

5.15. WATER AND WASTEWATER QUARTERLY REPORT FOR THE PERIOD ENDING 30 SEPTEMBER 2017

GENERAL MANAGER Nicholas Wellwood, General Manager Operations
DEPARTMENT Water and Wastewater

RECOMMENDATION

It is recommended that the Quarterly Report of the Water and Wastewater branch for the period ending 30 September 2017 be received and noted.

EXECUTIVE SUMMARY

This report documents progress on key operational and service delivery areas as well as the regulatory compliance status within the Water and Wastewater Branch for the period 1 July to 30 September 2017.

Whilst the results are generally positive the areas for improvement are noted and will be the focus of the branch over the next quarter. Notable capital improvements include the completion of Marrs Creek Water Mains Upgrade and the 2016-17 Sewer Relining program.

BACKGROUND

This report is the first Quarterly Report submitted by the Water and Wastewater Branch during the 2017/2018 Financial Year. This report highlights progress against key performance areas required by the Department of Energy and Water Supply and required compliance levels by the Department of Environment and Heritage Protection.

COMMENT

This report enables Councillors and the community to obtain a strategic view of activities within the Water and Wastewater Branch.

The Quarterly Report documents progress on key operational and service delivery aspects and regulatory compliance levels.

The Water and Wastewater Quarterly Report does not include comprehensive progress reporting in terms of the Capital Works Programs, Operational Plan and financial statements as these are dealt with in separate Quarterly Reports to Council.

FINANCIAL/RESOURCE IMPLICATIONS

Failure to comply with required standards and to respond quickly and effectively to water and wastewater incidents may result in harm to the community and substantial penalties.

RISK MANAGEMENT IMPLICATIONS

Council, as a registered water service provider, has a statutory obligation to ensure it is able to provide water and wastewater services to customers. Council's reputation would suffer if it is unable to maintain service levels at prescribed standards. This Quarterly Water and Wastewater report provides information on strategies implemented by the Water and Wastewater branch to minimise occupational health and safety risks and risks to Council infrastructure.

SUSTAINABILITY IMPLICATIONS

- Economic:** It is essential to adequately maintain water and wastewater infrastructure in order to provide satisfactory services in support of economic development in the Shire.
- Environmental:** Failing to provide adequate and compliant water and wastewater services can lead to environmental harm and breaching of licence conditions.
- Social:** The Community expects fully operational and compliant water and wastewater services.

CORPORATE/OPERATIONAL PLAN, POLICY REFERENCE

This report has been prepared in accordance with the following:

Corporate Plan 2014-2019 Initiatives:

Theme 5 – Governance

5.2.1 - Provide Councillors and community with accurate, unbiased and factual reporting to enable accountable and transparent decision-making.

5.3.4 - Develop practices and skill levels to ensure safety and wellbeing in the workplace.

Operational Plan 2017-2018 Actions:

3.1.10 - Obtain revised licence for Mossman Wastewater Treatment Plant.

3.2.7 - Implementation of a leak detection program.

3.2.8 - Obtain an amended licence for the Mossman Water Treatment Plant based on closed system conditions.

COUNCIL'S ROLE

Council can play a number of different roles in certain circumstances and it is important to be clear about which role is appropriate for a specific purpose or circumstance. The implementation of actions will be a collective effort and Council's involvement will vary from information only through to full responsibility for delivery.

The following areas outline where Council has a clear responsibility to act:

- | | |
|--------------------|--|
| Asset-Owner | Meeting the responsibilities associated with owning or being the custodian of assets such as infrastructure. |
| Regulator | Meeting the responsibilities associated with regulating activities through legislation or local law. |

CONSULTATION

Internal: Nil

External: Water and wastewater quality parameters are tested by an accredited laboratory and test results and service levels are required to be reported to the Department of Energy and Water Supply and the Department of Environment and Heritage Protection.

Community: Nil

ATTACHMENTS

1. Water and Wastewater Quarterly Report for the period ending 30 September 2017
[5.15.1]

Water and Wastewater Quarterly Report

1 July 2017 – 30 September 2017

The aim of the Water and Wastewater Quarterly Report is to inform Councillors and the community on the progress of key operational and service delivery areas as well as regulatory compliance status within the Water and Wastewater Branch.

The Water and Wastewater Quarterly Report does not include comprehensive progress reporting in terms of the Capital Works Programs and the Operational Plan which are dealt with in separate Quarterly Reports to Council.

This report highlights certain aspects of the activities of the Water and Wastewater Branch that are generally industry benchmark indicators as well as key performance areas and compliance monitoring parameters as required by the Department Energy Water Supply (DEWS) and the Department of Environment and Heritage Protection (DEHP).

Water

1. Water reticulation services

General maintenance was carried out on all schemes for this quarter including all intake flushing programs and cleaning/flushing of dead end mains. Hydrant and valve maintenance also continued throughout the schemes.

Cert III water management training continued for four members of the Water Team.

Capital works completed during the reporting period included the completion of the Marrs Creek Upgrade.

Table 1. Water Reticulation Services

| Douglas Shire Reticulation (all schemes) | |
|--|-----|
| Settlement Meter Reads | 103 |
| New Water Services Connections | 16 |
| Service Repairs | 86 |
| Water Mains Repairs | 5 |
| Water Quality Complaints | 0 |
| Flushing Events: Mossman/Port Douglas/ Cooya/ Newell | 7 |
| Flushing Events: Whyanbeel/Wonga | 1 |
| Flushing Events: Daintree/ De Meio | 1 |

There were no water quality complaints during the reporting period.

2. Water schemes and potable water consumption

Site Visit by Department of Science Information Technology and Innovation (DSITI), Department of Environment and Heritage Protection (DEHP) and TERRAIN

A site visit occurred on 5 September 2017 with representatives of DSITI, DEHP and TERRAIN in collaboration with Council's Environmental Technical Officer. The aim of the visit was to establish the best sampling locations and methods for environmental monitoring in relation to the Healthy Waterways partnership. This will assist in better outcomes and understanding of environmental impacts, particularly on coastal waters.

All Schemes

Raw water quality was good in all intakes averaging below 1.0 NTU. Due to prevailing dry conditions, and infrequent rain periods to replenish the water supply, the intakes dropped to low flow levels which triggered Level 2 Water Restrictions being introduced throughout the Shire.

Throughout the water schemes, all pump stations performed well with no incidents.

The De Meio Drive bore field and non-potable storage reservoir operated at normal production. Craiglie reservoir was fully operational. Both Flagstaff and Rocky Point reservoirs performed well, and the calcium hypo automated dosing facilities maintained stable chlorine levels in the drinking water.

Capital Works projects commenced for the 2017-2018 period. Major progress was made on the installation stages for the Mossman WTP Centrifugal Turbidity Clarifier which involved a total plant shutdown overnight from 18-19 September. Water supply was not adversely impacted and works were successfully commissioned within the anticipated timeframes.

Cert III and Cert IV water industry training continued for two water plant operators.

Mossman/Port Douglas Scheme

Mossman Water Treatment Plant met all demand requirements during the reporting period. Consumer demand continued to increase particularly in Port Douglas, which was indicative of the strong tourist season and the continuing dry weather.

Rex Creek intake levels steadily dropped due to the continuing dry weather, with the level reaching 0.21m. Maximum instantaneous demand flow rate dropped from the previous quarterly period of 370L/s to 225L/s. This level was very low, particularly in keeping up with demand, and the situation continued to be closely monitored to ensure supply was still able to be met.

All Ultra Filtration (UF) racks were operational, and maintenance works continued with cartridge repairs to ensure compliance with UF rack integrity test limits. General maintenance works were also undertaken.

There were no water quality reportable incidents in the Mossman/Port Douglas water scheme for the reporting period.

Fig 1. Rex Creek Intake level for the period 1 July 2017 – 30 September 2017

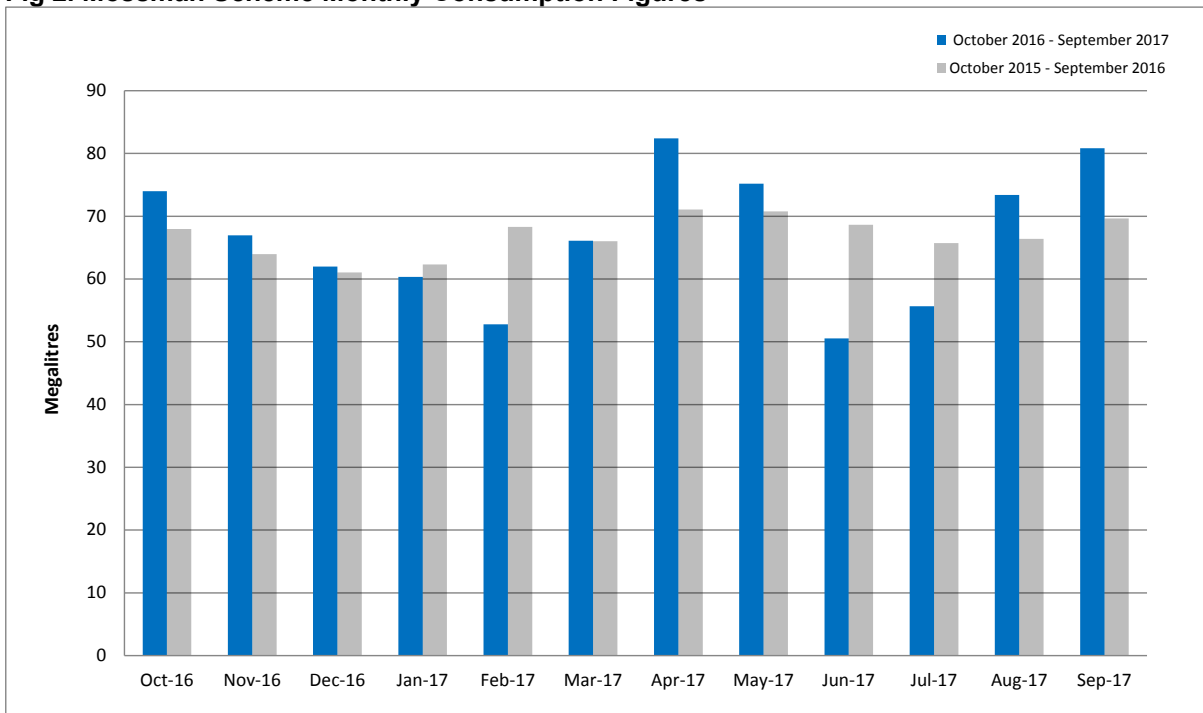


Mossman Water Treatment Plant met all demand requirements during the reporting period. Current trends indicate increasing consumption typical of seasonal trends and visitor numbers to the region.

