

5.5. WATER AND WASTEWATER QUARTERLY REPORT FOR PERIOD ENDING SEPTEMBER 2015

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DEPARTMENT: Water and Wastewater

RECOMMENDATION

It is recommended that the Quarterly Report of the Water and Wastewater Branch for the period ending 30 September 2015 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 2015.

Whilst the results are generally positive, the areas for improvement are noted and will be the focus of the branch over the next quarter. During this reporting period, 28 water and wastewater capital improvements projects were initiated and successfully launched. The progress of these projects is reported in a separate Council report.

The Water and Wastewater Branch successfully fulfilled annual regulatory reporting and submitted an Annual Wastewater Report to the Department of Environment and Heritage Protection (DEHP) in July and the State Water Information Management Report (SWIM) through the Queensland Water SWIM web portal in September. This year the SWIM report included the KPI framework from the Department of Energy and Water Supply (DEWS). The KPIs are designed to monitor and benchmark performance on common industry metrics including: water security, capacity to ensure continuity of supply, affordability, financial sustainability, industry and workforce capability and quality of service provided to customers. The SWIM report also included KPIs on all wastewater operations and related Bureau of Meteorology (BOM) data.

BACKGROUND

This report is the first Quarterly Report submitted by the Water and Wastewater Branch during the 2015/2016 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.

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.
Information Provider	Bringing people together to develop solutions to problems.

Regulator Meeting the responsibilities associated with regulating activities through legislation or local law.

CONSULTATION

Internal: This report was compiled based on monthly reports by team leaders and the technical officer and data abstracted from the SCADA system.

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

Attachment 1 Water and Wastewater Quarterly Report for the period ending 30 September 2015.

Water and Wastewater Quarterly Report

1 July 2015 - 30 September 2015

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 and 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 and the Department of Environment and Heritage Protection.

Water

1. Water reticulation services

General maintenance was carried out on all schemes this quarter including intake maintenance and cleaning/flushing of dead end mains. Hydrant maintenance and painting of sluice valves have been continuing in all locations throughout the Shire.

Table 1. Water Reticulation Services

Douglas Shire Reticulation (all schemes)	
Settlement meter reads	150
New water services connections	18
Service repairs	86
Water mains repairs	8
Water Quality Complaints	2
Flushing Events: Mossman/Port Douglas/ Cooya	2
Flushing Events: Whyanbeel/Wonga	2
Flushing Events: Daintree	1

Table 2. Water Complaints

Address	CRM Number & Date	Nature of water complaint	How was it resolved	Response Time
258R Mowbray River Rd	13445 18/09/15	Milky in colour	Flushed at meter and hydrant in area. Chlorine residual 0.45 mg/l	30mins
60 Cooya Beach Rd	13936 6/10/15	Metallic taste	Flushed at meter and Hydrants in area. Chlorine residual 0.66 mg/l	90mins

2. Water schemes and potable water consumption

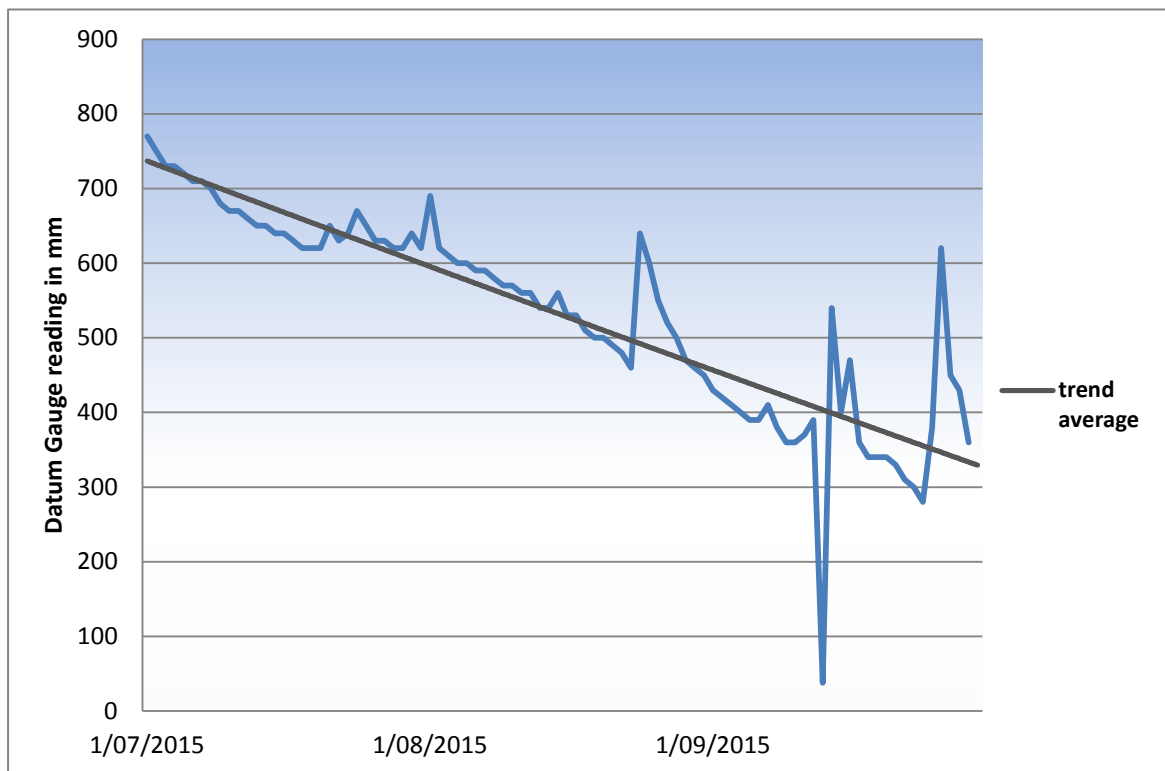
Raw water quality is good in all intakes averaging 0.6NTU. Some unseasonal rains throughout the reporting period helped to keep all intakes relatively steady, but the recent onset of drier periods coinciding with an increase in consumption has seen significant drops in water levels across the intakes.

With the dry conditions expected to continue along with increasing demand over the coming months, water restrictions Level 1 were implemented on 11 September.

Mossman/Port Douglas Schemes

Rex Creek intake level has adequate capacity to meet maximum extraction flows of >220L/s with no impact on production at this stage. The refurbishment of the Mossman reservoir has delivered an additional 1.8ML of storage capacity which has taken substantial load off the storage network particularly during periods of peak demand.

