



## February 2017 MONITORING DATA

### Notes on Monitoring Data

Environment Protection Licence: 11781

Date Data Published: 14 March 2017

Date Sampled: 4, 17, 18, 25, 26, 27 and 28 February 2017.

Date Sample Results Obtained: 15 February, 2, 8 and 10 March 2017.

In relation to the monitoring data, IPL notes:

- The automatic samplers only trigger when a specified volume of rainfall has occurred. Sampling is currently initiated when the following two conditions are met:
  - A minimum 2 mm rainfall depth is measured in the preceding 60 minute period by the tipping bucket rain gauge; and
  - Stormwater flow over the weir plate is detected by a pressure sensor installed within the monitoring pit.

Provided these conditions continue to be met, stormwater is sampled from the monitoring pit every 60 minutes and stored in sample bottles housed in a carousel within the auto sampler unit.
- Prior to analysis of collected stormwater samples “composite stormwater samples” are produced. Composite sampling consists of a collection of numerous individual discrete samples collected in a common container over a sampling period. Composite samples are collected from the discharge point and sent for analysis.
- EPA Licence 11781 sets no specific pollutant limit on the site’s water discharges.
- IPL Newcastle is currently conducting improvement works within the Northern Drain network. These works include the diversion of clean roof water and the relining of all existing stormwater pipes. During these works the Northern Drain has been taken offline and blocked. As such, there is currently no stormwater discharge from this area of the site.

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### North Drain Storm Water Drainage Analysis (EPL 1)

Pollutant	Units of Measure	Monitoring Frequency Required	No of Samples Analysed in month	Min. Value	Mean Value	Median Value	Max. Value
pH	pH Unit	Monthly during discharge	ND	ND	ND	ND	ND
Total Suspended Solids	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Sulfur as S	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Sulfate as SO <sub>4</sub>	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Dissolved Zinc	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Dissolved Arsenic	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Dissolved Cadmium	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Dissolved Lead	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Dissolved Mercury	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Total Zinc	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Total Arsenic	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Total Cadmium	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Total Lead	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Total Mercury	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Ammonia as N	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Nitrite as N	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Nitrate as N	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Nitrite & Nitrate	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen as N	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Total Nitrogen	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Phosphorus (Total) as P	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Phosphorus (Reactive) as P	mg/l	Monthly during discharge	ND	ND	ND	ND	ND
Phosphate (Calculation from Total P result)	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Sulfide (Dissolved) as S <sup>2-</sup>	mg/L	Monthly during discharge	ND	ND	ND	ND	ND
Sulfide (Total) as S <sup>2-</sup>	mg/L	Monthly during discharge	ND	ND	ND	ND	ND

ND – During February 2017 there were no samples collected from the Northern Drain as the drain was taken offline whilst improvement works were undertaken.