Mossman Water Supply

The total monthly consumption of water in Mossman, Cooya Beach and Newell Beach areas can be seen in Figure 2.

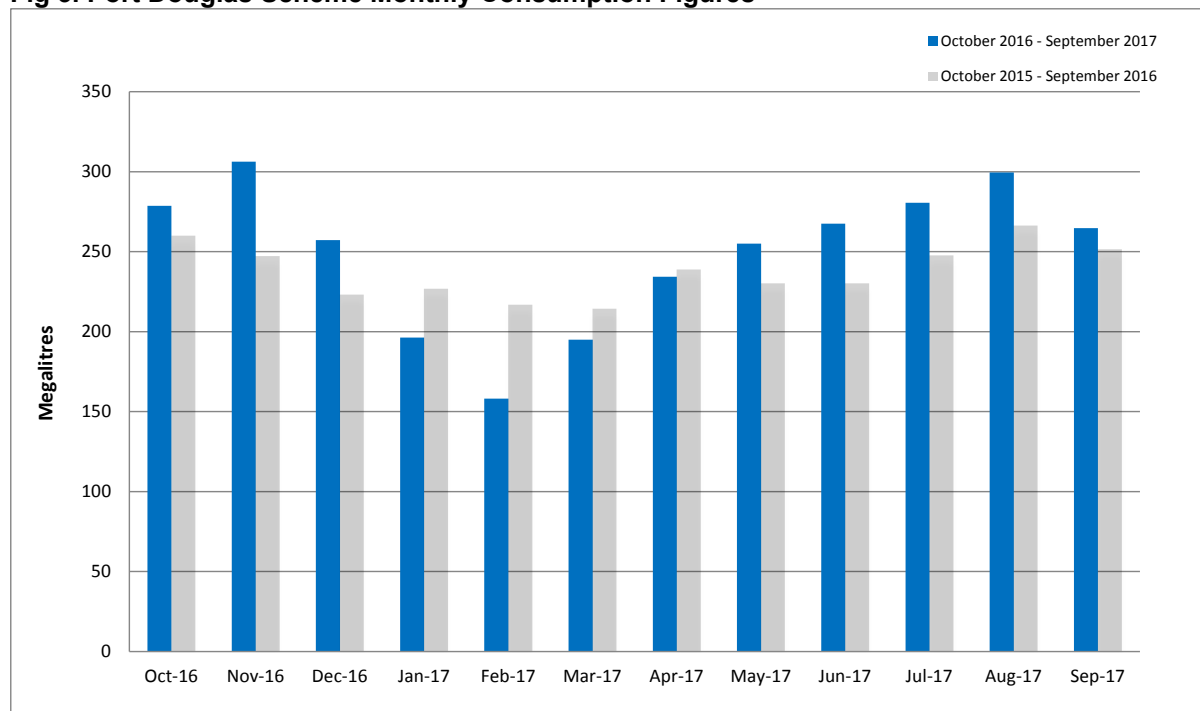
Fig 2. Mossman Scheme Monthly Consumption Figures



Port Douglas Water Supply

Current trends indicate increasing consumption typical of seasonal trends and visitor numbers to the region, and in particular within Port Douglas. The total monthly consumption of water in Port Douglas can be seen in Figure 3.

Fig 3. Port Douglas Scheme Monthly Consumption Figures



Whyanbeel Scheme

Whyanbeel Water Treatment Plant met all demand requirements during the reporting period.

The intake level dropped significantly due to the dry conditions, but was still adequate to meet demand. Reservoir levels remained near capacity to ensure consumer demand was met.

The UF rack was fully operational during the reporting period. To maintain UF filter efficiency, ongoing chemical clean-in-place operations were undertaken, and general maintenance work continued.

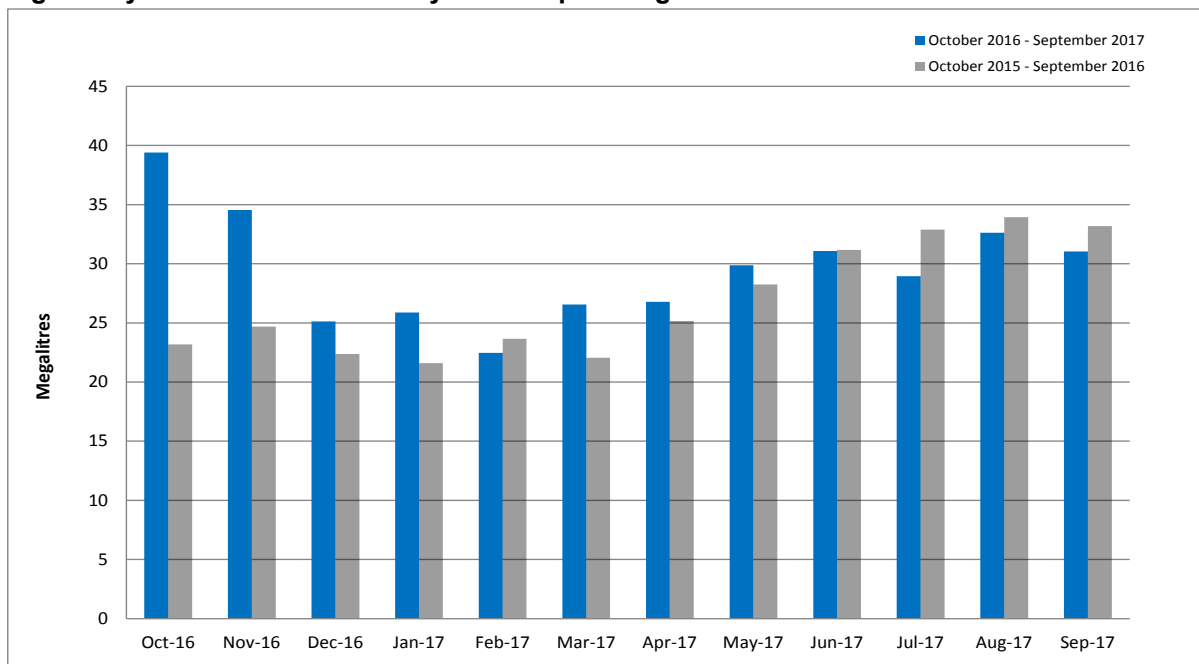
The new gas chlorination plant at Whyanbeel was completed and commissioned and was performing well to maintain stable chlorine residual levels in the treated drinking water.

There were no water quality reportable incidents in the Daintree water scheme for the reporting period.

Whyanbeel Water Supply

The total monthly consumption of water in the Whyanbeel scheme can be seen in Figure 4.

Fig 4. Whyanbeel Scheme Monthly Consumption Figures



Daintree Scheme

Daintree Water Treatment Plant met all demand requirements during the report period. Intake levels at Intake Creek dropped due to the dry conditions but were still adequate to meet consumer demand.

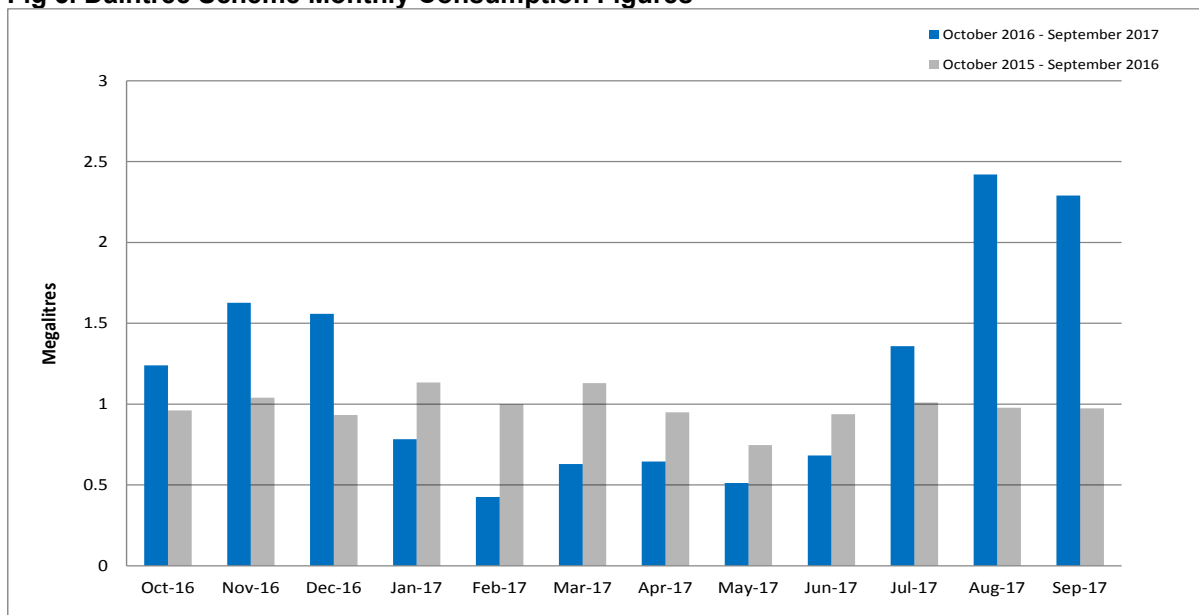
To maintain UF filter efficiency, ongoing chemical clean-in-place operations were undertaken and general maintenance works continued.

There were no water quality reportable incidents in the Daintree water scheme for the reporting period.

Daintree Water Supply

The total monthly consumption of water in the Daintree scheme can be seen in Fig 5.

Fig 5. Daintree Scheme Monthly Consumption Figures



3. Water quality monitoring and results

Drinking water is sampled at intakes, reservoirs, treatment plants and in the reticulation network to ensure compliance with the Australian Drinking Water Guideline (ADWG).

