



December 2017 Air Quality Summary Report

Barangaroo South – Remediation Works

Licence Number: 13336

Licensee: Barangaroo Delivery Authority

Licensee Address: Level 21, 201 Kent Street, Sydney

Sampling period: 1-31 December 2017

Date provided to Licensee: 19 January 2017

Date published: 19 January 2017

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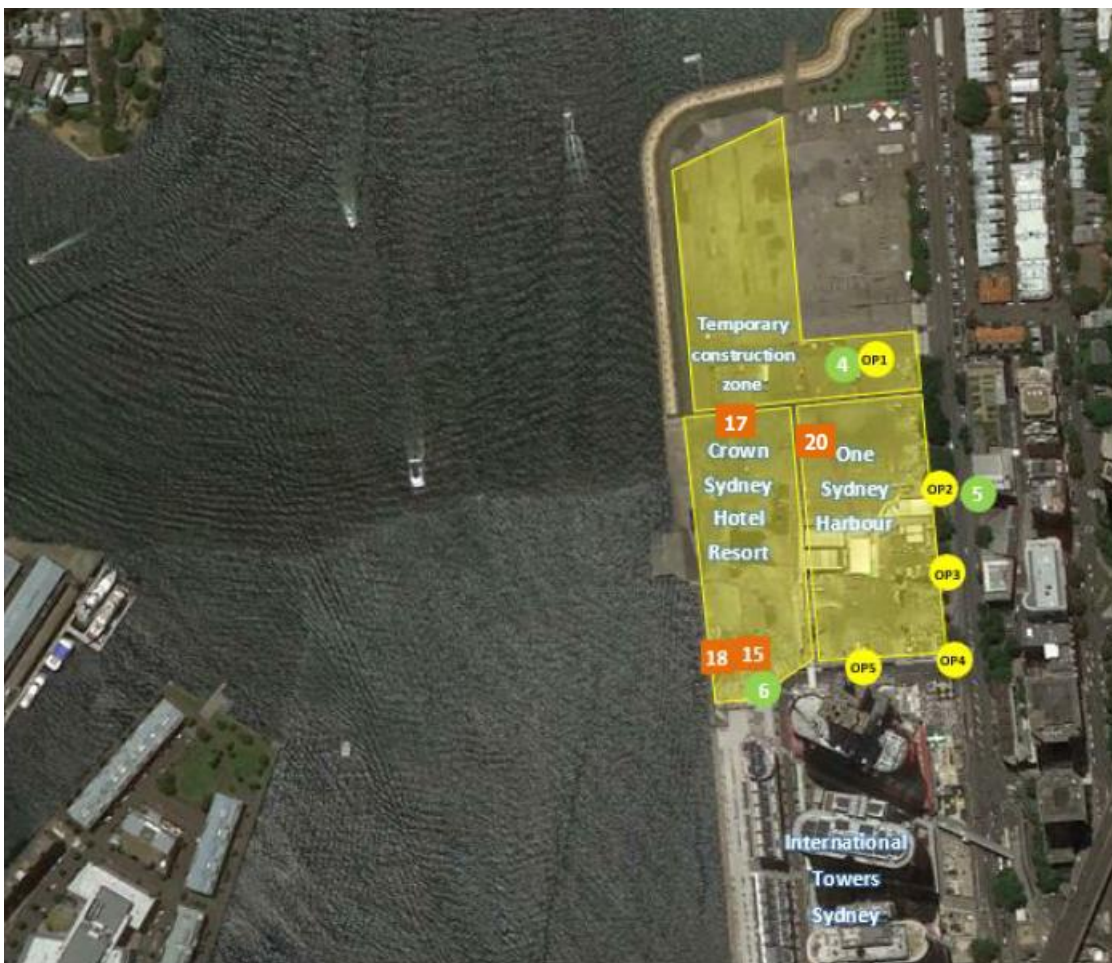
This report has been compiled to summarise results of air quality monitoring at Barangaroo South in December 2017 in accordance with [EPL number 13336](#). This data is for samples taken from 1 to 31 December 2017. The data was provided to the Barangaroo Delivery Authority (the Licencee) on 19 January 2017.

