



**AGL UPSTREAM INVESTMENTS PTY LTD**  
**Newcastle Gas Storage Facility**  
**Air Monitoring Report**

Reporting Period: June – July 2018

AGL Upstream Investments Pty Ltd  
ABN 58 115 063 744  
Locked Bag 1837, St Leonards NSW 2065  
200 George Street, Sydney NSW 2000  
Telephone: 02 9921 2999 Facsimile: 02 9921 2474  
Complaints Line (24 hours): 1300 799 716



## Foreword

<b>PREMISES</b>	Newcastle Gas Storage Facility 5 Old Punt Road TOMAGO NSW 2322
<b>LICENCE DETAILS</b>	<a href="#"><u>Environment Protection Licence 20130</u></a>
<b>LICENCEE</b>	AGL Upstream Investments Pty Limited
<b>LICENCEE'S ADDRESS</b>	Locked Bag 1837, St Leonards, NSW 2065
<b>MONITORING DATE</b>	13, 14, 19, 20 June and 12 July 2018
<b>MONITORING BY</b>	Ektimo
<b>ANALYSIS BY</b>	Ektimo (laboratory report number R006012)
<b>OBTAINED DATA DATE</b>	10 August 2018 (Ektimo Report R006012)
<b>REPORT DATE</b>	16 August 2018
<b>REPORT PREPARED BY</b>	Aaron Clifton Environment Business Partner

### SUMMARY OF ACTIVITY

The Newcastle Gas Storage Facility (NGSF) is located in Tomago, New South Wales.

The NGSF includes:

- A processing plant that converts pipeline natural gas to liquefied natural gas (LNG) by cooling it to  $-162^{\circ}\text{C}$ . It is capable of processing up to 66,500 tonnes of LNG per year.
- An insulated, non-pressurised LNG storage tank capable of containing 30,000 tonnes or  $63,000\text{ m}^3$  of LNG, equivalent to 1.5 petajoules (PJ) of natural gas, and an associated containment area.
- A re-gasification unit to convert the LNG in the storage tank back into natural gas.
- A flare stack with a height of approximately 15m to combust hydrocarbons discharged from the process.



- A truck loading facility to allow the dispatch of up to 1,000 tankers of LNG per year.
- Infrastructure and utility connection and an emergency access road.

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

## AIR MONITORING LOCATIONS

Point	Location	Monitoring Frequency
7	Stack associated with the Gas Liquefaction System (H101)	Twice per year
8	Stack associated with the LNG Vaporiser (H501A)	Twice per year
10	Stack associated with the LNG Vaporiser (H501B)	Twice per year
11	Stack associated with the LNG Vaporiser (H501C)	Twice per year

## AIR MONITORING TEST METHODS

Parameter	NSW EPA Test Method (Sampling Method)
Carbon dioxide	TM-24
Carbon monoxide	TM-32
Dry gas density	TM-23
Moisture	TM-22
Molecular weight of stack gases	TM-23
Nitrogen Oxides	TM-11
Oxygen (O <sub>2</sub> )	TM-25
Solid Particles	TM-15
Sulfuric acid mist and sulphur trioxide (as SO <sub>3</sub> )	TM-3
Sulphur dioxide	TM-4
Temperature	TM-2



Parameter	NSW EPA Test Method (Sampling Method)
Velocity	TM-2
Volatile organic compounds	OM-2
Volumetric flowrate	TM-2

## Air Monitoring Results

Monitoring Date: 14 June 2018

Monitoring Point	Description	Pollutant	Units of measure	Oxygen correction	Sampling method	Monitoring frequency required by licence	Average Concentration	Concentration limit
8	Stack associated with LNG Vaporiser (H-501a)	Carbon dioxide	Percent		TM-24	Twice per year	8.5	Not applicable
		Carbon monoxide	Milligrams per cubic metre	3%	TM-32	Twice per year	<2	125
		Dry gas density	Kilograms per cubic metre		TM-23	Twice per year	1.33	Not applicable
		Moisture	Percent		TM-22	Twice per year	14	Not applicable
		Molecular weight of stack gases	Grams per gram mole		TM-23	Twice per year	29.7	Not applicable
		Nitrogen Oxides (as NO <sub>2</sub> equivalent)	Milligrams per cubic metre		TM-11	Twice per year	130	190
		Oxygen (O <sub>2</sub> )	Percent		TM-25	Twice per year	6.5	Not applicable
		Solid Particles	Milligrams per cubic metre		TM-15	Twice per year	<2	40
		Sulfuric acid mist and sulphur trioxide (as SO <sub>3</sub> )	Milligrams per cubic metre		TM-3	Twice per year	<0.04	5
		Sulphur dioxide	Milligrams per cubic metre		TM-4	Twice per year	<5	Not applicable
		Temperature	Kelvin		TM-2	Twice per year	363	Not applicable
		Velocity	Metres per second		TM-2	Twice per year	5.3	Not applicable
		Volatile organic compounds	Milligrams per cubic metre	3%	OM-2	Twice per year	0.058	20
		Volumetric flowrate (dry, STP)	Cubic metres per second		TM-2	Twice per year	2.1	Not applicable