For the reporting period a total of 524 treated and 17 raw water samples were taken in the 3 water supply schemes. A total of 166 were tested in the Douglas water laboratory, and 375 treated and raw water samples were tested by a NATA accredited laboratory for physical, chemical and microbiological parameters. All tested parameters in water samples taken during the reporting period were compliant with Australian Drinking Water Guidelines (ADWG) and standards required by the Water Supply Regulator and Queensland Health.

Mossman/Port Douglas Supply Scheme

Average monthly values for key operational and compliance parameters can be seen in Table 3, 4 and 5 for treated water at the Mossman Treatment Plant, Port Douglas Reservoirs and Port Douglas/Mossman Reticulation network, respectively. Figure 6 indicates the daily turbidity trends at the intake and treated water as recorded at the Mossman Water Treatment Plant for the period July to September 2017.

Table 2. Average monthly values for key operational and compliance parameters in treated water at Mossman Treatment Plant.

| Month | pH | Temp °C | Total Alkalinity mg CaCO ₃ /L | Free chlorine mg/L | Total chlorine mg/L | <i>E.coli</i> CFU/100ml | Heterotrophic Plate CFU/mL | Total coliforms CFU/100ml |
|-----------------|---------|---------|--|--------------------|---------------------|-------------------------|----------------------------|---------------------------|
| Standard | 6.5-8.5 | 10-30 | 0-25 | 0.1-4.0 | Max 5.0 | <1 | - | 0-10 |
| Jul-17 | 7.33 | 20.9 | 8.5 | 1.25 | 1.30 | <1 | ~1 | <1 |
| Aug-17 | 6.55 | 20.6 | <5 | 1.27 | 1.36 | <1 | <1 | <1 |
| Sep-17 | 6.56 | 21.0 | 10.5 | 1.33 | 1.35 | <1 | <1 | <1 |

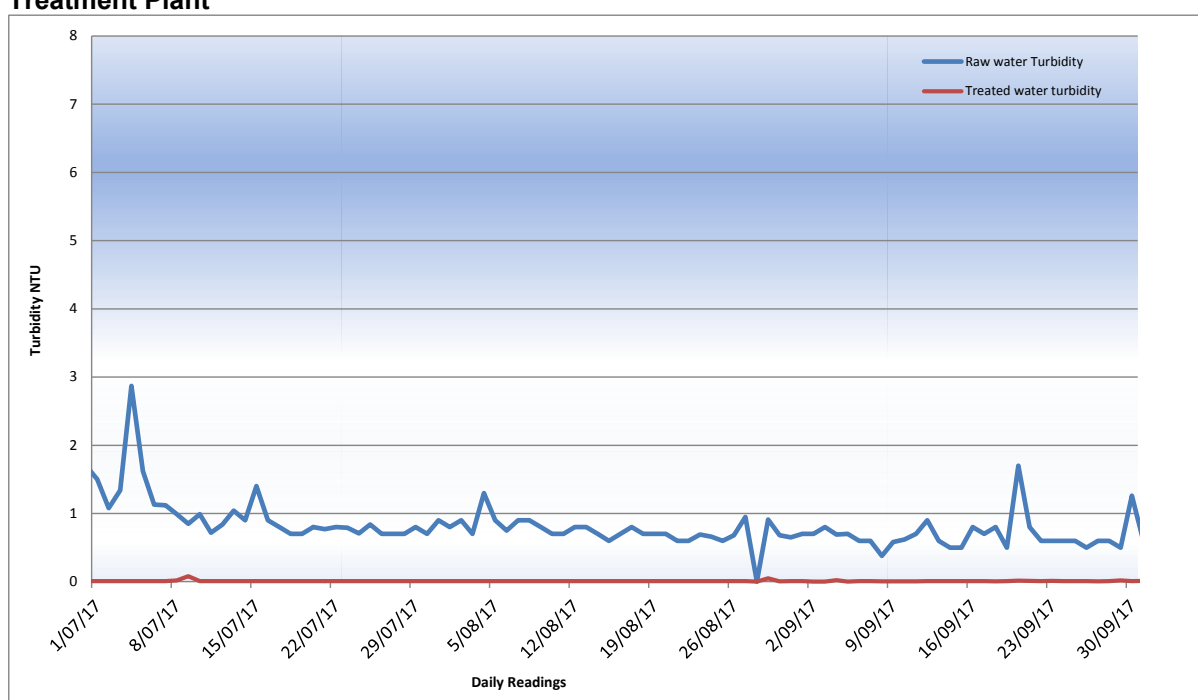
Table 3. Average monthly values for key operational and compliance parameters in the Port Douglas Reservoirs.

| Month | pH | Temp °C | Total Alkalinity mg CaCO ₃ /L | Free chlorine mg/L | Total chlorine mg/L | <i>E.coli</i> CFU/100ml | Heterotrophic Plate CFU/mL | Total coliforms CFU/100ml |
|-----------------|---------|---------|--|--------------------|---------------------|-------------------------|----------------------------|---------------------------|
| Standard | 6.5-8.5 | 10-30 | 0-25 | 0.1-4.0 | Max 5.0 | <1 | - | 0-10 |
| Jul-17 | 7.45 | 22.4 | 8.5 | 0.93 | 0.96 | <1 | ~3 | <1 |
| Aug-17 | 6.87 | 22.9 | 8 | 0.89 | 0.96 | <1 | ~2 | <1 |
| Sep-17 | 6.69 | 23.6 | 6.8 | 0.90 | 0.90 | <1 | ~1 | <1 |

Table 4. Average monthly values for key operational and compliance parameters in the Mossman/Port Douglas Reticulation Network.

| Month | pH | Temp °C | Free chlorine mg/L | Total chlorine mg/L | <i>E.coli</i> CFU/100ml | Hetero-trophic Plate CFU/mL | Total coliforms CFU/100ml |
|-----------------|---------|---------|--------------------|---------------------|-------------------------|-----------------------------|---------------------------|
| Standard | 6.5-8.5 | 10-30 | 0.1-4.0 | Max 5.0 | <1 | - | 0-10 |
| Jul-17 | 7.80 | 23.9 | 0.74 | 0.80 | <1 | <1 | <1 |
| Aug-17 | 7.11 | 24.4 | 0.81 | 0.88 | <1 | ~4 | <1 |
| Sep-17 | 6.78 | 25.7 | 0.82 | 0.85 | <1 | <1 | <1 |

Fig 6. Turbidity trends at the Rex Creek intake and treated water at the Mossman Water Treatment Plant



Whyanbeel Supply Scheme

Average monthly values for key operational and compliance parameters can be seen in Table 6, Table 7 and Table 8 for treated water at the Whyanbeel Treatment Plant/Reservoir and Whyanbeel Reticulation Network, respectively. Figure 7 indicates the daily turbidity trends at the intake and treated water as recorded at the Whyanbeel Water Treatment Plant for the period July to September 2017.

Table 5. Average monthly values for key operational and compliance parameters in treated water at Whyanbeel Treatment Plant

| Month | pH | Temp °C | Total Alkalinity mg CaCO ₃ /L | Free chlorine mg/L | Total chlorine mg/L | <i>E.coli</i> CFU/100ml | Hetero-trophic Plate CFU/mL | Total coliforms CFU/100 ml |
|-----------------|---------|---------|--|--------------------|---------------------|-------------------------|-----------------------------|----------------------------|
| Standard | 6.5-8.5 | 10-30 | 0-25 | 0.1-4.0 | Max 5.0 | <1 | - | 0-10 |
| Jul-17 | 7.25 | 21 | 6 | 1.18 | 1.30 | <1 | <1 | <1 |
| Aug-17 | 6.16 | 21.5 | <5 | 1.15 | 1.20 | <1 | ~8 | <1 |
| Sep-17 | 5.89 | 21.3 | <5 | 1.27 | 1.27 | <1 | <1 | <1 |

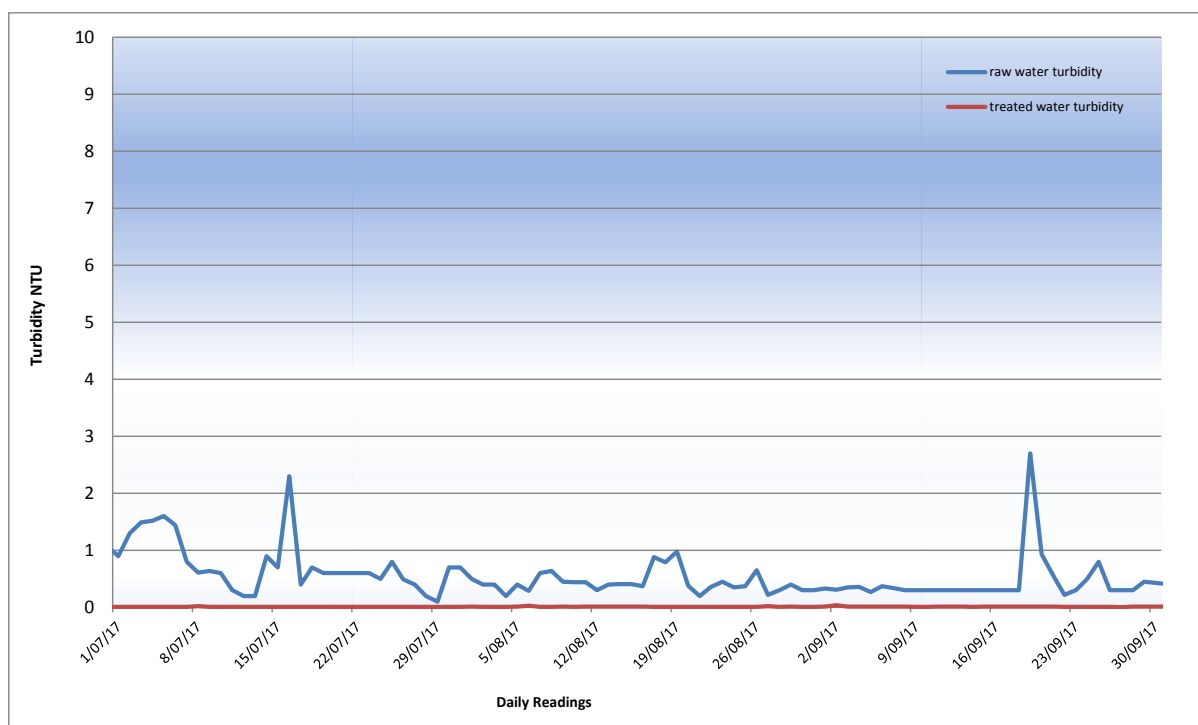
Table 6. Average monthly values for key operational and compliance parameters in the Whyanbeel Reservoir.