Lend Lease conducts continuous air quality monitoring at Barangaroo South to measure air quality and assist the construction team implement appropriate environmental controls on site.

Air quality monitoring is carried out in accordance with all relevant authority and statutory requirements. Monitoring parameters include particulate matter less than 10 microns (PM10), total solid particles (TSP), metals, polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs).




Air quality monitoring locations

Air quality monitoring locations are located as shown below:



Approximate location of air monitoring equipment

Legend

-  Ambient Air Quality Monitoring – EPL Point
-  Ambient Odour Monitoring Point
-  Air Discharge Point – EPL Point



Monitoring results – Interim Water Treatment Plant

During December 2017, the Water Storage Balance Tanks (WSBTs) fed untreated surface and groundwater water from the OSH remediation works to the Interim Water Treatment Plant (IWTP) for treatment. The water was treated and discharged in accordance with the premises EPL No. 13336. The air from the WSBTs and the IWTP is cleaned through filter media and discharged via vents. These vents are monitored in accordance with EPL requirements. During December, there were three air discharge points (EPL Point 15, 17, & 18) that were monitored in accordance with the EPL (continuously during operation). There were no exceedances of the VOC data associated with the WSBTs (EPL Point 17) or the Interim WTP (EPL Points 15 & 18) for this month.

Volatile Organic Compounds (VOCs) – Interim Water Treatment Plant

Monitoring Parameter	EPL Point 15 1 hour average	EPL Point 17 1 hour average	EPL Point 18 1 hour average
Average (mg/m ³)	0.64	0.09	0.10
Minimum (mg/m ³)	0.0	0.0	0.0
Maximum (mg/m ³)	3.4	1.3	0.2
Limit	5 mg/m ³	10 mg/m ³	5 mg/m ³

Monitoring results – Hotspot Remediation

During December 2017, the remediation of the “hotspot” areas were commenced within an Odour Control Enclosure (OCE). The air captured within the OCE was treated and discharged in accordance with the premises EPL No. 13336. The air from the Hotspot OCE is cleaned through filter media and discharged via a vent. This vent (EPL Point 20) is monitored in accordance with EPL requirements (i.e. continuously during operation). There were no exceedances of the VOC data associated with the EPL Point 20 for this month.

Monitoring Parameter	EPL Point 20 - 1 hour average
Average (mg/m ³)	0.02
Minimum (mg/m ³)	0.00
Maximum (mg/m ³)	1.29
Limit	5 mg/m ³

In addition to the continuous VOC monitoring, a stack test is required for EPL Point 20 once post commissioning and then every two months thereafter during operation. The stack monitoring results below represent the results of the post commissioning monitoring, which was undertaken on the 21 December 2017.

Monitoring Parameter	EPL Point 20 – Stack Test Results
Dry gas density (kg/m ³)	1.287
Moisture (%)	0.30
Molecular weight of stack gases (g/g mole)	28.84
Oxygen (%)	20.9
Solid Particles (mg/m ³)	0.87
Temperature (°C)	28
Velocity (m/s)	16.3
Volumetric flowrate (m ³ /s)	15.5



Monitoring results – Ambient air quality

Monitoring at ambient locations around the construction site was undertaken as per the EPL 13336.