## February 2017 MONITORING DATA

### Central Drain Storm Water Drainage Analysis (EPL 7)

Pollutant	Units of Measure	Monitoring Frequency Required	No of Samples Analysed in month	Min. Value	Mean Value	Median Value	Max. Value
pH	pH Unit	Monthly during discharge	7	5.81	6.24	6.21	6.77
Total Suspended Solids	mg/L	Monthly during discharge	7	12.0	49.3	39.0	91.0
Sulfur as S	mg/L	Monthly during discharge	7	55.0	134.1	94.0	300.0
Sulfate as SO <sub>4</sub>	mg/L	Monthly during discharge	7	52.0	141.7	84.0	346.0
Dissolved Zinc	mg/L	Monthly during discharge	7	0.002	0.006	0.003	0.016
Dissolved Arsenic	mg/L	Monthly during discharge	7	0.0001	0.0003	0.0002	0.001
Dissolved Cadmium	mg/L	Monthly during discharge	7	0.001	0.001	0.001	0.001
Dissolved Lead	mg/L	Monthly during discharge	7	0.041	0.150	0.143	0.333
Dissolved Mercury	mg/L	Monthly during discharge	7	0.0001	0.0001	0.0001	0.0001
Total Zinc	mg/L	Monthly during discharge	7	0.001	0.006	0.004	0.017
Total Arsenic	mg/L	Monthly during discharge	7	0.0003	0.001	0.0004	0.002
Total Cadmium	mg/L	Monthly during discharge	7	0.002	0.007	0.008	0.011
Total Lead	mg/L	Monthly during discharge	7	0.176	0.415	0.310	0.874
Total Mercury	mg/L	Monthly during discharge	7	0.0001	0.0001	0.0001	0.0001
Ammonia as N	mg/L	Monthly during discharge	7	20.7	56.0	29.8	119.0
Nitrite as N	mg/L	Monthly during discharge	7	0.11	0.2	0.2	0.4
Nitrate as N	mg/L	Monthly during discharge	7	1.9	3.9	4.0	5.5
Nitrite & Nitrate	mg/L	Monthly during discharge	7	2.0	4.1	4.4	5.7
Total Kjeldahl Nitrogen as N	mg/L	Monthly during discharge	7	23.8	68.2	37.7	158.0
Total Nitrogen	mg/L	Monthly during discharge	7	25.8	72.3	43.4	164.0
Phosphorus (Total) as P	mg/L	Monthly during discharge	7	11.2	58.7	24.9	177.0
Phosphorus (Reactive) as P	mg/l	Monthly during discharge	7	9.1	55.5	24.0	164.0
Phosphate (Calculation from Total P result)	mg/L	Monthly during discharge	7	34.3	179.9	76.3	544.0
Sulfide (Dissolved) as S <sup>2-</sup>	mg/L	Monthly during discharge	7	0.1	0.1	0.1	0.1
Sulfide (Total) as S <sup>2-</sup>	mg/L	Monthly during discharge	7	0.1	0.1	0.1	0.1