| Month | pH | Temp °C | Total Alkalinity mg CaCO ₃ /L | Free chlorine mg/L | Total chlorine mg/L | <i>E.coli</i> CFU/100ml | Hetero-trophic Plate CFU/mL | Total coliforms CFU/100 ml |
|-----------------|---------|---------|--|--------------------|---------------------|-------------------------|-----------------------------|----------------------------|
| Standard | 6.5-8.5 | 10-30 | 0-25 | 0.1-4.0 | Max 5.0 | <1 | - | 0-10 |
| Jul-17 | 7.90 | 24.0 | 12 | 0.88 | 1.00 | <1 | <1 | <1 |
| Aug-17 | 7.36 | 24.6 | 9 | 0.86 | 0.95 | <1 | ~1 | <1 |
| Sep-17 | 6.89 | 24.8 | 7.5 | 0.95 | 1.00 | <1 | ~1 | <1 |

Table 7. Average monthly values for key operational and compliance parameters in the Whyanbeel Reticulation Network.

| Month | pH | Temp °C | Free chlorine mg/L | Total chlorine mg/L | <i>E.coli</i> CFU/100ml | Hetero-trophic Plate CFU/mL | Total coliforms CFU/100ml |
|-----------------|---------|---------|--------------------|---------------------|-------------------------|-----------------------------|---------------------------|
| Standard | 6.5-8.5 | 10-30 | 0.1-4.0 | Max 5.0 | <1 | - | 0-10 |
| Jul-17 | 7.95 | 24.2 | 0.84 | 0.94 | <1 | ~1 | <1 |
| Aug-17 | 7.02 | 24.7 | 0.80 | 0.88 | <1 | ~1 | <1 |
| Sep-17 | 6.64 | 26.0 | 0.82 | 0.87 | <1 | <1 | <1 |

Fig 7. Turbidity trends at the Little Falls Creek intake and treated water at the Whyanbeel Water Treatment Plant



Daintree Supply Scheme

Average monthly values for key operational and compliance parameters can be seen in Table 8 and Table 9 for treated water at the Daintree Treatment Plant and Daintree Reticulation network, respectively. Figure 8 indicates the daily turbidity trends at the intake and treated water as recorded at the Daintree water treatment plant for the period July to September 2017. Due to seasonal fluctuations, the water quality had a slight increase in total alkalinity however this was still within acceptable parameters. (*The increased elevation has no detrimental impact on consumer health – refer table below).

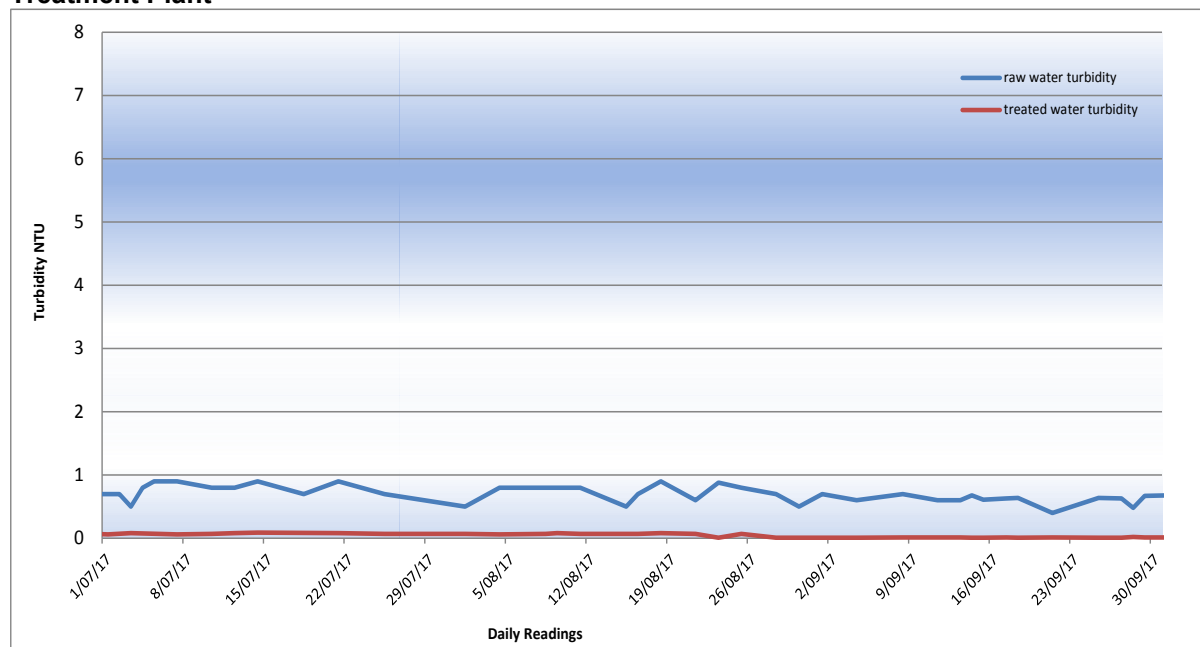
Table 8. Average monthly values for key operational and compliance parameters in treated water at Daintree Treatment Plant.

| Month | pH | Temp °C | Total Alkalinity mg CaCO ₃ /L | Free chlorine mg/L | Total chlorine mg/L | <i>E.coli</i> CFU/100ml | Hetero-trophic Plate CFU/mL | Total coliforms CFU/100ml |
|-----------------|---------|---------|--|--------------------|---------------------|-------------------------|-----------------------------|---------------------------|
| Standard | 6.5-8.5 | 10-30 | 0-25 | 0.1-4.0 | Max 5.0 | <1 | - | 0-10 |
| Jul-17 | 7.15 | 22.0 | *39 | 1.00 | 1.18 | <1 | <1 | <1 |
| Aug-17 | 7.19 | 21.8 | 25 | 0.95 | 0.99 | <1 | ~1 | <1 |
| Sep-17 | 7.00 | 23.8 | *27.5 | 1.07 | 1.11 | <1 | <1 | <1 |

Table 9. Average monthly values for key operational and compliance parameters in the Daintree Reticulation Network.

| Month | pH | Temp °C | Free chlorine mg/L | Total chlorine mg/L | <i>E.coli</i> CFU/100ml | Hetero-trophic Plate CFU/mL | Total coliforms CFU/100ml |
|-----------------|---------|---------|--------------------|---------------------|-------------------------|-----------------------------|---------------------------|
| Standard | 6.5-8.5 | 10-30 | 0.1-4.0 | Max 5.0 | <1 | - | 0-10 |
| Jul-17 | 7.80 | 23.3 | 0.88 | 1.05 | <1 | <1 | <1 |
| Aug-17 | 7.54 | 22.5 | 0.80 | 0.89 | <1 | <1 | <1 |
| Sep-17 | 7.30 | 25.1 | 0.97 | 0.97 | <1 | <1 | <1 |

Fig 8. Turbidity trends at the Intake/Martin Creek intake and treated water at the Daintree Water Treatment Plant



4. Plumbing and drainage

During the reporting period there were some changes within the organisational structure. The Plumbing and Drainage program was reallocated under Sustainable Communities commencing 25 September 2017. Please refer to Table 10. below for program details.

Table 10. Plumbing and Drainage Services

| | |
|---|-----|
| No. of plumbing and drainage applications received | 33 |
| No. of plumbing and drainage permits issued | 33 |
| No. of plumbing and drainage inspections undertaken | 101 |
| No. of properties audited – Backflow | 0 |
| No. of registrations received - Backflow | 70 |

Wastewater

5. Wastewater reticulation services

General maintenance programs were carried out at the reticulation networks and 31 pump stations in the Mossman and Port Douglas catchments. Electrical contractors conducted rectification works on minor issues identified during the annual Hazelec service carried out in June 2017.

Capital works sewer relining program for 2016-17 financial year were completed. All 2017-18 capital work programs commenced with no impact on the planned completion dates.

Table 11. Wastewater Reticulation Services

| | Port Douglas Catchment | Mossman Catchment |
|---------------------------------------|------------------------|-------------------|
| Pump Blockages | 5 | 18 |
| Sewer Chokes | 1 | 2 |
| Sewer Main Breaks | 3 | 1 |
| HCB Repairs (House Connection Branch) | 1 | 5 |
| Odour Complaints | 2 | 1 |

6. Liquid trade waste

During the reporting period there were some changes within the organisational structure. The Trade Waste program was reallocated under Sustainable Communities commencing 25 September 2017. Please refer to Table 12. below for program details.

Table 12. Liquid Trade Waste Services

| | |
|--------------------------------------|-----|
| Total Businesses Holding an Approval | 130 |
| Change of Business Ownership | 1 |
| Business Closures | 1 |
| New Approval Applications | 3 |
| Renewal Applications Received | 9 |
| Inspections Undertaken | 7 |

7. Influent and irrigation flows

Port Douglas Wastewater Treatment Plant

A total of 290,560 kL of influent entered the Port Douglas Wastewater Treatment Plant during the reporting period. The average daily flow was 3,158 kL/day. Tanker truck contractors delivered 804.5 kL of septage to the plant and 0.401 ML of Leachate from the Killaloe Landfill and Transfer Station. Influent is treated in a Sequencing Batch Reactor (SBR) which produced compliant effluent during the reporting period. A total of 58.5% of the

treated effluent was pumped to two resorts and the remaining discharged into the Dickson Inlet. The Sheraton Mirage received 101,725 kL and Palmer Sea Reef received 68,175 kL of treated effluent during this period. Total rainfall on site during the reporting period was measured as 62.5 mm. On 19 September 2017, the highest rainfall on a day was recorded as 20 mm. Daily inflows and total monthly flows for the reporting period are presented in Fig 9 and 10 respectively.