Fig 1. Rex Creek Intake Level in 2015

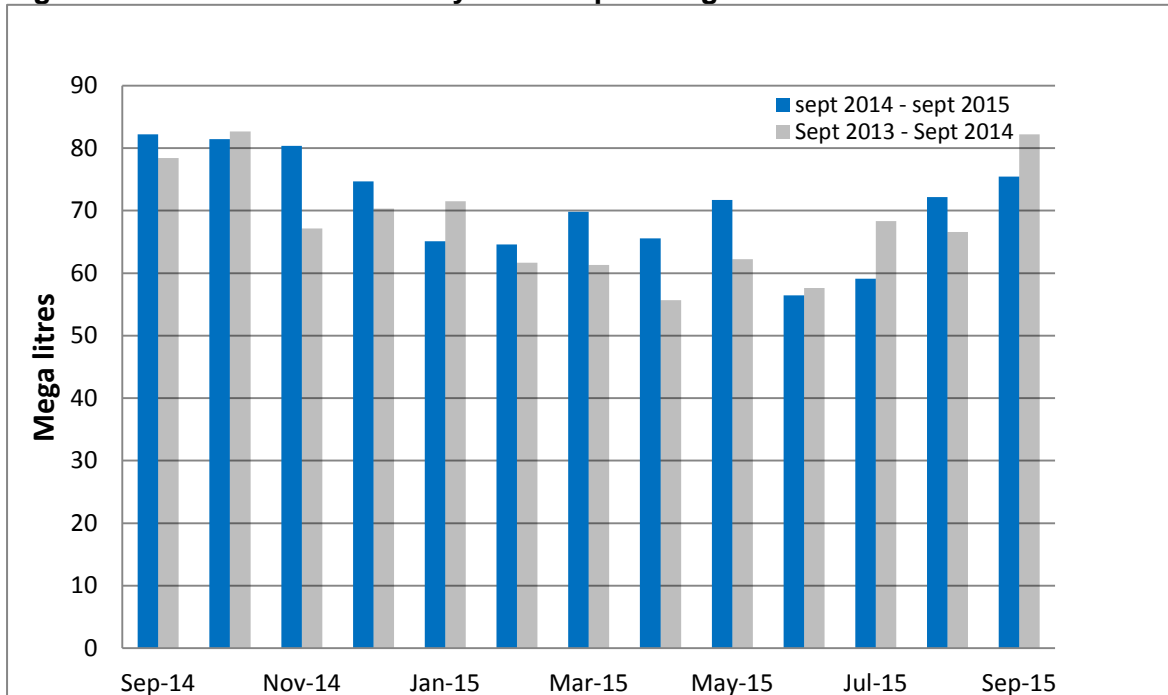


Mossman Water Treatment Plant is meeting demand capacity. The consumption for the Mossman Scheme was measured as 206.69 Mega litres and 827.87 Mega litres for the Port Douglas Scheme.

Mossman Water Supply

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

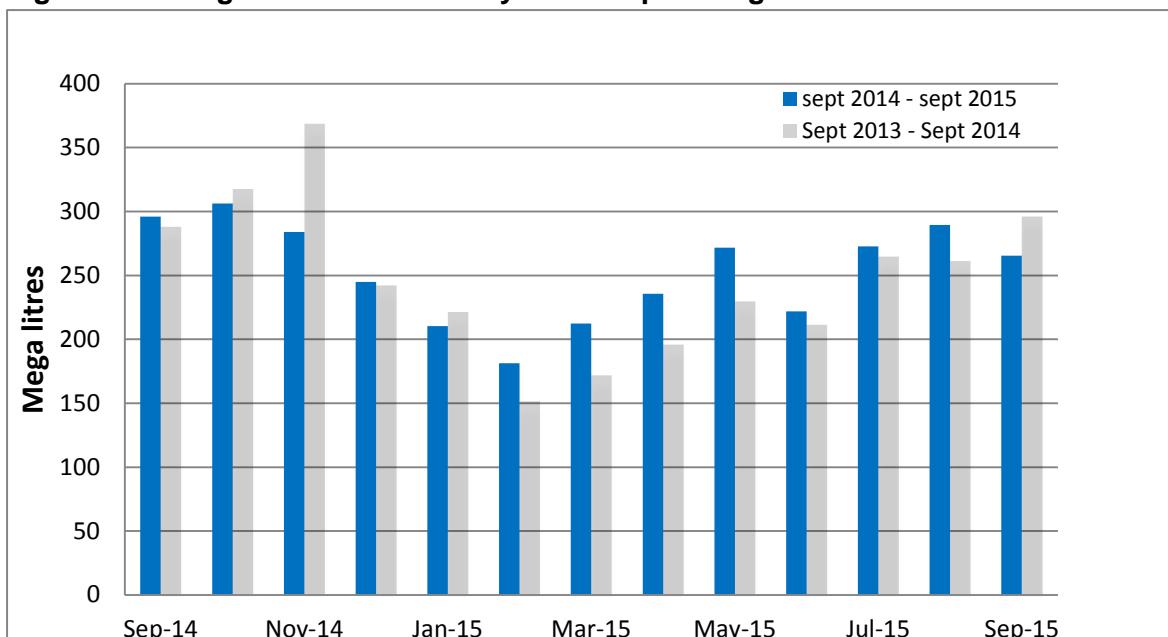
Fig 2. Mossman Scheme Monthly Consumption Figures



Port Douglas Water Supply

The total monthly consumption of water in Port Douglas can be seen in Fig 3.

Fig 3. Port Douglas Scheme Monthly Consumption Figures



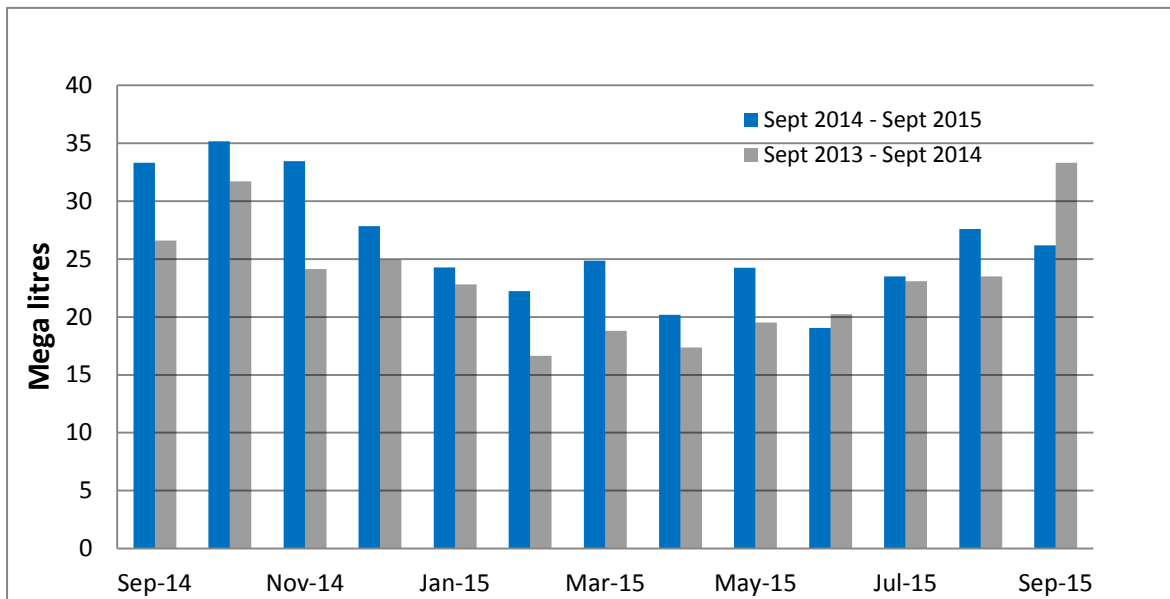
Whyanbeel Scheme

Whyanbeel Water Treatment Plant is operating and meeting demand. Net treated water outflow from the Whyanbeel WTP for the reporting period was 77.26 Mega litres and represents consumption for the entire Whyanbeel and Wonga water supply scheme.

Whyanbeel Water Supply

The total monthly consumption of water in the Whyanbeel Scheme can be seen in Fig 4.

