

## December 2013 Water Quality Summary Report

**Licence Number: 13336**

**Licensee: Barangaroo Delivery Authority**

**Licensee Address: Lvl 21, 201 Kent Street, Sydney**

**Sampling period: 1-31 December 2013**

**Date provided to Licensee: 20 January 2014**

**Date published: 31 January 2014**

# December 2013 Water Quality Summary Report

## Barangaroo South

This report has been compiled to summarise results of water quality monitoring at Barangaroo South during December 2013 in accordance with [EPL number 13336](#). This data is for samples taken from 1 to 31 December 2013. The data was provided to the Barangaroo Delivery Authority (the Licencee) on 20 January 2014.

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

Water quality monitoring is carried out in accordance with all relevant authority and statutory requirements. Ambient monitoring in Darling Harbour measures conductivity, pH, temperature and turbidity. The water treatment plant discharge point is monitored for a variety of water quality parameters, and volume.

### Location of water quality monitors

Ambient water quality monitoring devices are positioned at three locations within Darling Harbour as shown below. The location of the water treatment plant discharge point is adjacent to the Nearfield 1 location.



*Approximate locations of water monitoring equipment*

These locations correspond to the following licenced monitoring locations:

Water Discharge Point 1:	EPL Point 1
Nearfield 1:	EPL Point 2
Nearfield 2:	EPL Point 3
Background:	EPL Point 4

### Monitoring results

During December 2013, there were no exceedances of water quality criteria for ambient monitoring in Darling Harbour or monitoring of WTP discharge.

## Water Discharge Point 1 – EPL Point 1

Pollutant	Units of measure	Monitoring frequency required by licence	Limit	Min. Value	Max. Value	Exceedence (yes/no)	No. of Samples:	
							Required	Completed
Volume	kL	Daily	7776	102	1095	No	31	31
Ammonia(N)	µg/L	Varies*	910	870	910	No	4	4
Conductivity	uS/cm	Varies*	N/A	25	38	N/A	4	4
Cyanide (total)	µg/L	Varies*	4	ND	ND	No	4	4
Dissolved Oxygen	mg/L	Varies*	N/A	1.9	4.9	N/A	4	4
Oil & Grease	mg/L	Varies*	10	ND	ND	No	4	4
pH	pH	Varies*	6.5 - 8.5	6.9	7.2	No	4	4
Sulphate (S)	mg/L	Varies*	N/A	440	1000	N/A	4	4
Suspended Solids	mg/L	Varies*	50	18	26	No	4	4
Turbidity (NTU)	NTU	Varies*	N/A	0.5	0.9	N/A	4	4
Benzene	µg/L	Varies*	500	ND	ND	No	4	4
Toluene	µg/L	Varies*	180	ND	ND	No	4	4
Ethylbenzene	µg/L	Varies*	80	ND	ND	No	4	4
Total m+p-Xylenes	µg/L	Varies*	75	ND	ND	No	4	4
o-Xylene	µg/L	Varies*	350	ND	ND	No	4	4
Arsenic (filtered)	µg/L	Varies*	2.3	ND	0.6	No	4	4
Cadmium (filtered)	µg/L	Varies*	0.7	ND	0.1	No	4	4
Copper (filtered)	µg/L	Varies*	1.3	ND	ND	No	4	4
Lead (filtered)	µg/L	Varies*	4.4	ND	ND	No	4	4
Mercury (filtered)	µg/L	Varies*	0.1	ND	ND	No	4	4
Nickel (filtered)	µg/L	Varies*	7	ND	ND	No	4	4
Zinc (filtered)	µg/L	Varies*	15	6	7	No	4	4
Chromium (hexavalent)	µg/L	Varies*	27	ND	ND	No	4	4
Chromium (trivalent)	µg/L	Varies*	4.4	ND	ND	No	4	4
Acenaphthene	µg/L	Varies*	2	ND	ND	No	4	4
Acenaphthylene	µg/L	Varies*	2	ND	ND	No	4	4
Anthracene	µg/L	Varies*	2	ND	ND	No	4	4
Benz(a)anthracene	µg/L	Varies*	2	ND	ND	No	4	4
Benzo(a)pyrene	µg/L	Varies*	2	ND	ND	No	4	4
Benzo(b)fluoranthene	µg/L	Varies*	2	ND	ND	No	4	4
Benzo(g,h,i)perylene	µg/L	Varies*	2	ND	ND	No	4	4
Benzo(k)fluoranthene	µg/L	Varies*	2	ND	ND	No	4	4
Chrysene	µg/L	Varies*	2	ND	ND	No	4	4
Dibenz(a,h)anthracene	µg/L	Varies*	2	ND	ND	No	4	4
Fluoranthene	µg/L	Varies*	2	ND	ND	No	4	4
Fluorene	µg/L	Varies*	2	ND	ND	No	4	4
Indeno(1,2,3-cd)pyrene	µg/L	Varies*	2	ND	ND	No	4	4
Naphthalene	µg/L	Varies*	50	ND	ND	No	4	4
Phenanthrene	µg/L	Varies*	2	ND	ND	No	4	4
Pyrene	µg/L	Varies*	2	ND	ND	No	4	4
Total PCB	µg/L	Varies*	N/A	ND	ND	N/A	4	4
Phenol	µg/L	Varies*	400	ND	ND	No	4	4
TRH C6-C9	µg/L	Varies*	20	ND	ND	No	4	4
TRH C10-C14	µg/L	Varies*	50	ND	ND	No	4	4
TRH C15-C28	µg/L	Varies*	100	ND	ND	No	4	4
TRH C29-C36	µg/L	Varies*	50	ND	ND	No	4	4