Fig 9. Port Douglas Daily Inflow

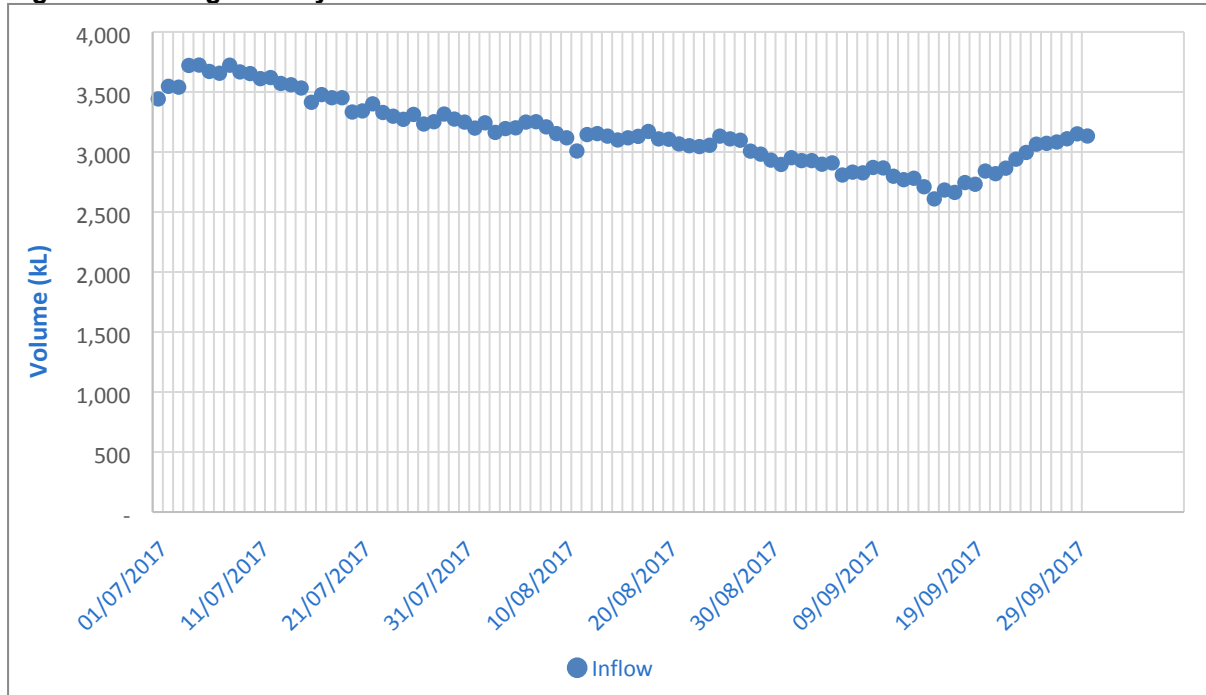
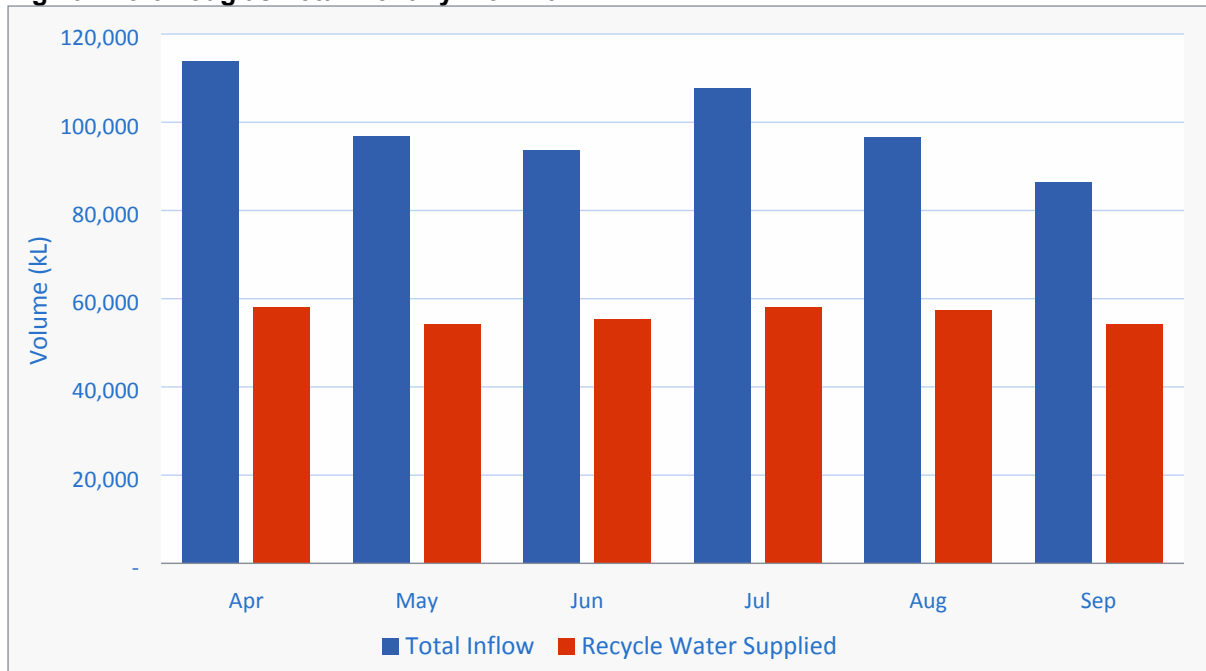


Fig 10. Port Douglas Total Monthly Flow 2017



Mossman Wastewater Treatment Plant

The Mossman Wastewater Treatment Plant received a total influent flow of 74,491 kL during the reporting period. The average daily flow was 810 kL/day. Influent is treated in an

Oxidation Ditch system and compliant effluent is discharged into the Mossman River. A total of 77.3 mm of rain fell on site for the reporting period with the highest daily rainfall measured at 25.5 mm on 18 September 2017.

Daily flows from the Mossman Wastewater Treatment Plant and total monthly flows for 2017 are presented in Fig 11 and 12 respectively.

Fig 11. Mossman Wastewater Treatment Plant Daily Flow

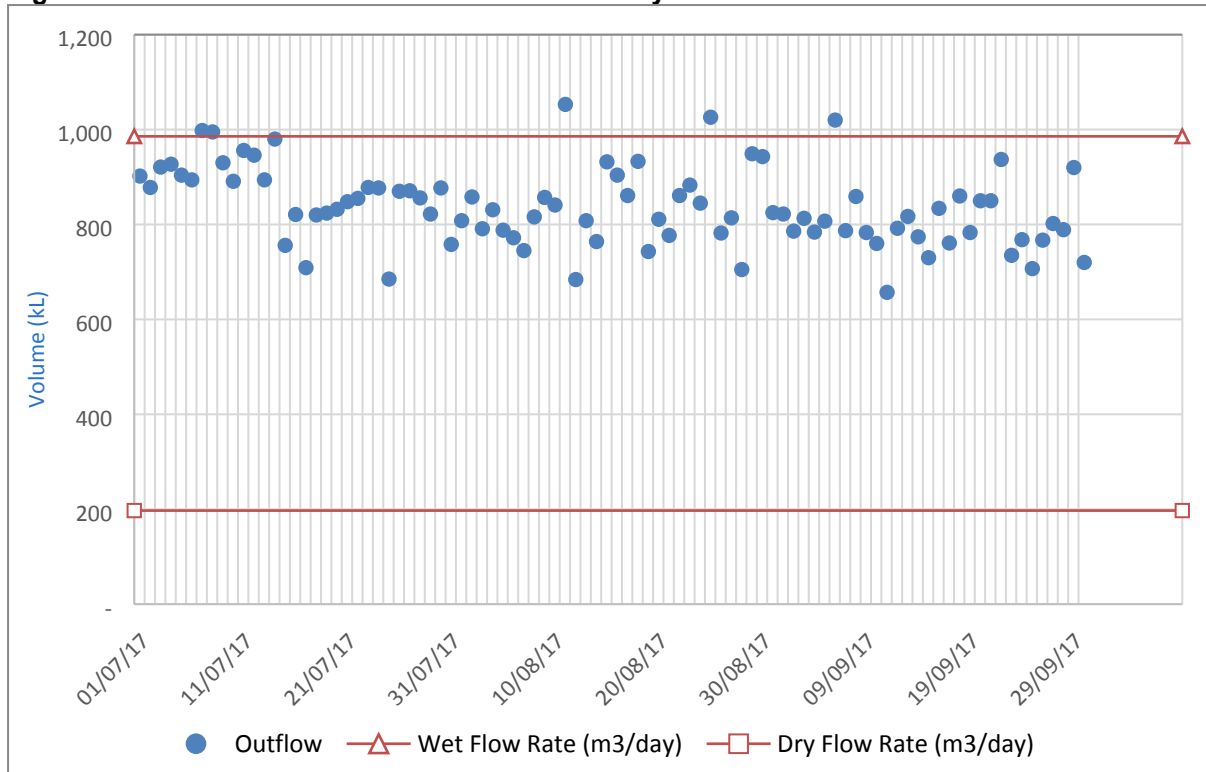
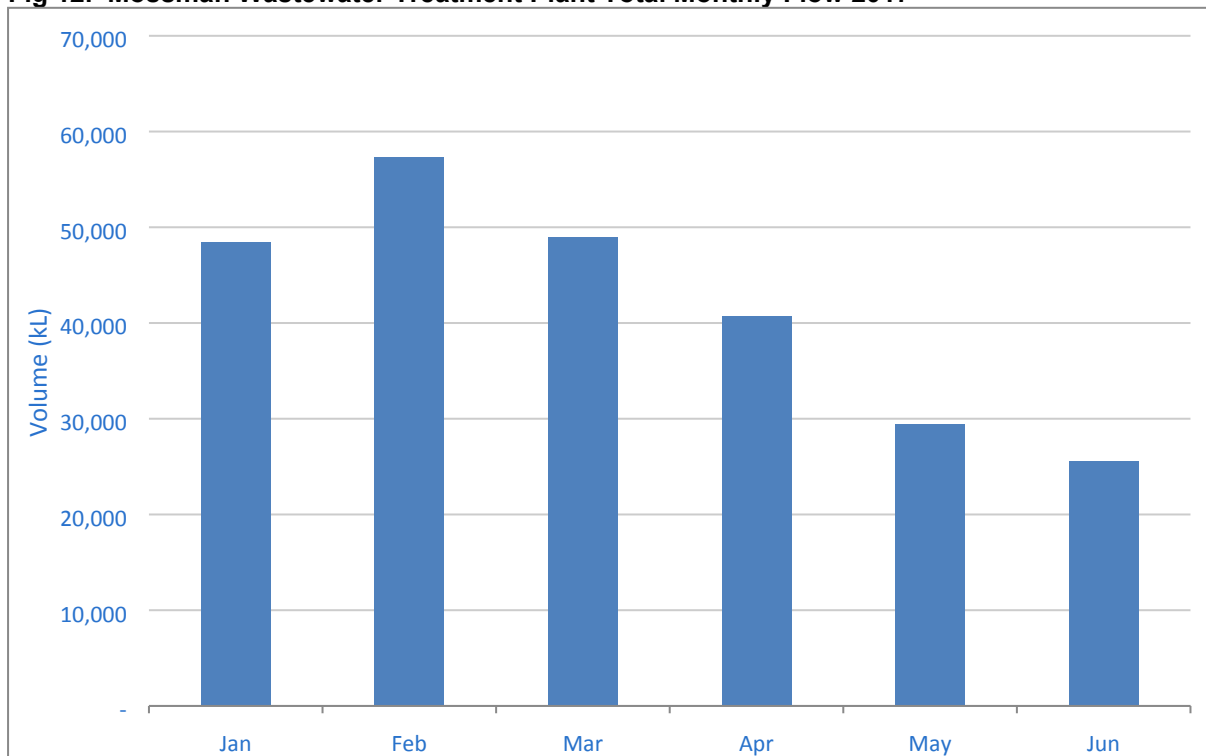