Fig 4. Whyanbeel Scheme Monthly Consumption Figures



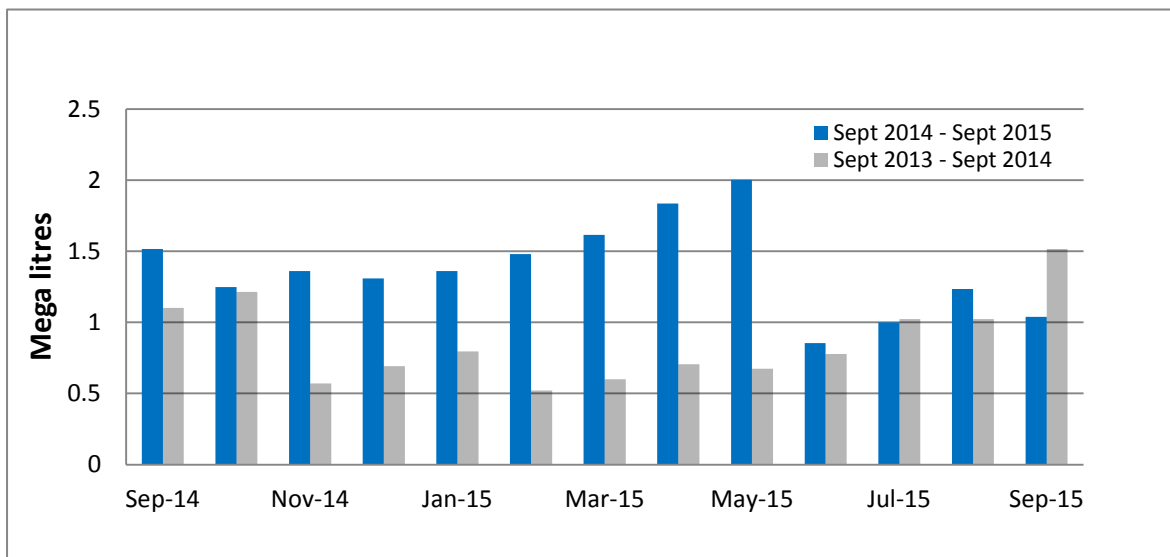
Daintree Scheme

Daintree Water Treatment Plant is operating and meeting demand. Intake levels at Intake Creek have increased with unseasonal rains and are adequate for full plant production capacity. Net treated water outflow from the Daintree WTP for the reporting period was 3.27 Mega litres. This represents consumption for the entire Daintree water supply scheme.

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 period 1 July to 30 September 2015, a total of 354 water samples were taken in the 4 water supply schemes. A total of 253 samples were tested in the Douglas Water Laboratory and 101 samples were tested by a NATA accredited laboratory for physical, chemical and microbiological parameters. Of these 354 water samples, 215 samples were taken from the public reticulation network, 41 at reservoirs and 98 were samples taken at the treatment process. 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.

Annual Performance Report to the Department of Energy and Water Supply (DEWS)

Douglas Shire Council has successfully complied with regulations by the Department of Energy and Water Supply (DEWS) on 30th September 2015 by submitting an Annual Performance Report through the SWIM portal. This successful compliance is attributable to the huge efforts of the Water and Wastewater team as a whole, with additional contributions from internal stakeholders, making the submission possible.

A PDF version of the data published to DEWS is available on the DSC website. The SWIM (State Water Information Management) system was created to simplify reporting of up to 900 plus indicators reported by Queensland Service Providers. Currently, attributed to the SWIM program, the SWIM online portal and data translation tools require the reporting of around 200 indicators which are then passed on to State and Commonwealth agencies in specified formats. This year the SWIM report also included the KPI framework from the DEWS. The KPIs are designed to monitor and benchmark performance on common industry metrics including: water security, capacity to ensure continuity of supply, affordability, financial sustainability, industry and workforce capability and quality of service provided to customers.

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. Fig 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 2015.

Table 3. 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	Hetero-trophic Plate CFU/mL	Total coliforms CFU/100 ml
Standard	6.5-8.5	10-30	0-25	0.1-4.0	-	<1	-	0-10
July-15	7.20	19.6	6	0.82	0.85	<1	<1	<1
Aug-15	7.27	19.4	<5	0.81	0.86	<1	<1	<1
Sept-15	7.25	20.2	6.5	0.84	0.91	<1	<1	<1

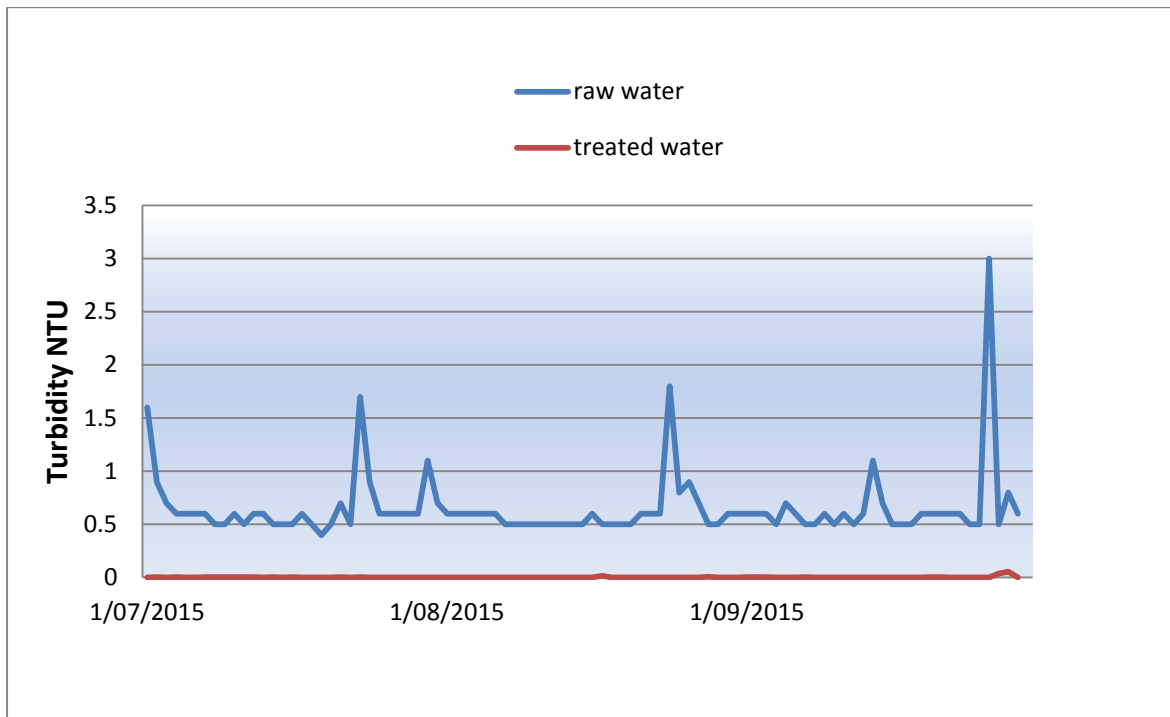
Table 4. Average monthly values for key operational and compliance parameters in the Port Douglas Reservoirs.

Month	pH	Temp °C	Total Alkalinity mg CaCO ₃ /L	Free chlorine mg/L	Total chlorine mg/L	<i>E.coli</i> CFU/100ml	Hetero-trophic Plate CFU/mL	Total coliforms CFU/100ml
Standard	6.5-8.5	10-30	0-25	0.1-4.0	-	<1	-	0-10
July-15	7.54	21.0	8.5	1.01	1.10	<1	<1	<1
Aug-15	7.18	20.3	6	0.81	0.90	<1	3	<1
Sept-15	7.19	21.4	6	0.97	1.05	<1	<1	<1

Table 5. 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/100 ml	Hetero-trophic Plate Count CFU/mL	Total coliforms CFU/100 ml
Standard	6.5-8.5	10-30	0.1-4.0	-	<1	-	0-10
July-15	7.74	22.4	0.69	0.75	<1	<1	<1
Aug-15	7.45	21.9	0.61	0.71	<1	3	<1
Sept-15	7.25	22.8	0.56	0.66	<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., 7. and 8. for treated water at the Whyanbeel Treatment Plant, Whyanbeel Reservoir and Whyanbeel Reticulation Network, respectively. Fig 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 2015.

