



Sarina Water Recycling Facility

**Department of Environment and Energy Annual Report
July 1, 2015 - June 30, 2016**

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Annual Report Sarina Recycled Water Recycling Facility EPBC 2011-6005 for the reporting period 01 July 2015 – 30 June 2016.

Introduction

Construction of the Sarina Water Recycling Facility (SWRF) commenced on 04 February 2013 and the first inflow into the plant began on 01 August 2014 with the first releases to Plane Creek on 09 August 2014. The plant was formally handed over to council on 14 November 2014.

The SWRF replaced the 40 year old Sarina Sewage Treatment Plant which used an outdated Biological Trickle Filter treatment process. The Sarina Water Recycling Facility is an 8,000 EP biological nutrient removal membrane bioreactor process plant. The main plant comprises of inlet works, a biological reactor and a submerged membrane reactor. The sludge handling is by aerobic digestion and centrifuge dewatering.

Additional and peripheral plant includes the chemical dosing systems for sodium hypochlorite, alum, caustic soda, citric acid and polymer additions, dewatering plant, chemical storage, switchroom and transformer, and the associated support equipment for the central process area. With the addition of an integrated membrane system, the plant is able to meet effluent pathogen quality requirements and also provides for tertiary filtration, allowing the effluent to be utilised for supply to recycled water schemes.

Annual Report Submission

This the annual report as per EPBC Authorisation EPBC 2011-6005 for the twelve month period from 01 July 2015 to 30 June 2016. This report was submitted to the Department of Environment and uploaded to council's internet as per Condition 2 of the authorisation.

This is an amended reporting period and was requested by Mackay Regional Council to bring the EPBC reporting into line with other statutory reporting periods. The Department of the Environment and Energy approved the amendment to the reporting period (01 July to 30 June) on 02 August 2016.

Average Dry Weather Flow and Maximum Peak Weather Flow

The maximum average dry weather flow was 0.61ML/day which is below the maximum of 2.16ML/d whereas the maximum peak weather flow was 7.58ML/day which is less than the maximum of 9.2ML/day.

Total Nitrogen and Total Phosphorus

The maximum concentrations of Total Nitrogen and Total Phosphorous released into Plane Creek are represented in Table 1 and graphically in Figures 1 and 2.

Table 1: Total Nitrogen and Total Phosphorous SWRF 01 July 2015 to 30 June 2016

Date	Total Nitrogen (mg/L)		Total Phosphorus (mg/L)	
	Results	Maximum	Results	Maximum
2/07/2015	2.7	15	0.56	3
10/07/2015	3.3	15	0.6	3
18/07/2015	2.1	15	0.59	3
26/07/2015	2.7	15	0.54	3
3/08/2015	2.8	15	0.39	3
11/08/2015	3.5	15	0.52	3
19/08/2015	3.8	15	0.28	3
27/08/2015	5.3	15	0.94	3
4/09/2015	4	15	0.24	3
12/09/2015	3.7	15	0.17	3
20/09/2015	3	15	0.27	3
28/09/2015	2.5	15	0.48	3
6/10/2015	2.4	15	0.17	3
14/10/2015	4	15	0.1	3
22/10/2015	3.4	15	0.1	3
30/10/2015	3.5	15	0.13	3
7/11/2015	3.3	15	<0.1	3
15/11/2015	3.8	15	0.11	3
23/11/2015	2.9	15	0.26	3
1/12/2015	3.4	15	0.33	3
9/12/2015	3.5	15	1.07	3
17/12/2015	2.7	15	0.6	3
27/12/2015	3.4	15	0.12	3
4/01/2016	3.4	15	0.22	3
10/01/2016	2.7	15	0.69	3
18/01/2016	2.1	15	0.2	3
27/01/2016	2.8	15	0.21	3
3/02/2016	2	15	1.16	3
11/02/2016	2.5	15	0.91	3
19/02/2016	3.2	15	0.27	3
27/02/2016	3	15	0.63	3
7/03/2016	3.8	15	0.34	3
14/03/2016	2.4	15	0.46	3
22/03/2016	3.8	15	0.3	3
30/03/2016	2.3	15	0.29	3
7/04/2016	2.2	15	0.29	3
15/04/2016	4.8	15	0.53	3
23/04/2016	5.3	15	0.5	3
1/05/2016	3.6	15	0.55	3
9/05/2016	3.7	15	0.55	3
17/05/2016	3.8	15	0.22	3
25/05/2016	4.1	15	0.19	3
2/06/2016	3.5	15	<1	3
10/06/2016	4.1	15	0.1	3
18/06/2016	4	15	0.3	3
26/06/2016	3.5	15	0.4	3