Fig 12. Mossman Wastewater Treatment Plant Total Monthly Flow 2017



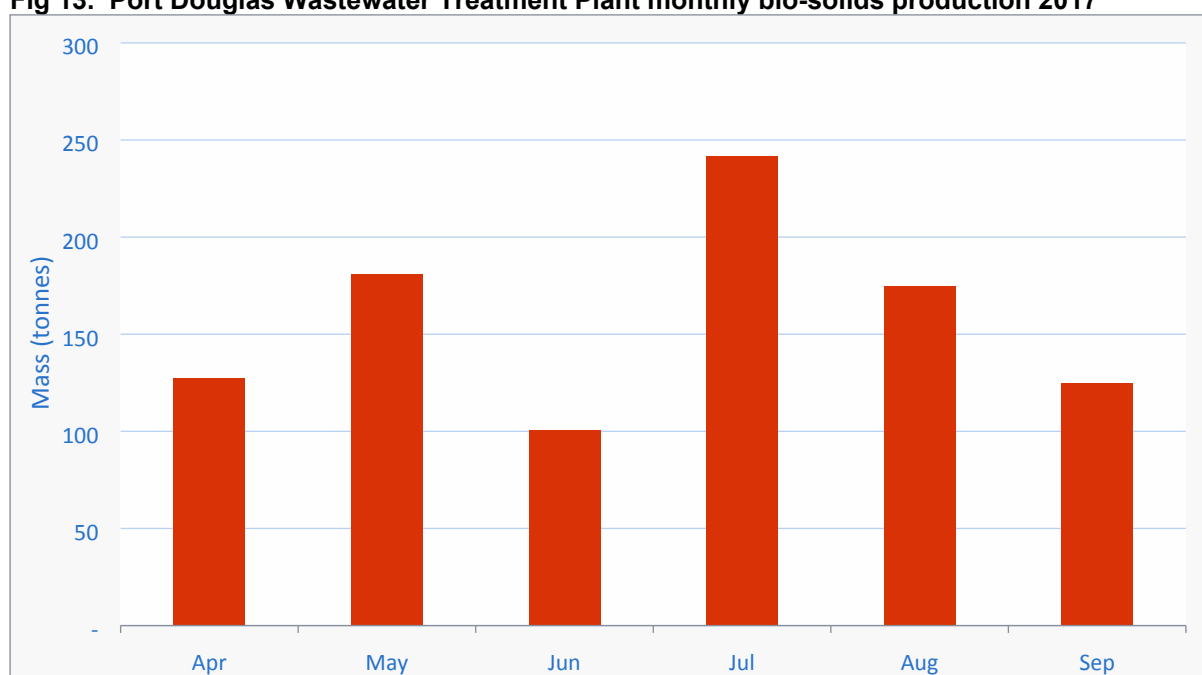
8. Bio-solids Production

Bio-solids were produced at the dewatering plants at Mossman Wastewater Treatment Plant (17% solids) and Port Douglas Wastewater Treatment Plant (12% solids). Bio-solids were transported by Arkwood Organics to Edmonton Farms, Tablelands Regional Farms and Spring Mount Waste Facility for further treatment and beneficial land application as organic fertiliser and soil conditioner.

Port Douglas Wastewater Treatment Plant

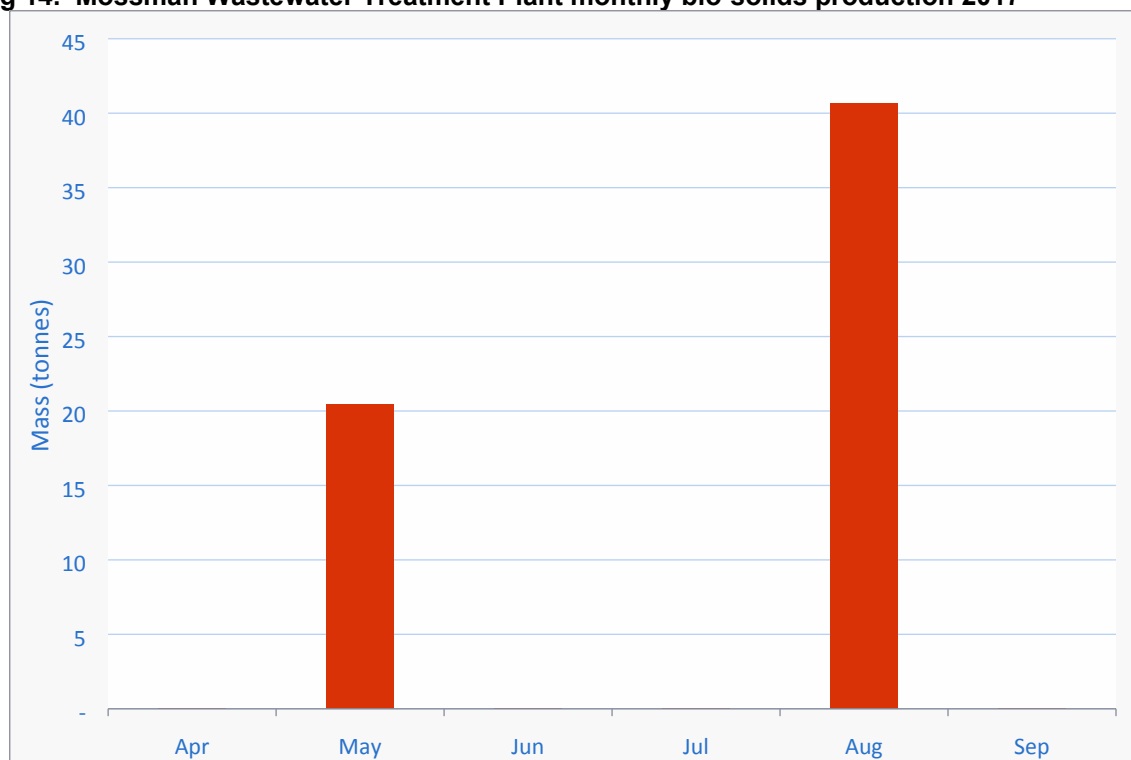
At Port Douglas Wastewater Treatment Plant, 541.24 tonnes of wet biosolids were produced during the reporting period and sent to farms for beneficial reuse. This amount of wet Biosolids equates to 62.45 dry tonnes. The monthly bio-solids production trends can be seen in Figure 13.

Fig 13. Port Douglas Wastewater Treatment Plant monthly bio-solids production 2017



Mossman Wastewater Treatment Plant

At Mossman Wastewater Treatment Plant, 20.44 tonnes of wet biosolids were produced during the reporting period and sent to farms for beneficial reuse. This amount of wet Biosolids equates to 4.05 dry tonnes. The monthly bio-solids production trends can be seen in Figure 14.

Fig 14. Mossman Wastewater Treatment Plant monthly bio-solids production 2017

***No Bio-solids removed in April, June, July and September 2017**

Effluent quality and compliance

During the reporting period a total number of 222 wastewater compliance samples were taken from the treatment processes, bio-solids, final effluent, receiving waters and bores in both wastewater catchments. Samples were tested by a NATA accredited laboratory for physical, chemical and microbiological parameters.

During the reporting period all parameters tested in the Port Douglas and Mossman catchment were compliant with maximum concentrations as per licence definitions and conditions. There was an exceedance of the 50% percentile limit of total nitrogen at the Port Douglas WWTP which was reported to DEHP, who deemed the minor exceedance to not require further action. The allowable limit is 5mg/l and the sample recorded a 5.05mg/l reading.

The process and compliance is monitored each day by in-house analyses of samples at the plants. Process settings, effluent quality, flow rates, pump stations performance and maintenance aspects are monitored and controlled with SCADA Citect via an extensive telemetry network.

The General Manager Operations attended a meeting with DEHP in Brisbane on 29 September to discuss the amendment application currently being assessed. Further information has been requested to assist in finalising the changes being considered for the EA Licence conditions.