Table 6. 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	Heterotrophic Plate CFU/mL	Total coliforms CFU/100 ml
Standard	6.5-8.5	10-30	0-25	0.1-4.0	-	<1	-	0-10
July-15	7.07	18.9	5	0.78	0.87	<1	<1	<1
Aug-15	7.05	19.4	5	0.87	0.94	<1	34	<1
Sept-15	6.95	20.2	3	0.98	1.03	<1	<1	<1

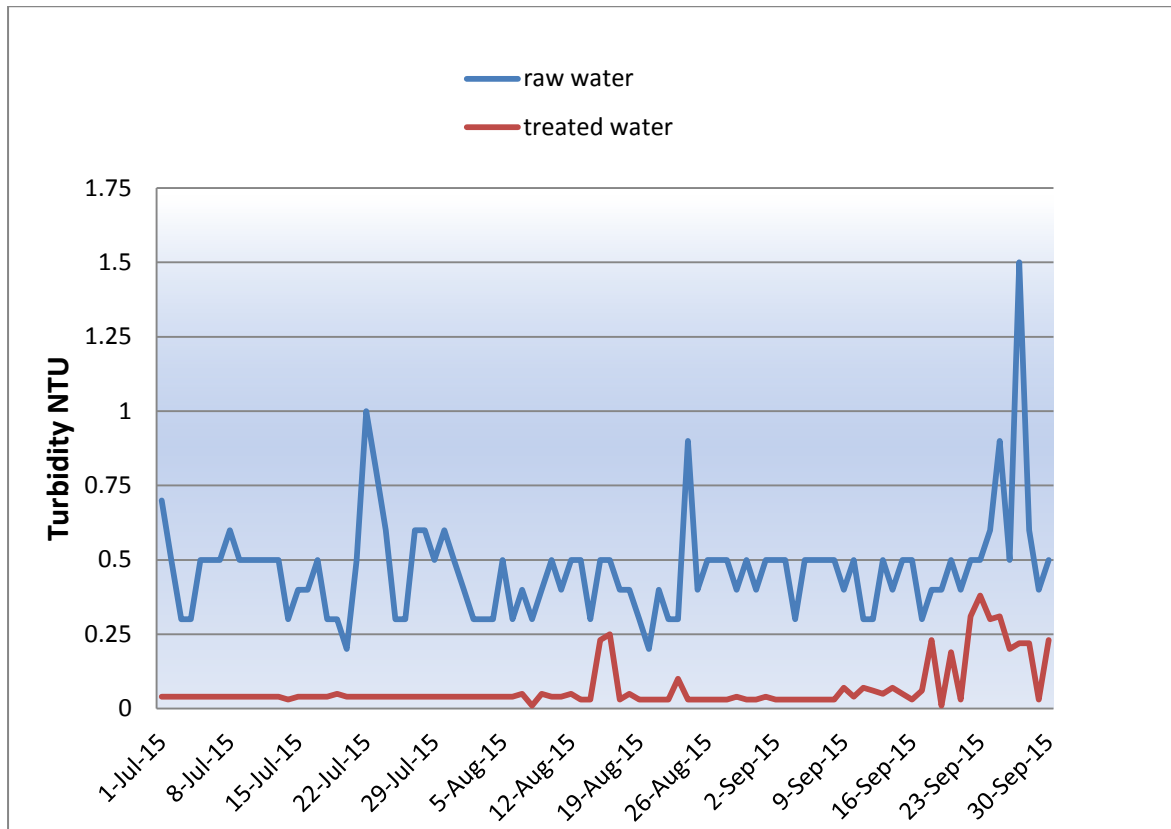
Table 7. Average monthly values for key operational and compliance parameters in the Whyanbeel Reservoir.

Month	pH	Temp °C	Total Alkalinity mg CaCO ₃ /L	Free chlorine mg/L	Total chlorine mg/L	<i>E.coli</i> CFU/100ml	Heterotrophic Plate CFU/mL	Total coliforms CFU/100ml
Standard	6.5-8.5	10-30	0-25	0.1-4.0	-	<1	-	0-10
July-15	7.12	21.3	5	0.77	0.84	<1	<1	<1
Aug-15	7.12	21.4	<5	0.70	0.78	<1	1	<1
Sept-15	7.34	22.5	8.5	1.07	1.18	<1	<1	<1

Table 8. 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/100 ml	Heterotrophic Plate CFU/mL	Total coliforms CFU/100 ml
Standard	6.5-8.5	10-30	0.1-4.0	-	<1	-	0-10
July-15	8.05	22.7	0.35	0.40	<1	2	<1
Aug-15	7.76	22.9	0.36	0.43	<1	6	<1
Sept-15	7.62	22.2	0.59	0.68	<1	3	<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 9. and 10. for treated water at the Daintree Treatment Plant and Daintree Reticulation network, respectively. Fig 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 2015.

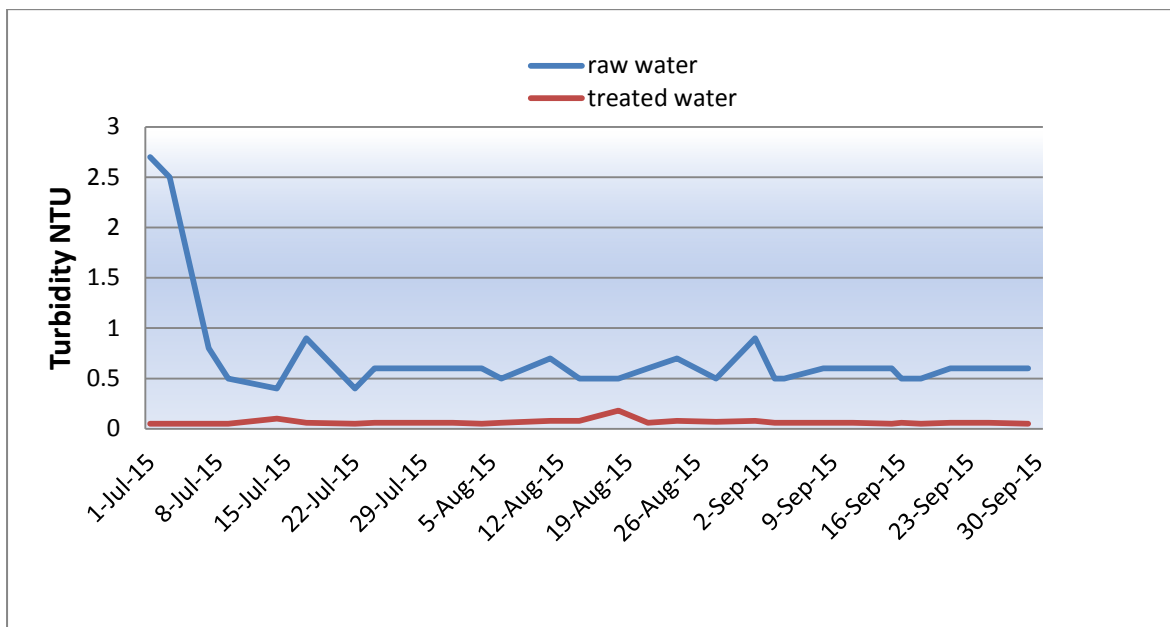
Table 9. Average monthly values for key operational and compliance parameters in treated water at Daintree Treatment Plant.