Monitoring Date: 20 June 2018

Monitoring Point	Description	Pollutant	Units of measure	Oxygen correction	Sampling method	Monitoring frequency required by licence	Average Concentration	Concentration limit
8	Stack associated with LNG Vaporiser (H-501a)	Carbon dioxide	Percent		TM-24	Twice per year	9.2	Not applicable
		Carbon monoxide	Milligrams per cubic metre	3%	TM-32	Twice per year	<2	125
		Dry gas density	Kilograms per cubic metre		TM-23	Twice per year	1.33	Not applicable
		Moisture	Percent		TM-22	Twice per year	14	Not applicable
		Molecular weight of stack gases	Grams per gram mole		TM-23	Twice per year	29.8	Not applicable
		Nitrogen Oxides (as NO <sub>2</sub> equivalent)	Milligrams per cubic metre		TM-11	Twice per year	140	190
		Oxygen (O <sub>2</sub> )	Percent		TM-25	Twice per year	5.3	Not applicable
		Solid Particles	Milligrams per cubic metre		TM-15	Twice per year	<2	40
		Sulfuric acid mist and sulphur trioxide (as SO <sub>3</sub> )	Milligrams per cubic metre		TM-3	Twice per year	<0.03	5
		Sulphur dioxide	Milligrams per cubic metre		TM-4	Twice per year	<5	Not applicable
		Temperature	Kelvin		TM-2	Twice per year	364	Not applicable
		Velocity	Metres per second		TM-2	Twice per year	6.1	Not applicable
		Volatile organic compounds	Milligrams per cubic metre	3%	OM-2	Twice per year	0.56	20
Volumetric flowrate (dry, STP)	Cubic metres per second		TM-2	Twice per year	2.4	Not applicable		

Monitoring Date: 13 June 2018

Monitoring Point	Description	Pollutant	Units of measure	Oxygen correction	Sampling method	Monitoring frequency required by licence	Average Concentration	Concentration limit
10	Stack associated with LNG Vaporiser (H-501b)	Carbon dioxide	Percent		TM-24	Twice per year	9.9	Not applicable
		Carbon monoxide	Milligrams per cubic metre	3%	TM-32	Twice per year	<2	125
		Dry gas density	Kilograms per cubic metre		TM-23	Twice per year	1.33	Not applicable
		Moisture	Percent		TM-22	Twice per year	16	Not applicable
		Molecular weight of stack gases	Grams per gram mole		TM-23	Twice per year	29.9	Not applicable
		Nitrogen Oxides (as NO <sub>2</sub> equivalent)	Milligrams per cubic metre		TM-11	Twice per year	160	190
		Oxygen (O <sub>2</sub> )	Percent		TM-25	Twice per year	4.4	Not applicable
		Solid Particles	Milligrams per cubic metre		TM-15	Twice per year	<2	40
		Sulfuric acid mist and sulphur trioxide (as SO <sub>3</sub> )	Milligrams per cubic metre		TM-3	Twice per year	<0.04	5
		Sulphur dioxide	Milligrams per cubic metre		TM-4	Twice per year	<5	Not applicable
		Temperature	Kelvin		TM-2	Twice per year	364	Not applicable
		Velocity	Metres per second		TM-2	Twice per year	5.4	Not applicable
		Volatile organic compounds	Milligrams per cubic metre	3%	OM-2	Twice per year	0.079	20
Volumetric flowrate (dry, STP)	Cubic metres per second		TM-2	Twice per year	2.1	Not applicable		