Port Douglas Wastewater Treatment Plant

The results for final effluent key licence compliance parameters (Ammonia, Total Phosphorous, and Total Suspended Solids & BOD₅) are shown in Figure 15, 16, 17 & 18

Fig 15. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Ammonia

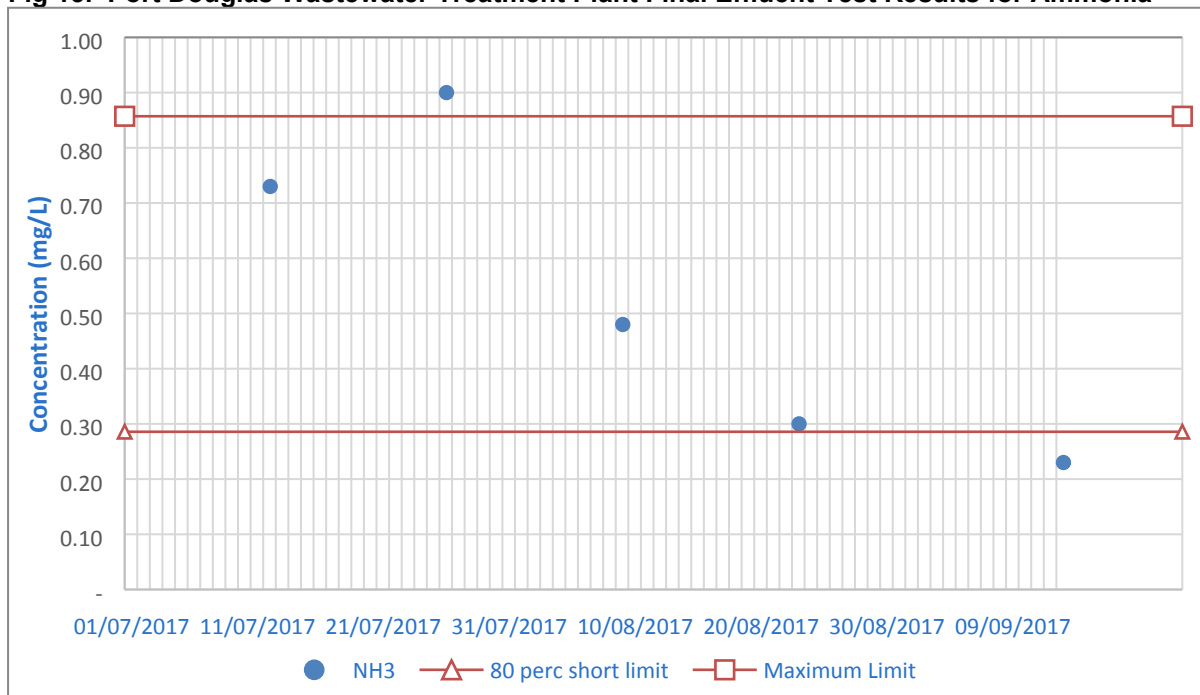


Fig 16. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Total Phosphorous

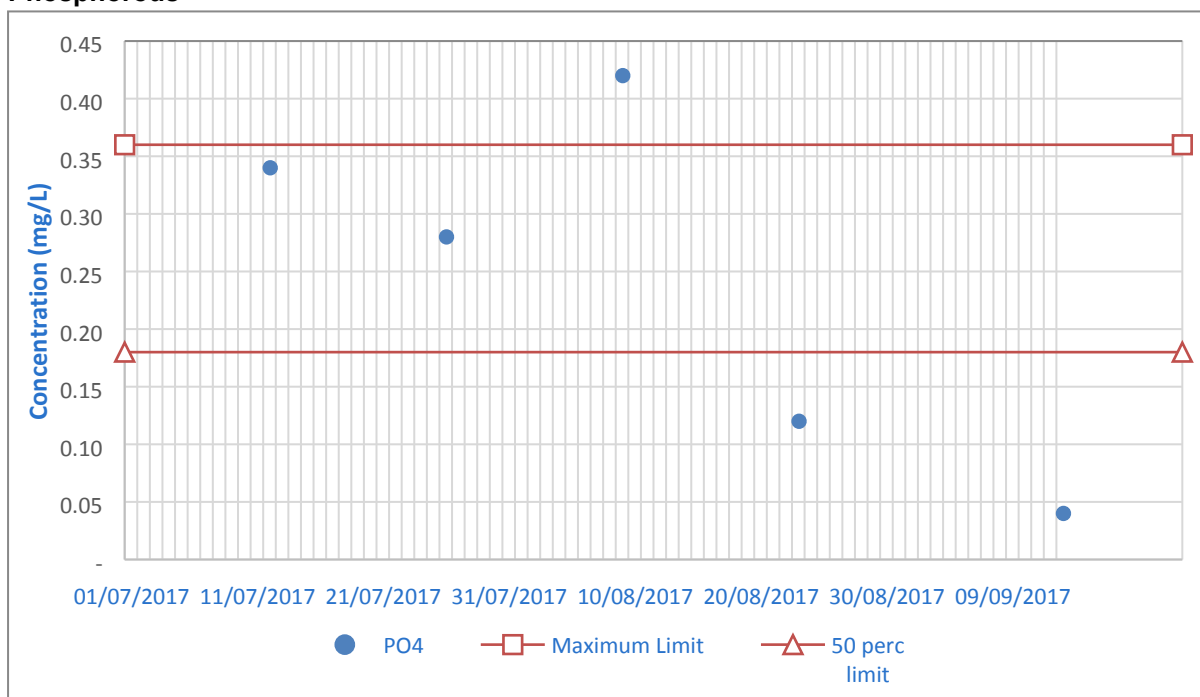


Fig 17. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Total Suspended Solids

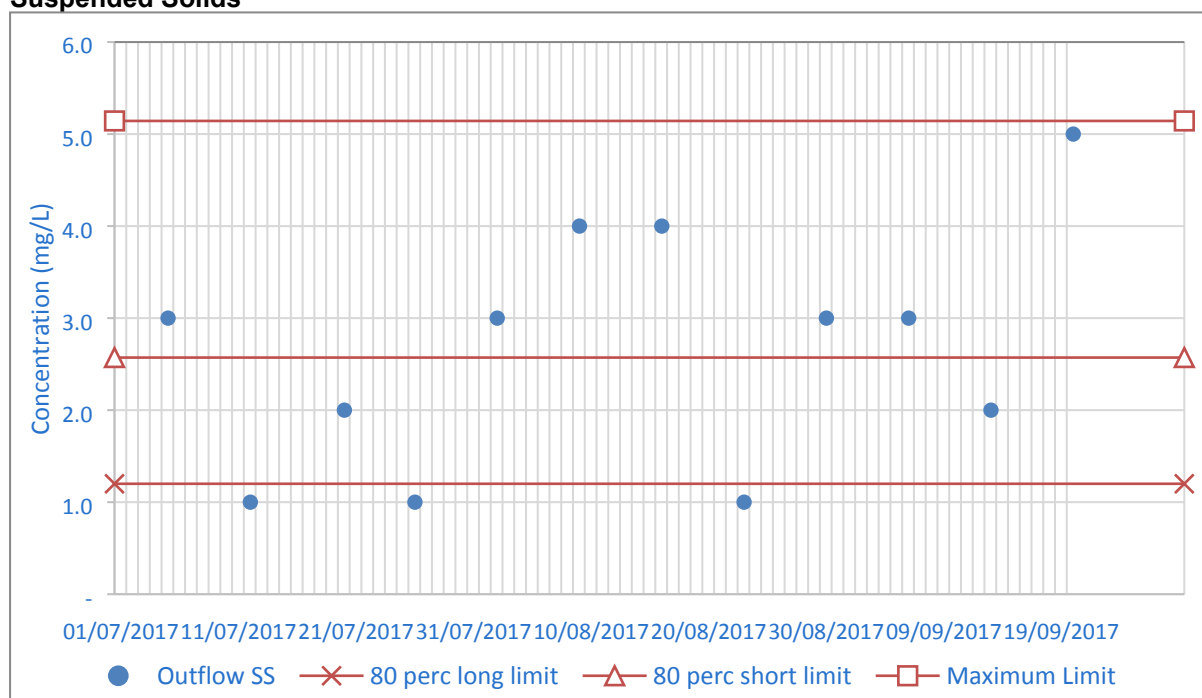
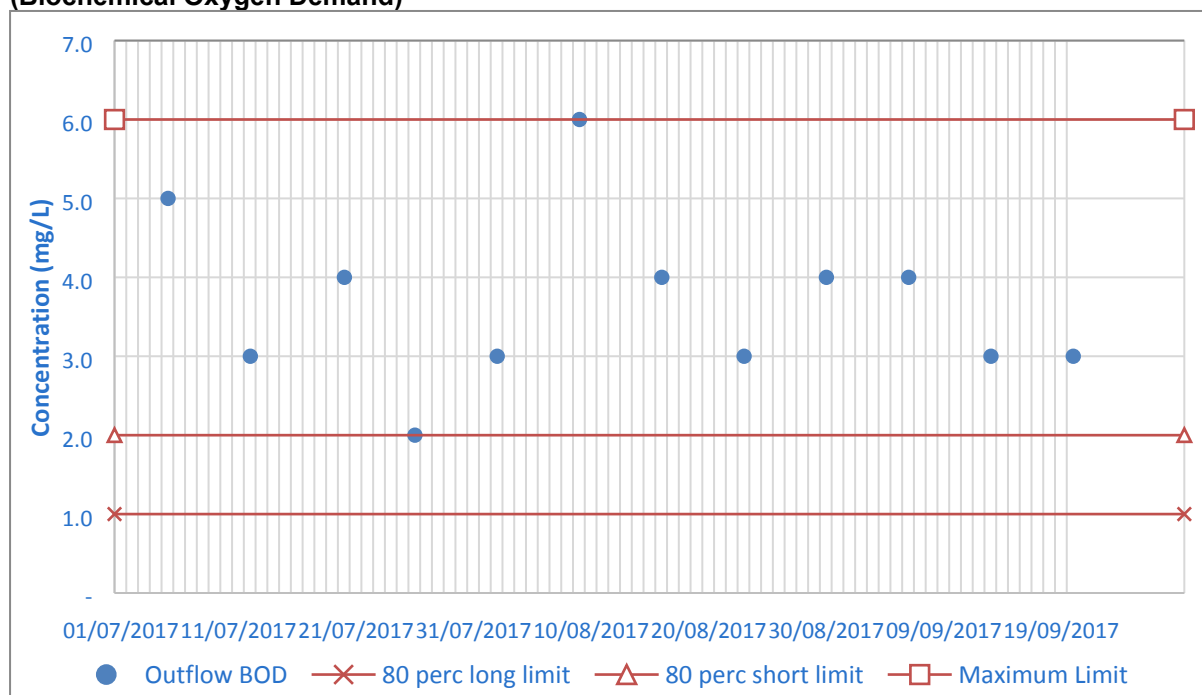


Fig. 18 Port Douglas Wastewater Treatment Plant Final Effluent Test Results for BOD₅ (Biochemical Oxygen Demand)



Mossman Wastewater Treatment Plant

The results for final effluent key licence compliance parameters (Ammonia, Total Phosphorous, Total Suspended Solids & BOD₅) are shown in Figures 19, 20, 21 & 22.