Month	pH	Temp °C	Total Alkalinity mg CaCO ₃ /L	Free chlorine mg/L	Total chlorine mg/L	<i>E.coli</i> CFU/100ml	Heterotrophic Plate CFU/mL	Total coliforms CFU/100ml
Standard	6.5-8.5	10-30	0-25	0.1-4.0	-	<1	-	0-10
July-15	7.53	20.9	19	0.82	0.86	<1	<1	<1
Aug-15	7.46	21.2	24	0.92	0.97	<1	<1	<1
Sept-15	7.45	23	24	0.93	1.08	<1	<1	<1

Table 10 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/100 ml	Hetero-trophic Plate CFU/mL	Total coliforms CFU/100 ml
Standard	6.5-8.5	10-30	0.1-4.0	-	<1	-	0-10
July-15	7.56	21.8	0.51	0.55	<1	<1	<1
Aug-15	7.46	22.3	0.68	0.74	<1	<1	<1
Sept-15	7.45	23.5	0.66	0.77	<1	8	<1

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



Wastewater

4. Wastewater Reticulation Services

General maintenance programs were carried out at the reticulation networks and 31 pump stations in the Mossman and Port Douglas catchments.

Table 11. Wastewater Reticulation Services

	Port Douglas Catchment	Mossman Catchment
Pump Blockages	38	5
Sewer Chokes	2	2
Sewer Main Breaks	0	0
HCB Repairs (House Connection Branch)	2	4
Odour Complaints	1	0

Odour complaint:

Odour complaint was received regarding Port Douglas WWTP;
CRM 10672/2015 21 July 2015

- Pandanus Caravan Park Manager had received a number of complaints from customers regarding odour from the WWTP. Wastewater operators subsequently checked the odour system fan, odour bed moisture content and dosed odour neutraliser at the screenings bin area. The Operators discussed the planned servicing and odour control system upgrade project with the Caravan Park Manager. The upgrade of the odour control system has progressed far and several recommendations were already actioned, for instance the odour extraction fan has been removed and sent away for repairs, work has commenced on sealing the inlet works aluminium walkways and a quote was received for the supply of a 200mm odour capturing zeolite layer in the odour bed.

Environmental incident reporting:

On 17 July 2015, an exceptionally rare PLC failure resulted in the environmental release of partially treated sewage at the regulated discharge location W1 to the Dickson Inlet. Douglas Shire Council reported the incident immediately and provided an incident notification to the Department of Environment and Heritage Protection (DEHP) on 23 July 2015. Subsequently DEHP sent DSC a letter dated 9 September 2015, requesting more information on the incident. A full incident report will be submitted to EHP during October. Since the incident DSC undertook several steps to ensure that this extremely rare event should not occur again. These include:

- correcting the existing PLC program to prevent a recurrence
- installing a hard-wired pump override (Force-to-run) that is intended to ensure that Pump 1 pumps to the WWTP in any event of sewage levels exceeding the high set point
- replacing the entire ageing PLC system (current capital improvement item)
- biological and macro-invertebrate survey to determine the impact of the discharge
- arranging additional environmental sampling training to relevant staff members

5. Influent and Irrigation Flows**Port Douglas Wastewater Treatment Plant**

A total of 293,217 kL of influent entered the Port Douglas Wastewater Treatment Plant during the reporting period. The average daily flow was 3,187 kL/d. Tanker truck contractors delivered 795 kL of septage to the plant. Influent is treated in a Sequencing Batch Reactor (SBR) and produced compliant effluent during the reporting period. A total of 42% of the treated effluent was pumped to two resorts and the remaining discharged in the Dickson Inlet. The Sheraton Mirage received 50,109 kL and Reef Links received 72,563 kL of treated effluent during this period. Total rainfall on site during the reporting period was measured as 110 mm. Daily SBR flows and total monthly flows for 2014/2015 are presented in Fig 9 and 10 respectively.

Fig 9. Port Douglas SBR Daily Flow

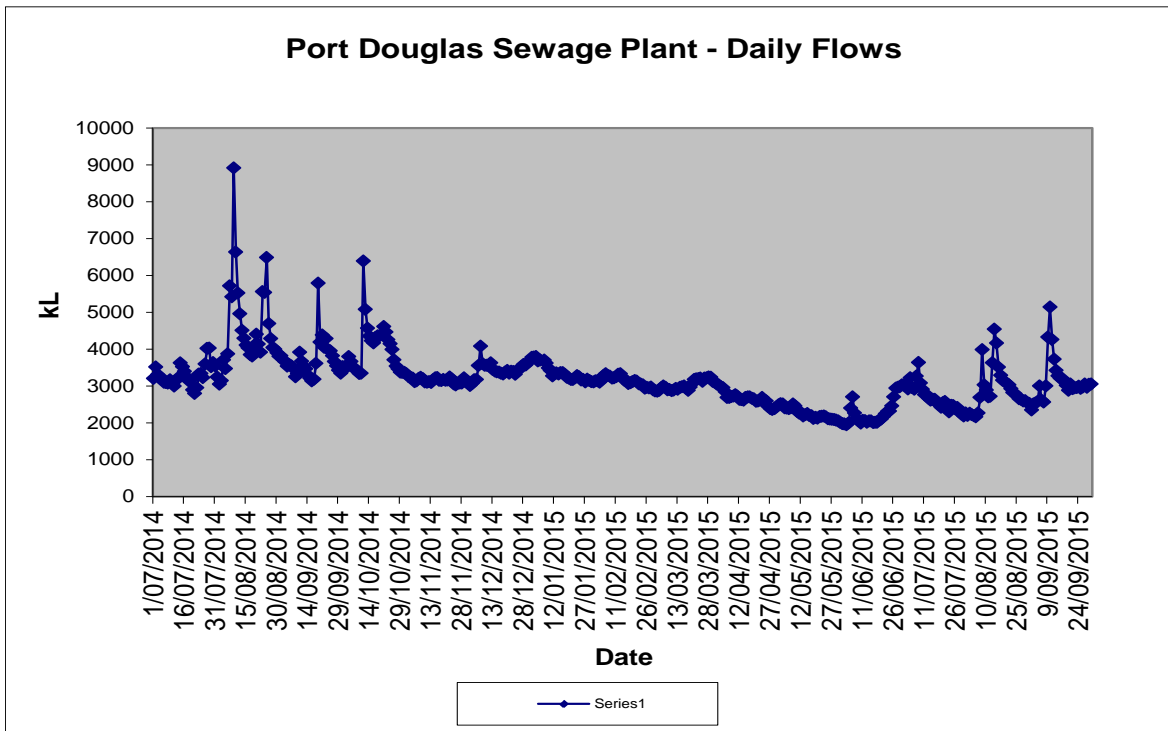
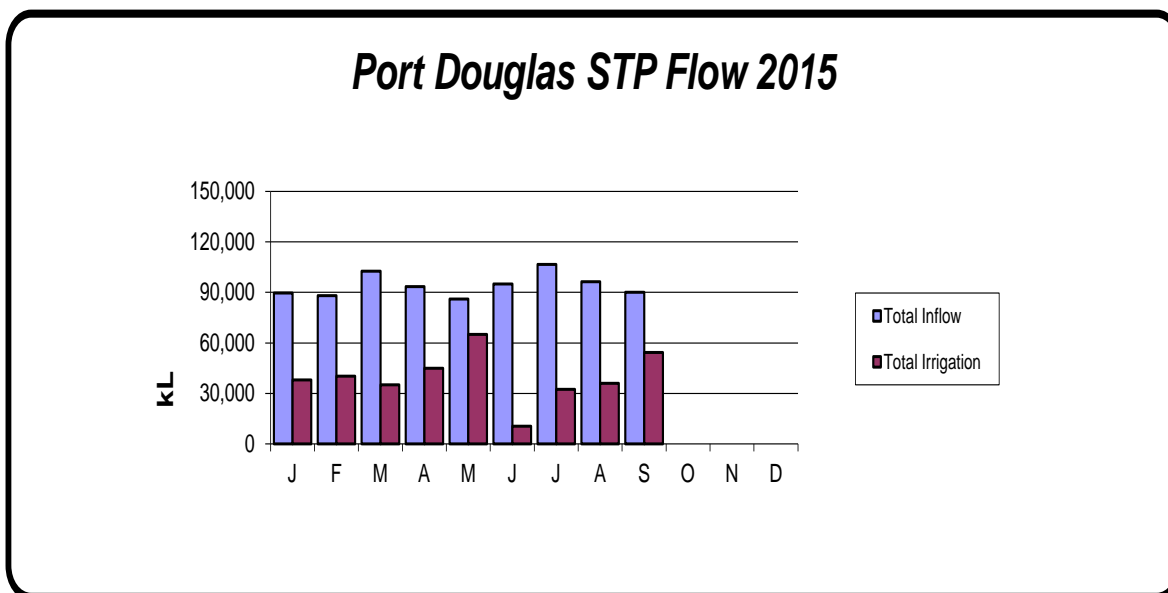