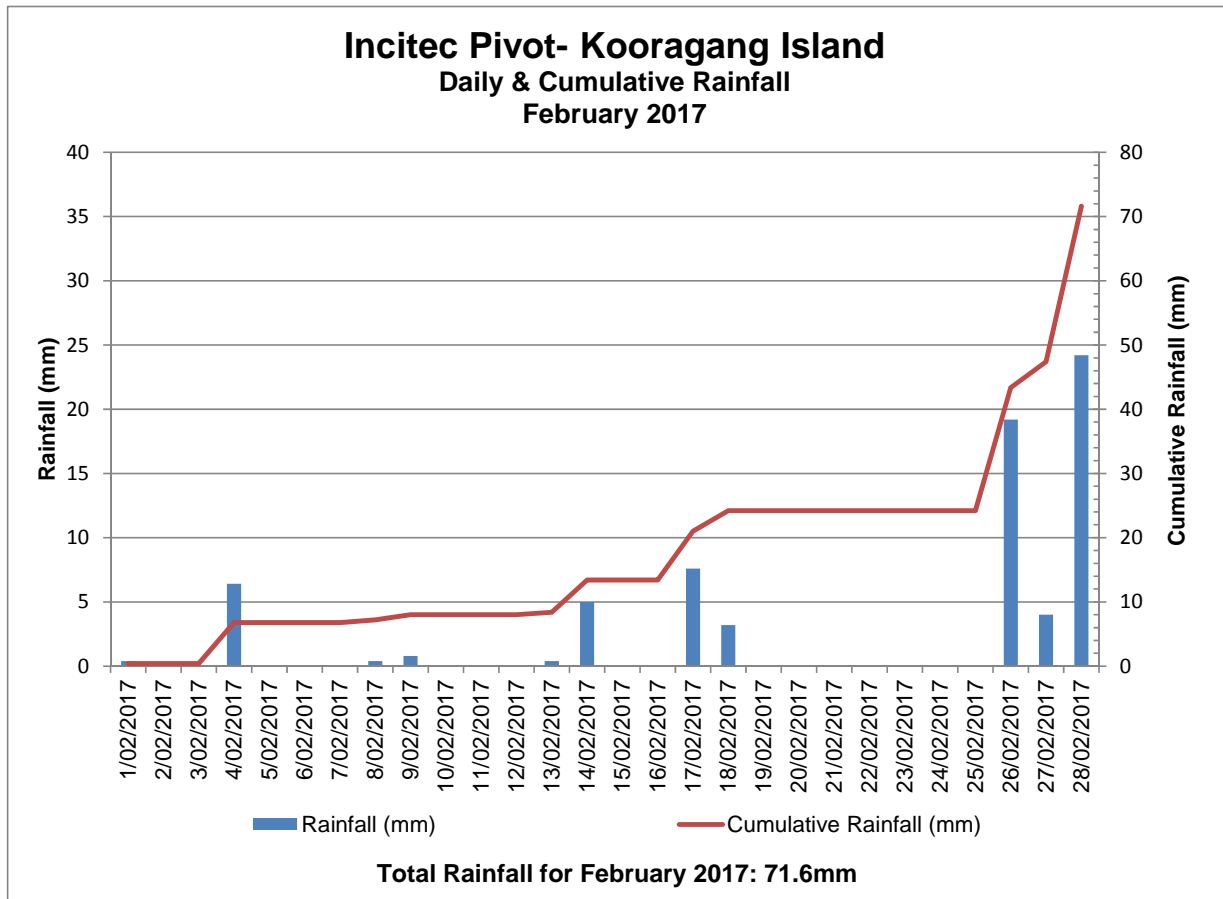


## February 2017 MONITORING DATA

### Rainfall & Flow Data

Each of the automated water sampling units incorporates a rain gauge and flow volume measurement capability in accordance with the site's EPL licence (EPL 11781). The rain gauge and flow sensor act as a trigger to determine sample collection from the automatic sampler.

**Figure 1** summarises the rainfall for the January 2017 period.



**Figure 1** February 2017 Rainfall Summary

## February 2017 MONITORING DATA

Flow rate information is recorded on a continual basis via automated sampling devices located in each discharge drain. The flow rate information is provided in the table below.

Date	Site Rainfall (mm)	Discharge Volume (m <sup>3</sup> [kilolitres]/day)		Total Flow (m <sup>3</sup> /day)
		North Drain EPL 1	Central Drain EPL 7	
01-Feb-17	0.4	ND	0.0	0.0
02-Feb-17	0.0	ND	0.0	0.0
03-Feb-17	0.0	ND	0.0	0.0
04-Feb-17	6.4	ND	0.0	0.0
05-Feb-17	0.0	ND	0.0	0.0
06-Feb-17	0.0	ND	0.0	0.0
07-Feb-17	0.0	ND	0.0	0.0
08-Feb-17	0.4	ND	0.0	0.0
09-Feb-17	0.8	ND	0.0	0.0
10-Feb-17	0.0	ND	0.0	0.0
11-Feb-17	0.0	ND	0.0	0.0
12-Feb-17	0.0	ND	0.0	0.0
13-Feb-17	0.4	ND	0.0	0.0
14-Feb-17	5.0	ND	0.0	0.0
15-Feb-17	0.0	ND	0.0	0.0
16-Feb-17	0.0	ND	6.8	6.8
17-Feb-17	7.6	ND	69.2	69.2
18-Feb-17	3.2	ND	41.3	41.3
19-Feb-17	0.0	ND	5.7	5.7
20-Feb-17	0.0	ND	5.5	5.5
21-Feb-17	0.0	ND	4.0	4.0
22-Feb-17	0.0	ND	2.3	2.3
23-Feb-17	0.0	ND	1.0	1.0
24-Feb-17	0.0	ND	0.3	0.3
25-Feb-17	0.0	ND	183.3	183.3
26-Feb-17	19.2	ND	41.6	41.6
27-Feb-17	4.0	ND	154.8	154.8
28-Feb-17	24.2	ND	310.5	310.5
<b>Total</b>	<b>71.6</b>	<b>ND</b>	<b>826.32</b>	<b>826.32</b>

ND – During February 2017 there were no samples collected from the Northern Drain as the drain was offline whilst improvement works were undertaken.

No stormwater discharge data was recorded during the period 1 – 15 February 2017 at the Central drain due to a flow sensor malfunction. Consequently, IPL arranged for a third party to conduct a service and repair of the Central drain sampling unit which has functioned correctly from 16 February 2017 onwards.