N/A – no licence limit, monitoring requirement only

ND – not detected

\* Once prior to discharge during batch operation; once daily during intermittent continuous operation; once daily for the first fourteen days of continuous operation, then weekly.

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## Turbidity

Monitoring Parameter	EPL Point 2 (NTU)	EPL Point 3 (NTU)	EPL Point 4 (NTU)
Minimum	1.90	1.40	0.30
Maximum	13.40	6.40	19.30
Mean	2.56	1.96	1.43
<b>Limit</b>	No licence limit, monitoring requirement only		
<b>Number of Exceedences</b>	N/A	N/A	N/A

## Conductivity

Monitoring Parameter	EPL Point 2 (mS/cm)	EPL Point 3 (mS/cm)	EPL Point 4 (mS/cm)
Minimum	47.00	34.50	48.80
Maximum	53.90	53.70	53.70
Mean	53.04	52.85	53.06
<b>Limit</b>	No licence limit, monitoring requirement only		
<b>Number of Exceedences</b>	N/A	N/A	N/A

## pH

Monitoring Parameter	EPL Point 2	EPL Point 3	EPL Point 4
Minimum	7.52	6.70	7.89
Maximum	7.94	7.41	8.36
Mean	7.85	7.06	8.20
<b>Limit</b>	No licence limit, monitoring requirement only		
<b>Number of Exceedences</b>	N/A	N/A	N/A

## Temperature

Monitoring Parameter	EPL Point 2 (°C)	EPL Point 3 (°C)	EPL Point 4 (°C)
Minimum	20.67	21.20	20.85
Maximum	24.03	24.50	24.26
Mean	22.45	23.32	22.58
<b>Limit</b>	No licence limit, monitoring requirement only		
<b>Number of Exceedences</b>	N/A	N/A	N/A

## Frequency

Monitoring Parameter	EPL Point 2	EPL Point 3	EPL Point 4
Monitoring frequency required by licence	Every 15 minutes		
NTU Samples Collected & Analysed *	99.4%	99.2%	97.7%
pH Samples Collected & Analysed *	99.4%	99.2%	99.4%
Conductivity Samples Collected & Analysed *	98.9%	99.3%	99.4%
Temperature Samples Collected & Analysed *	99.4%	99.3%	99.4%

\* Based on the percentage of data recovery for the month

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