Monitoring Date: 19 June 2018

Monitoring Point	Description	Pollutant	Units of measure	Oxygen correction	Sampling method	Monitoring frequency required by licence	Average Concentration	Concentration limit
10	Stack associated with LNG Vaporiser (H-501b)	Carbon dioxide	Percent		TM-24	Twice per year	10.2	Not applicable
		Carbon monoxide	Milligrams per cubic metre	3%	TM-32	Twice per year	<2	125
		Dry gas density	Kilograms per cubic metre		TM-23	Twice per year	1.33	Not applicable
		Moisture	Percent		TM-22	Twice per year	16	Not applicable
		Molecular weight of stack gases	Grams per gram mole		TM-23	Twice per year	29.9	Not applicable
		Nitrogen Oxides (as NO <sub>2</sub> equivalent)	Milligrams per cubic metre		TM-11	Twice per year	160	190
		Oxygen (O <sub>2</sub> )	Percent		TM-25	Twice per year	3.5	Not applicable
		Solid Particles	Milligrams per cubic metre		TM-15	Twice per year	<2	40
		Sulfuric acid mist and sulphur trioxide (as SO <sub>3</sub> )	Milligrams per cubic metre		TM-3	Twice per year	<0.05	5
		Sulphur dioxide	Milligrams per cubic metre		TM-4	Twice per year	<5	Not applicable
		Temperature	Kelvin		TM-2	Twice per year	364	Not applicable
		Velocity	Metres per second		TM-2	Twice per year	5.1	Not applicable
		Volatile organic compounds	Milligrams per cubic metre	3%	OM-2	Twice per year	0.74	20
Volumetric flowrate (dry, STP)	Cubic metres per second		TM-2	Twice per year	2	Not applicable		



Monitoring Date: 13 June 2018

Monitoring Point	Description	Pollutant	Units of measure	Oxygen correction	Sampling method	Monitoring frequency required by licence	Average Concentration	Concentration limit
11	Stack associated with LNG Vaporiser (H-501c)	Carbon dioxide	Percent		TM-24	Twice per year	9.2	Not applicable
		Carbon monoxide	Milligrams per cubic metre	3%	TM-32	Twice per year	<2	125
		Dry gas density	Kilograms per cubic metre		TM-23	Twice per year	1.33	Not applicable
		Moisture	Percent		TM-22	Twice per year	15	Not applicable
		Molecular weight of stack gases	Grams per gram mole		TM-23	Twice per year	29.8	Not applicable
		Nitrogen Oxides (as NO <sub>2</sub> equivalent)	Milligrams per cubic metre		TM-11	Twice per year	140	190
		Oxygen (O <sub>2</sub> )	Percent		TM-25	Twice per year	5.4	Not applicable
		Solid Particles	Milligrams per cubic metre		TM-15	Twice per year	<1	40
		Sulfuric acid mist and sulphur trioxide (as SO <sub>3</sub> )	Milligrams per cubic metre		TM-3	Twice per year	<0.04	5
		Sulphur dioxide	Milligrams per cubic metre		TM-4	Twice per year	<5	Not applicable
		Temperature	Kelvin		TM-2	Twice per year	365	Not applicable
		Velocity	Metres per second		TM-2	Twice per year	6.3	Not applicable
		Volatile organic compounds	Milligrams per cubic metre	3%	OM-2	Twice per year	<0.04	20
Volumetric flowrate (dry, STP)	Cubic metres per second		TM-2	Twice per year	2.4	Not applicable		

Monitoring Date: 12 July 2018

Monitoring Point	Description	Pollutant	Units of measure	Oxygen correction	Sampling method	Monitoring frequency required by licence	Average Concentration	Concentration limit
11	Stack associated with LNG Vaporiser (H-501c)	Carbon dioxide	Percent		TM-24	Twice per year	9.1	Not applicable
		Carbon monoxide	Milligrams per cubic metre	3%	TM-32	Twice per year	<2	125
		Dry gas density	Kilograms per cubic metre		TM-23	Twice per year	1.33	Not applicable
		Moisture	Percent		TM-22	Twice per year	12	Not applicable
		Molecular weight of stack gases	Grams per gram mole		TM-23	Twice per year	29.8	Not applicable
		Nitrogen Oxides (as NO <sub>2</sub> equivalent)	Milligrams per cubic metre		TM-11	Twice per year	140	190
		Oxygen (O <sub>2</sub> )	Percent		TM-25	Twice per year	5.5	Not applicable
		Solid Particles	Milligrams per cubic metre		TM-15	Twice per year	<1	40
		Sulfuric acid mist and sulphur trioxide (as SO <sub>3</sub> )	Milligrams per cubic metre		TM-3	Twice per year	0.11	5
		Sulphur dioxide	Milligrams per cubic metre		TM-4	Twice per year	<5	Not applicable
		Temperature	Kelvin		TM-2	Twice per year	367	Not applicable
		Velocity	Metres per second		TM-2	Twice per year	5.7	Not applicable
		Volatile organic compounds	Milligrams per cubic metre	3%	OM-2	Twice per year	<0.08	20
Volumetric flowrate (dry, STP)	Cubic metres per second		TM-2	Twice per year	2.3	Not applicable		