Fig 10. Port Douglas Total Monthly Flow



Mossman Wastewater Treatment Plant

The Mossman Wastewater Treatment Plant received a total influent flow of 62,452 kL during the reporting period. The average daily flow was 679 kL/d. Influent is treated in an Oxidation Ditch system and compliant effluent is discharged in the Mossman River. Total rainfall on site during the reporting period was measured as 189mm.

Daily flows from the Mossman Wastewater Treatment Plant and total monthly flows for 2014/2015 are presented in Fig 11 and 12 respectively.

Fig 11. Mossman Wastewater Treatment Plant Daily Flow

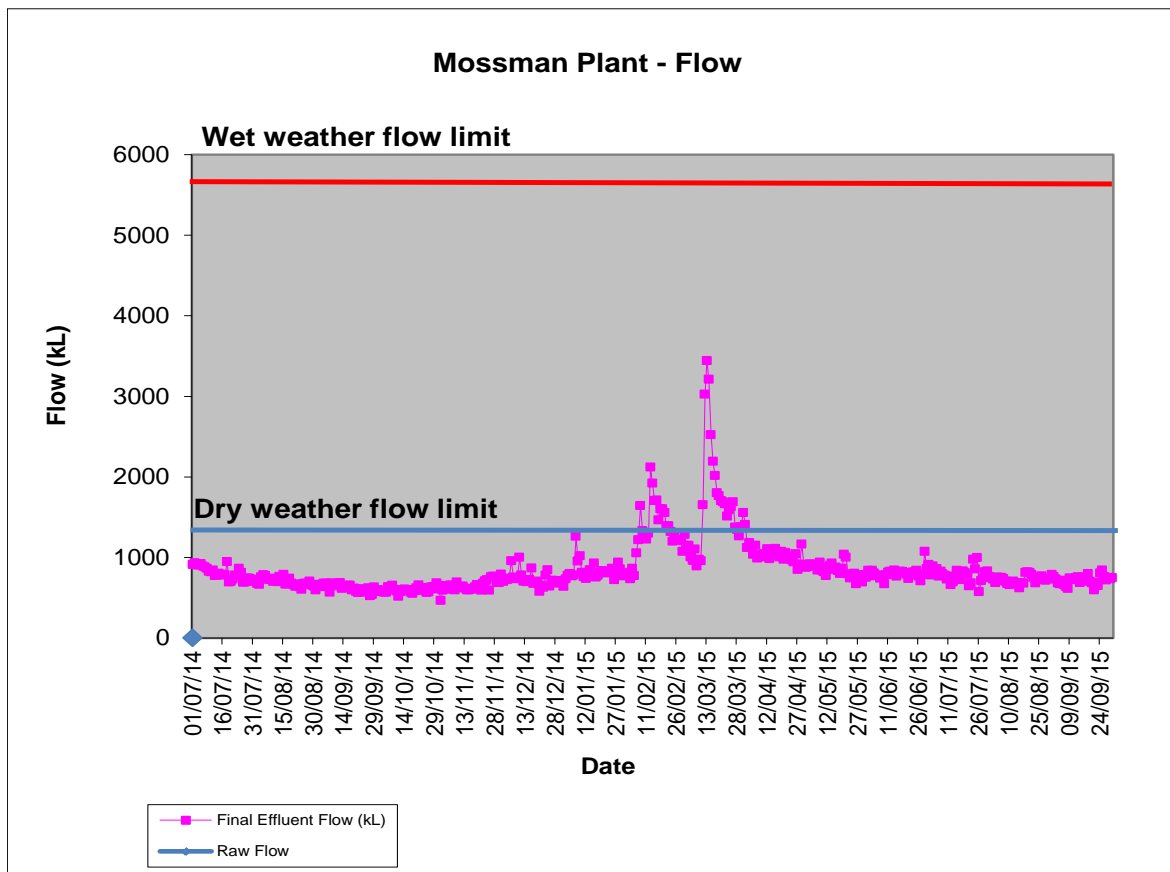
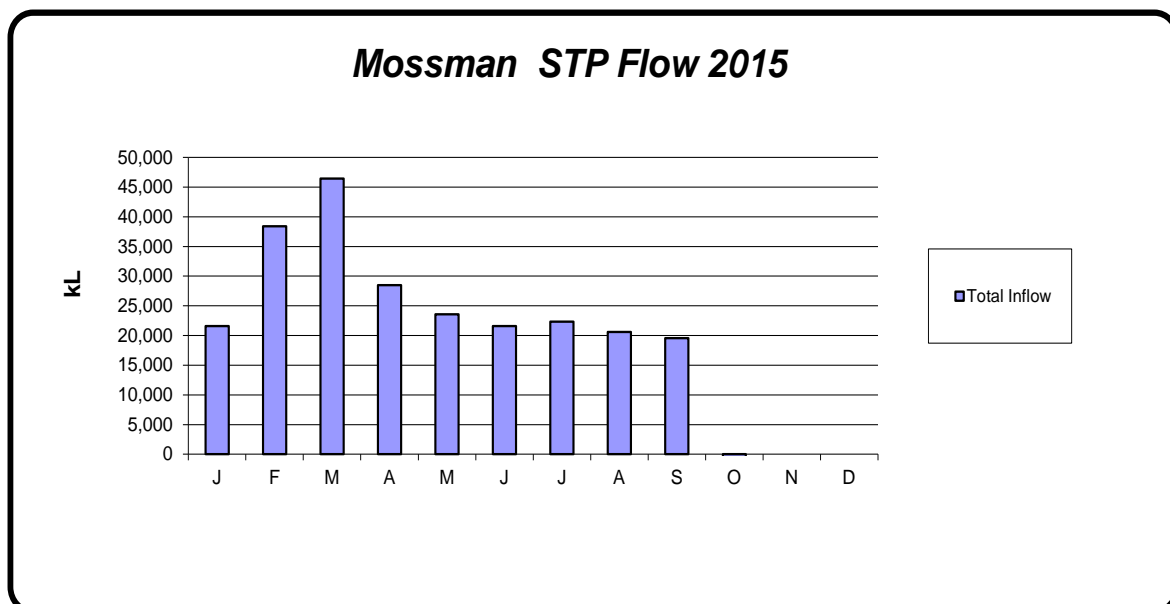


