



SEPTEMBER 2019 MONITORING DATA

Notes on Monitoring Data

Environment Protection Licence: 11781

Date Data Published: 21 October 2019

Date Sampled: 17 and 18 September.

Date Sample Results Released: 26 September 2019.

In relation to the monitoring data, IPL notes:

- The automatic sampler only triggers 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 is detected by the flow sensor installed inside the drainage line.
 - Provided these conditions continue to be met, stormwater is sampled from the monitoring pit every 15 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. The current sampling period is ‘per rainfall event’. This is defined as a continuous period where the flow and rainfall conditions are continued to be met and the time between sample collection is 15 minutes.
- EPA Licence 11781 sets no specific pollutant limit on the site’s water discharges.
- IPL Newcastle has recently concluded the improvement works conducted within the Northern Drain network. These works included the diversion of clean roof water and the re-lining of all existing stormwater pipes. All stormwater flow is now diverted to the Central drain.

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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 | 2 | 7.09 | 7.15 | 7.15 | 7.21 |
| Total Suspended Solids | mg/L | Monthly during discharge | 2 | 64.0 | 75.0 | 75.0 | 86.0 |
| Sulfur as S | mg/L | Monthly during discharge | 2 | 20.0 | 40.0 | 40.0 | 60.0 |
| Sulfate as SO ₄ | mg/L | Monthly during discharge | 2 | 35.0 | 48.0 | 48.0 | 61.0 |
| Total Zinc | mg/L | Monthly during discharge | 2 | 0.421 | 0.503 | 0.503 | 0.585 |
| Ammonia as N | mg/L | Monthly during discharge | 2 | 10.4 | 18.8 | 18.8 | 27.2 |
| Nitrite as N | mg/L | Monthly during discharge | 2 | 0.440 | 0.870 | 0.870 | 1.300 |
| Nitrate as N | mg/L | Monthly during discharge | 2 | 3.84 | 5.60 | 5.60 | 7.36 |
| Nitrite and Nitrate as N | mg/L | Monthly during discharge | 2 | 4.3 | 6.5 | 6.5 | 8.7 |
| Total Kjeldahl Nitrogen as N | mg/L | Monthly during discharge | 2 | 12.5 | 22.0 | 22.0 | 31.5 |
| Total Nitrogen as N | mg/L | Monthly during discharge | 2 | 16.8 | 28.5 | 28.5 | 40.2 |
| Phosphorus (Total) as P | mg/L | Monthly during discharge | 2 | 8.2 | 10.7 | 10.7 | 13.1 |
| Phosphorus (Reactive) as P | mg/L | Monthly during discharge | 2 | 6.1 | 8.6 | 8.6 | 11.1 |
| Phosphate (Calculation from Total Phosphorus) | mg/L | Monthly during discharge | 2 | 25.1 | 32.7 | 32.7 | 40.2 |

Rainfall & Flow Data

Each drain has a rain gauge and flow sensor. The rain gauge and flow sensor transmit the rain and flow information to a controller which then initiates the automatic sampler to take a sample in accordance with the site's EPL licence (EPL 11781).

Flow rate information is recorded on a continual basis via flow sensors located inside the discharge drain. A magnetic flow sensor has recently been installed to measure the flow at the Central drain. Rainfall data is recorded by a rain gauge located adjacent to the automatic sampler.

A rainfall gauge independent of the automatic sampler is also located on site. **Figure 1** summarises the rainfall for September 2019.



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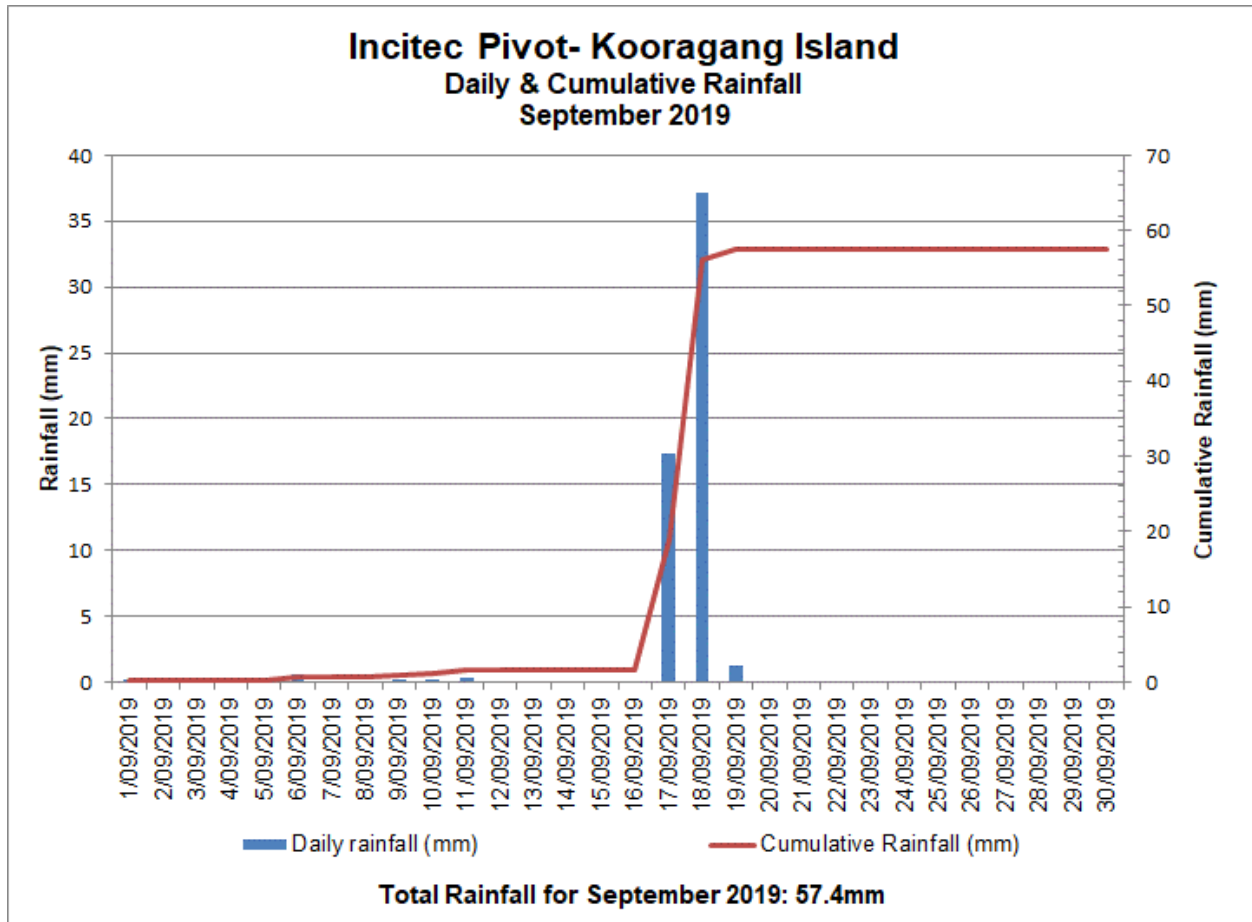


Figure 1 September 2019 Rainfall Summary