric acid mist and sulphur trioxide (as SO ₃) | Milligrams per cubic metre | | TM-3 | Quarterly | 0.065 | 3.5 |
| | | Sulphur dioxide | Milligrams per cubic metre | | TM-4 | Quarterly | <5.4 | 35 |
| | | Temperature | Degrees Celsius | | TM-2 | Quarterly | 236 | Not applicable |
| | | Velocity | Metres per second | | TM-2 | Quarterly | 3.4 | Not applicable |
| | | Volumetric flowrate | Cubic metres per second | | TM-2 | Quarterly | 0.089 | Not applicable |



| Monitoring Point | Description | Pollutant | Units of measure | Oxygen correction | Sampling method | Monitoring frequency required by licence | Average Concentration | Concentration limit |
|------------------|--------------------|---|----------------------------|-------------------|-----------------|--|-----------------------|---------------------|
| 5 | Reflux Column Vent | Carbon dioxide | Percent | | TM-24 | Quarterly | 15.3 | Not applicable |
| | | Dry gas density | Kilograms per cubic metre | | TM-23 | Quarterly | 1.37 | Not applicable |
| | | Moisture | Percent | | TM-22 | Quarterly | 62 | Not applicable |
| | | Molecular weight of stack gases | Grams per gram mole | | TM-23 | Quarterly | 30.6 | Not applicable |
| | | Nitrogen Oxides (as NO ₂ equivalent) | Milligrams per cubic metre | 7% oxygen | TM-11 | Quarterly | <2.8 | 13 |
| | | Oxygen (O ₂) | Percent | | TM-25 | Quarterly | <0.4 | Not applicable |
| | | Sulfuric acid mist and sulphur trioxide (as SO ₃) | Milligrams per cubic metre | | TM-3 | Quarterly | 0.49 | 35 |
| | | Sulphur dioxide | Milligrams per cubic metre | | TM-4 | Quarterly | <5.4 | 1042 |
| | | Temperature | Degrees Celsius | | TM-2 | Quarterly | 88 | Not applicable |
| | | Velocity | Metres per second | | TM-2 | Quarterly | <1.9 | Not applicable |
| | | Volumetric flowrate | Cubic metres per second | | TM-2 | Quarterly | <0.0043 | Not applicable |



| Monitoring Point | Description | Pollutant | Units of measure | Oxygen correction | Sampling method | Monitoring frequency required by licence | Average Concentration | Concentration limit |
|------------------|----------------------|---------------------------------|---------------------------|-------------------|-----------------|--|-----------------------|---------------------|
| 6 | Carbon Scrubber Vent | Carbon dioxide | Percent | | TM-24 | Quarterly | <0.3 | Not applicable |
| | | Dry gas density | Kilograms per cubic metre | | TM-23 | Quarterly | 1.29 | Not applicable |
| | | Moisture | Percent | | TM-22 | Quarterly | 0.66 | Not applicable |
| | | Molecular weight of stack gases | Grams per gram mole | | TM-23 | Quarterly | 29 | Not applicable |
| | | Odour | Odour Units | | OM-7 | Quarterly | 490 | Not applicable |
| | | Oxygen (O ₂) | Percent | | TM-25 | Quarterly | 20.9 | Not applicable |
| | | Temperature | Degrees Celsius | | TM-2 | Quarterly | 41 | Not applicable |
| | | Velocity | Metres per second | | TM-2 | Quarterly | 6.1 | Not applicable |
| | | Volumetric flowrate | Cubic metres per second | | TM-2 | Quarterly | 0.15 | Not applicable |