Fig 12. Mossman Wastewater Treatment Plant Total Monthly Flow



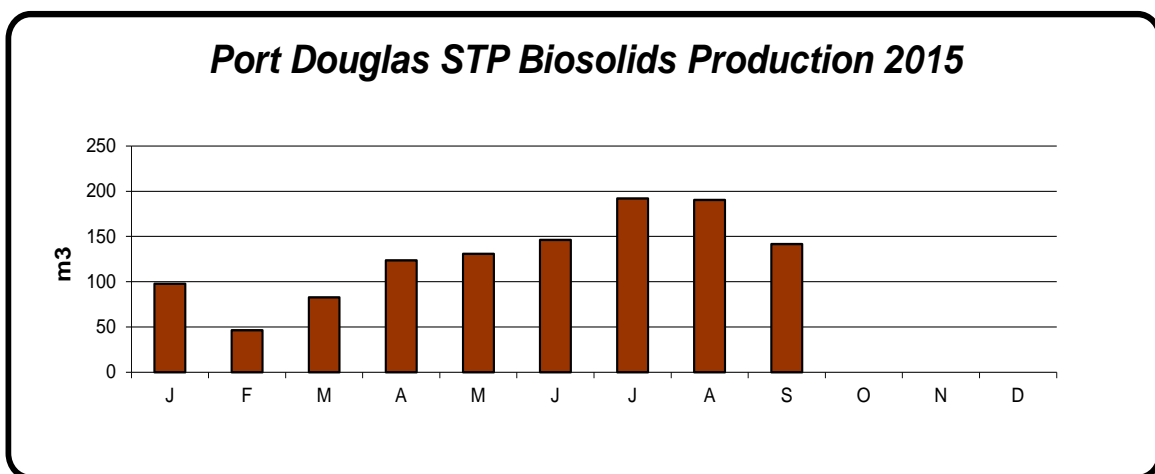
6. Bio-solids Production

Bio-solids were produced at the dewatering plants at Mossman Wastewater Treatment Plant (18% solids) and Port Douglas Wastewater Treatment Plant (14% 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, 73.36 dry tons (524.05m³) of bio-solids were produced during the reporting period. The monthly bio-solids production trends can be seen in Fig 13.

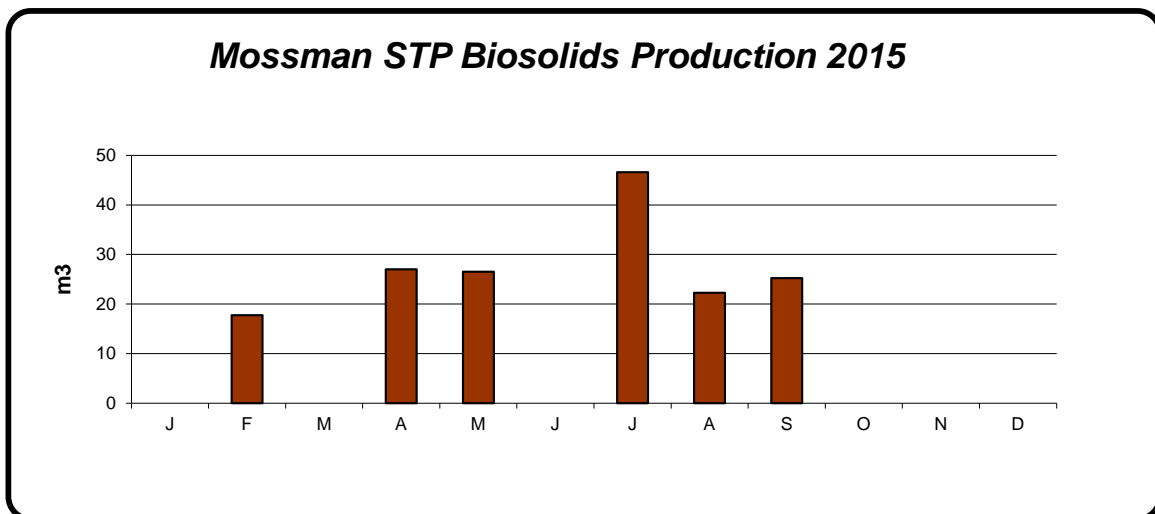
Fig 13. Port Douglas Wastewater Treatment Plant monthly bio-solids production



Mossman Wastewater Treatment Plant

At Mossman Wastewater Treatment Plant, 12.89 dry tons (592.12m³) of bio-solids were produced during the reporting period. The monthly bio-solids production trends can be seen in Fig 14.

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



7. Effluent Quality and Compliance

During the reporting period a total number of 172 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.

All parameters tested in the Port Douglas and Mossman catchment were compliant with maximum concentration licence conditions during the reporting period. The final effluent ammonia concentration on 23 September was 1.38mg/l and didn't comply with the 80%ile limit of 1mg/l. This was reported to EHP. The treatment operator increased aeration and reduced Mixed Liquor Suspended Solids (MLSS) concentration in both reactors.

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.