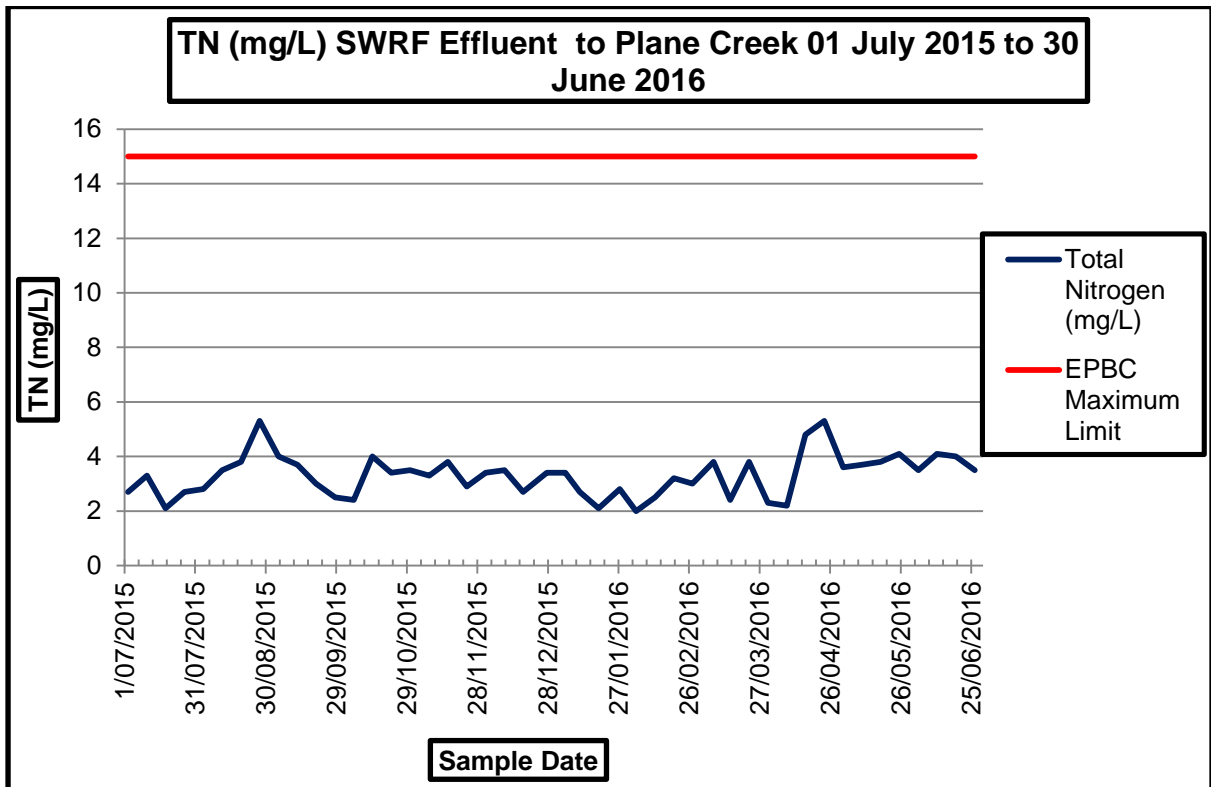


Figure 1: Total nitrogen SWRF 01 July 2015 to 30 June 2016

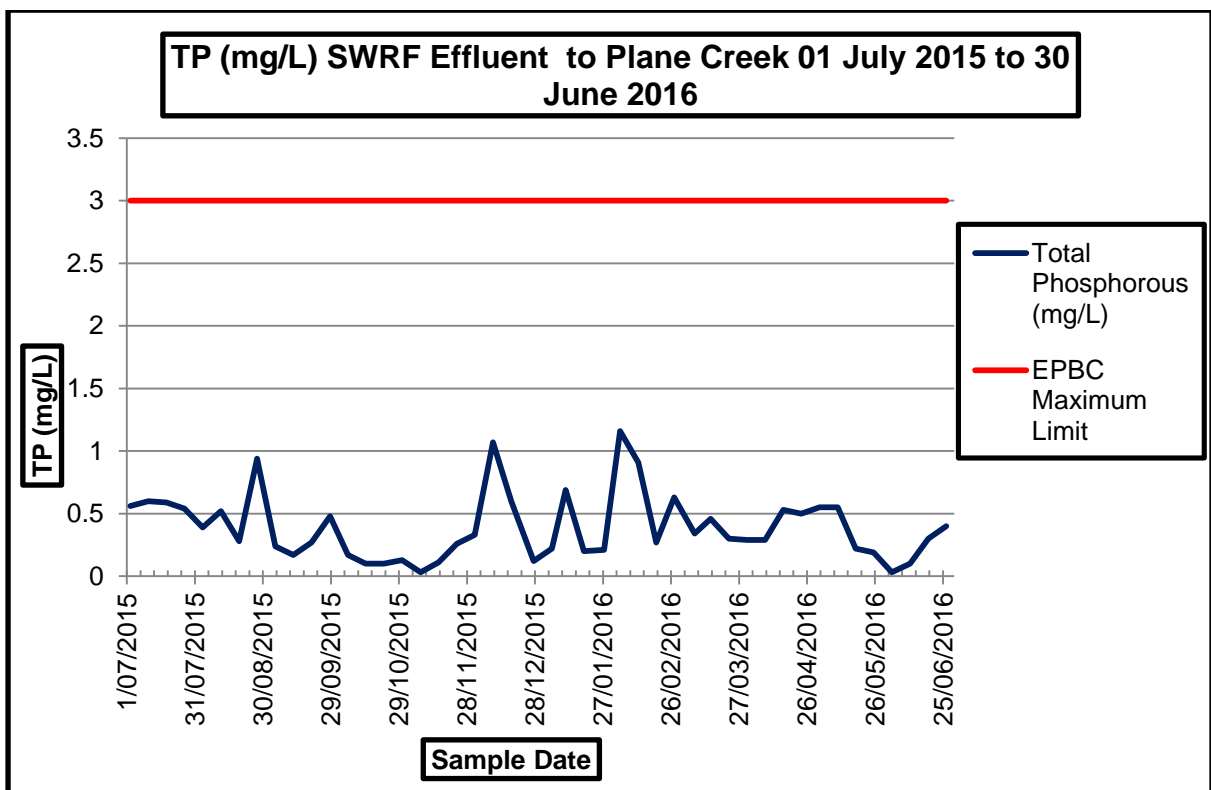


Figure 2: Total phosphorous SWRF 01 July 2015 to 30 June 2016

Annual Mass Loads

Table 2 below shows the annual mass loads for the reporting period for both Total Nitrogen and Total Phosphorous. To bring the mass load calculation into line with annual NPI reporting, the NPI formula was used to determine the mass loads of Total Nitrogen and Total Phosphorous.

Both were below the statutory limits.

Table 2: Mass Loads total nitrogen and total phosphorous SWRF 01 July 2015 to 30 June 2016

	Mass Loads (kg)	Limits (kg)
Total Nitrogen	713	4338
Total Phosphorous	91	868

Table 3: Comparison of twelve months mass loads between SWF and the decommissioned Sarina STP

	Mass Loads SWRF (kg)	Mass Loads Sarina STP (kg)
Total Nitrogen	713	7970.59
Total Phosphorous	91	1953.38

Table 3 compares the current mass loads at the SWRF, compared to the mass loads at the last year of operation at the decommissioned Sarina STP. There has been a significant reduction in loads for both Total Nitrogen and Total Phosphorous.

There have been no reports of any slick or visible evidence of oil or grease, litter or other objectionable matter at the release point M1.

Non-compliance with EPBC approval 2011/6005

During the reporting period there was one exceedence of the conditions stipulated in EPBC/2011. This was an exceedence of Total Nitrogen and Total Phosphorous that passes monitoring point M1 of the Sarina Water Recycling Facility.

On 17 February 2016 an estimated 1.44kL of screened and de-gritted sewage bypassed the bioreactor from the grit trap outlet chamber and was released into Plane Creek. The regulator was notified of the incident within the statutory timeframes.

From analysis of water sample results and visual inspections downstream of M1 it is not believed that the bypass event had any impact on the Plane Creek water quality.