Fig. 19 Mossman Wastewater Treatment Plant Final Effluent Test Results for Ammonia

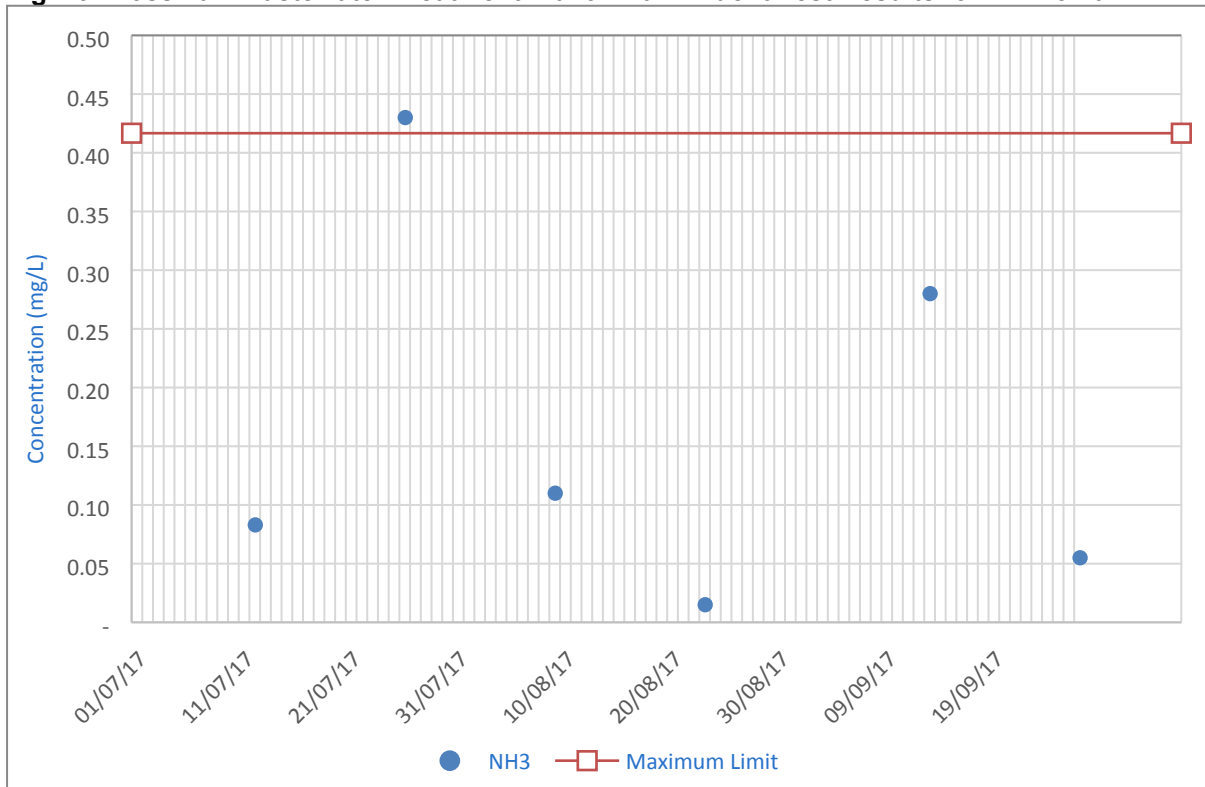


Fig. 20 Mossman WWTP Final Effluent Test Results for Total Phosphorous

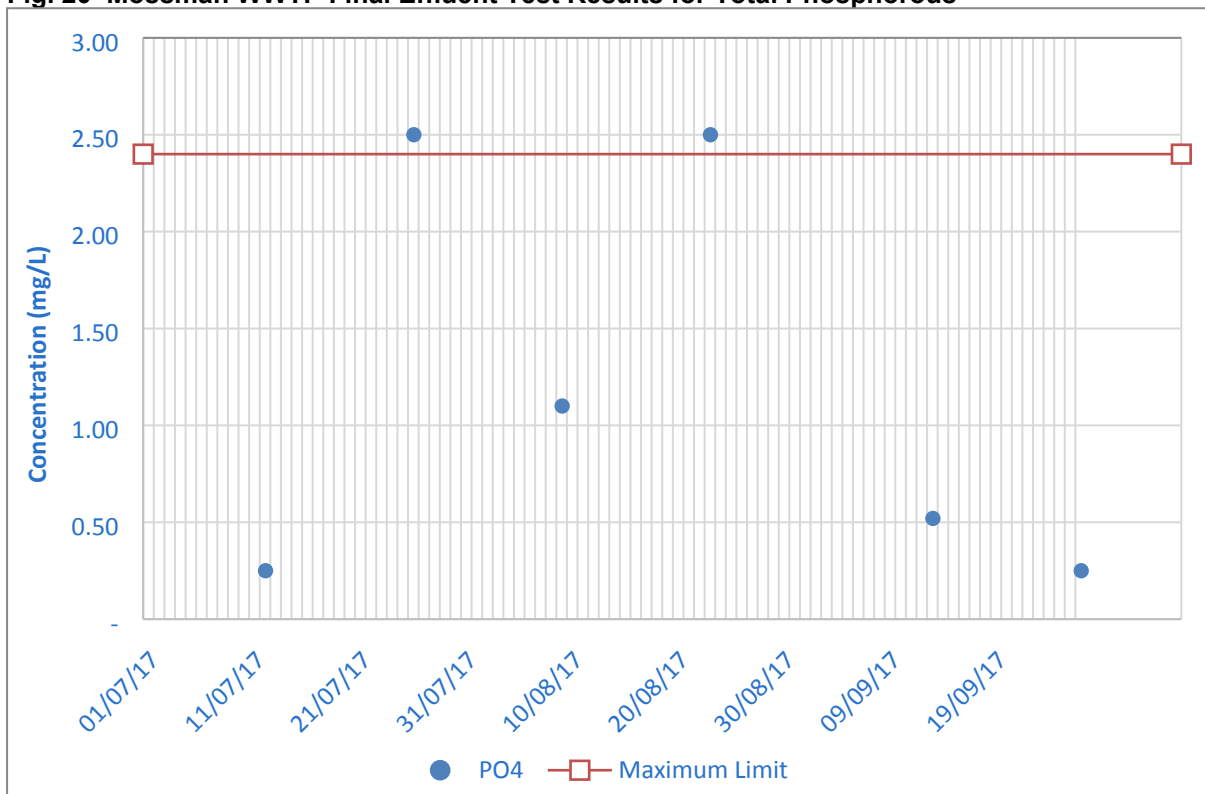


Fig. 21 Mossman WWTP Final Effluent Test Results for Total Suspended Solids

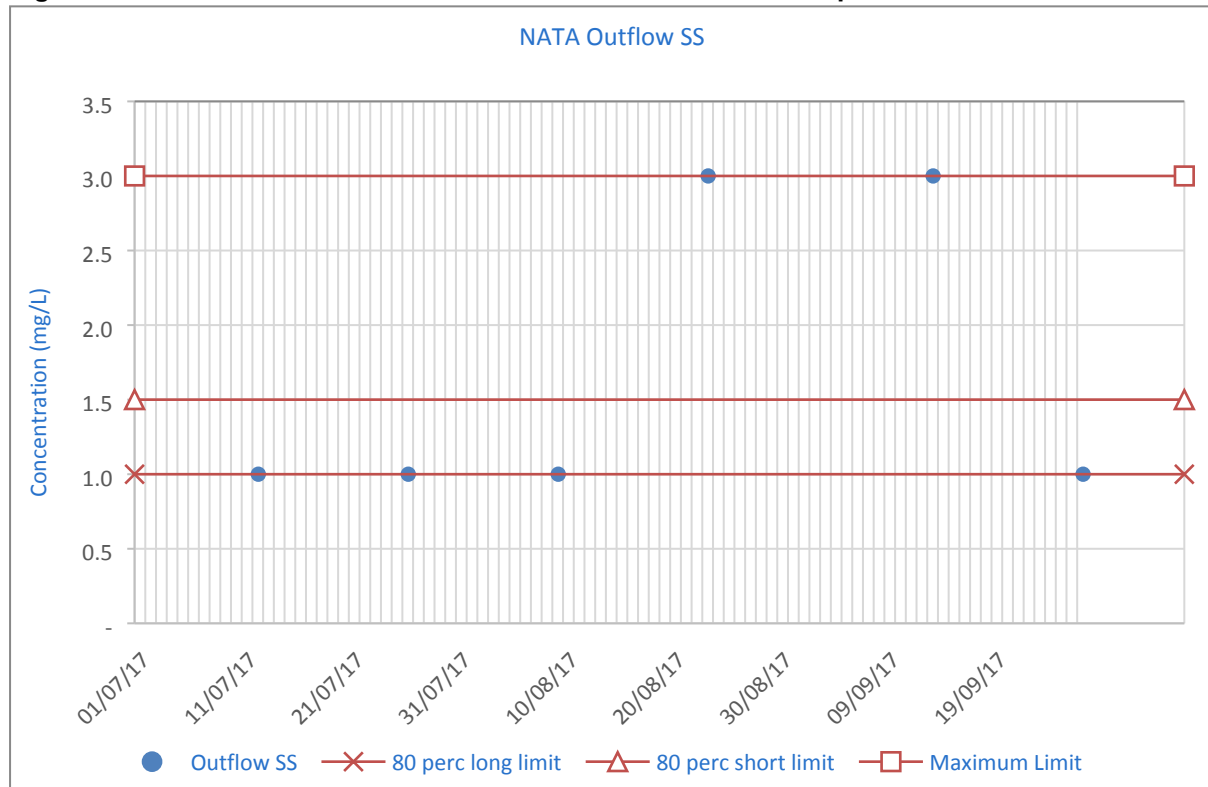


Fig. 22 Mossman Wastewater Treatment Plant Final Effluent Test Results for BOD₅ (Biochemical Oxygen Demand)