These locations correspond to the following licenced monitoring locations, as shown in the figure above:

- J Northern: EPL Point 4
- J Eastern: EPL Point 5
- J Southern: EPL Point 6

PM10

Monitoring Parameter	EPL Point 4 ($\mu\text{g}/\text{m}^3$)	EPL Point 5 ($\mu\text{g}/\text{m}^3$)	EPL Point 6 ($\mu\text{g}/\text{m}^3$)
Average	23.7	6.2	5.9
Minimum (24hr)	8.5	1.7	1.1
Maximum (24hr)	42.8	11.7	10.2

Volatile Organic Compounds (VOCs) – Ambient

Monitoring Parameter	EPL Point 4 (ppm)	EPL Point 5 (ppm)	EPL Point 6 (ppm)
Average	0	0.01	0
Minimum (24hr)	0	0	0
Maximum (24hr)	0	0.4	0

Total Solid Particles (TSP)

Monitoring Parameter	EPL Point 4 - TSP ($\mu\text{g}/\text{m}^3$)	EPL Point 6 - TSP ($\mu\text{g}/\text{m}^3$)
04/12/2017	31.47	29.83
10/12/2017	39.77	45.19
16/11/2017	67.23	69.24
22/12/2017	50.70	57.34
Rolling annual average	60.55	46.13
Annual average criteria	90	90

PAHs

Monitoring Parameter	EPL Point 4 (ng/m^3)		EPL Point 6 (ng/m^3)	
	Total PAH	Benzo(a) pyrene	Total PAH	Benzo(a) pyrene
04/12/2017	<3	<2	<3	<2
10/12/2017	<3	<2	<3	<2
16/11/2017	<3	<2	<3	<2
22/12/2017	<3	<2	<3	<2
1 Hour Average Criteria (indicative purposes) (PAHs as BaP) (ng/m^3)	400			



Metals

Date	Location	Concentration (ng/m ³)												
		Sb	As	Cd	Pb	Hg	Be	Cr	Co	Mn	Ni	Se	Sn	V
04/12/2017	EPL Point 4	<13	<5.2	<1.3	9.2	<0.5	<2.6	2.1	<1.3	9	<2.6	<13	<5.2	<2.6
	EPL Point 6	<13	<5.2	<1.3	5.7	<0.5	<2.6	1.9	<1.3	9	<2.6	<13	<5.2	<2.6
10/12/2017	EPL Point 4	<13	<5.2	<1.3	5.1	<0.5	<2.6	3.1	<1.3	12	3.3	<13	<5.2	4.7
	EPL Point 6	<13	<5.2	<1.3	4.8	<0.5	<2.6	3.2	<1.3	16	3.1	<13	<5.2	4.8
16/12/2017	EPL Point 4	<13	<5.2	<1.3	5.5	<0.5	<2.6	3.8	<1.3	18	3.6	<13	5.3	6
	EPL Point 6	<13	<5.2	<1.3	4	<0.5	<2.6	3.5	<1.3	19	3.3	<13	<5.2	5
22/12/2017	EPL Point 4	<13	<5.2	<1.3	3.7	<0.5	<2.6	2.4	<1.3	10	8	<13	<5.2	14
	EPL Point 6	<13	<5.2	<1.3	2.7	<0.5	<2.6	5.5	<1.3	16	4.5	<13	<5.2	6.5
EPL Point 4 Annual Average		-	-	-	4.95	-	-	-	-	-	-	-	-	-
EPL Point 6 Annual Average		-	-	-	4.06	-	-	-	-	-	-	-	-	-
1 Hour Average Criteria (indicative purposes)		9	90	18	-	180	4	90	-	18000	180	-	-	-
No. of 1 hr Exceedances		0	0	0	0	0	0	0	-	0	0	-	-	-
Annual Average Criteria					500									

Frequencies – Ambient Monitoring

Parameter	Frequency	EPL Point 4	EPL Point 5	EPL Point 6
TSP, PAHs, metallic compounds	Monitoring frequency required by licence	24 Hours every 6 days		
	No. of samples required by licence	4	N/A	4
	No. of samples collected & analysed	4	N/A	4
VOCs	Monitoring frequency required by licence	Daily (during work)		
	No. of samples required by licence	24	24	24
	No. of samples collected & analysed	24	24	24
PM10	Monitoring frequency required by licence	Continuous		
	No. of samples required by licence			
	No. of samples collected & analysed			