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 Fig 15, 16, 17 & 18

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

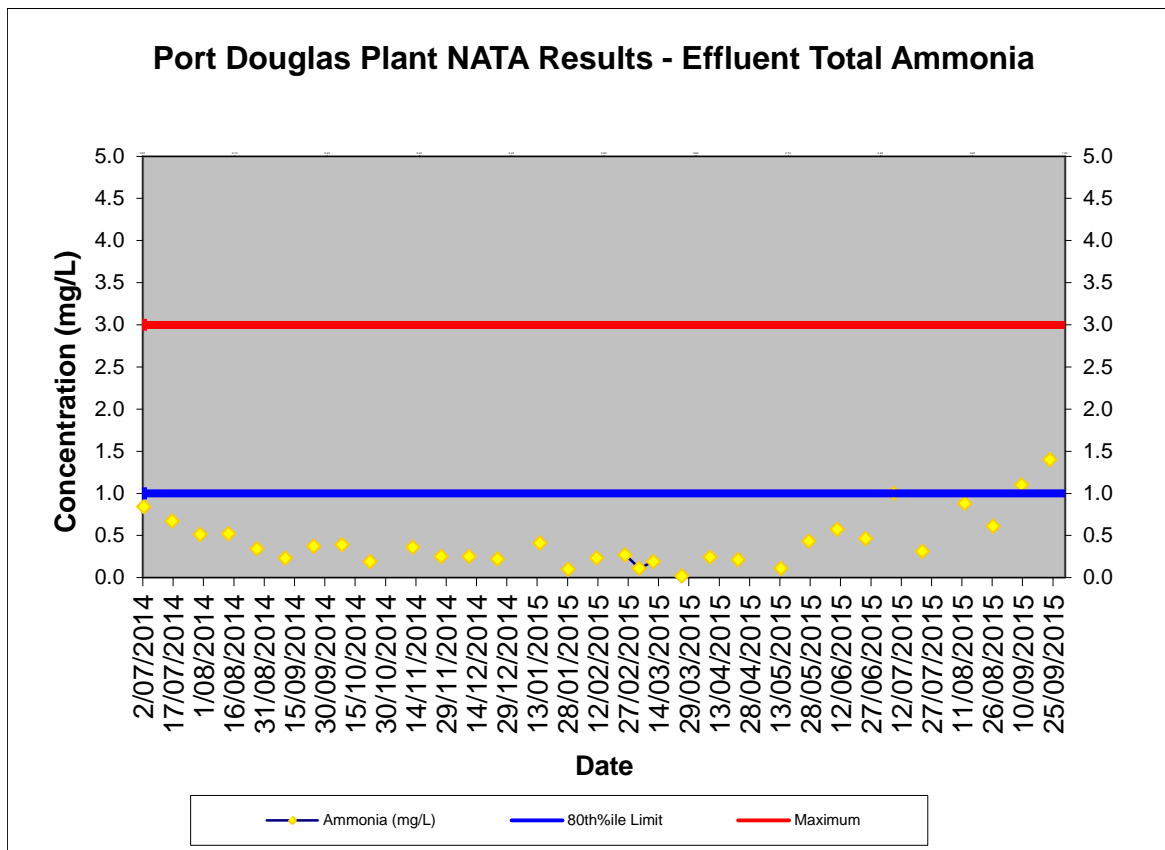


Fig 16. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Total Phosphorous

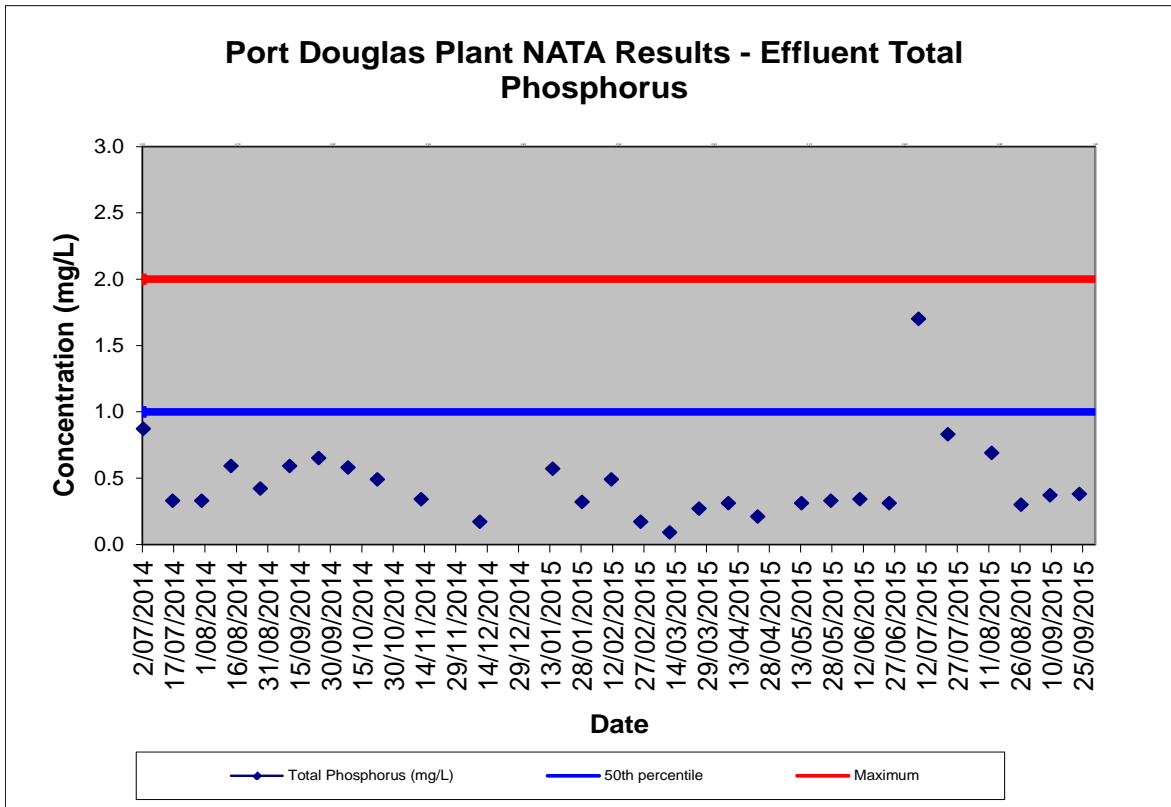


Fig 17. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Total Suspended Solids

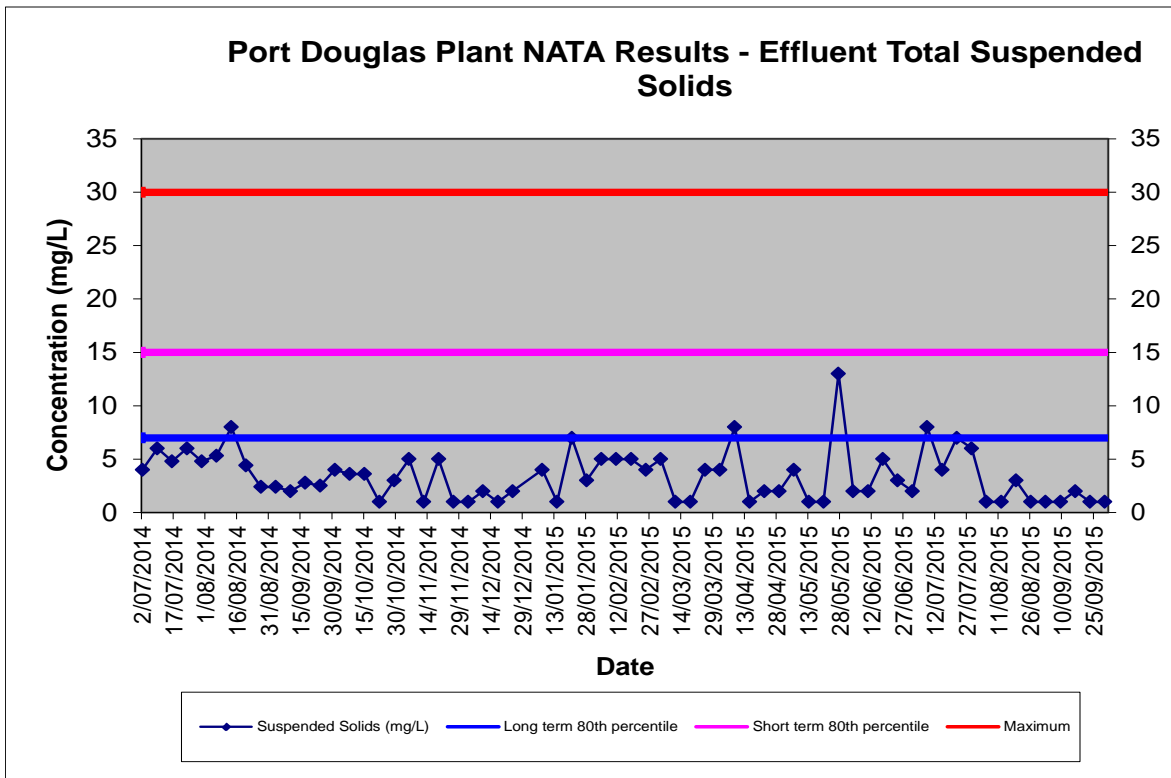
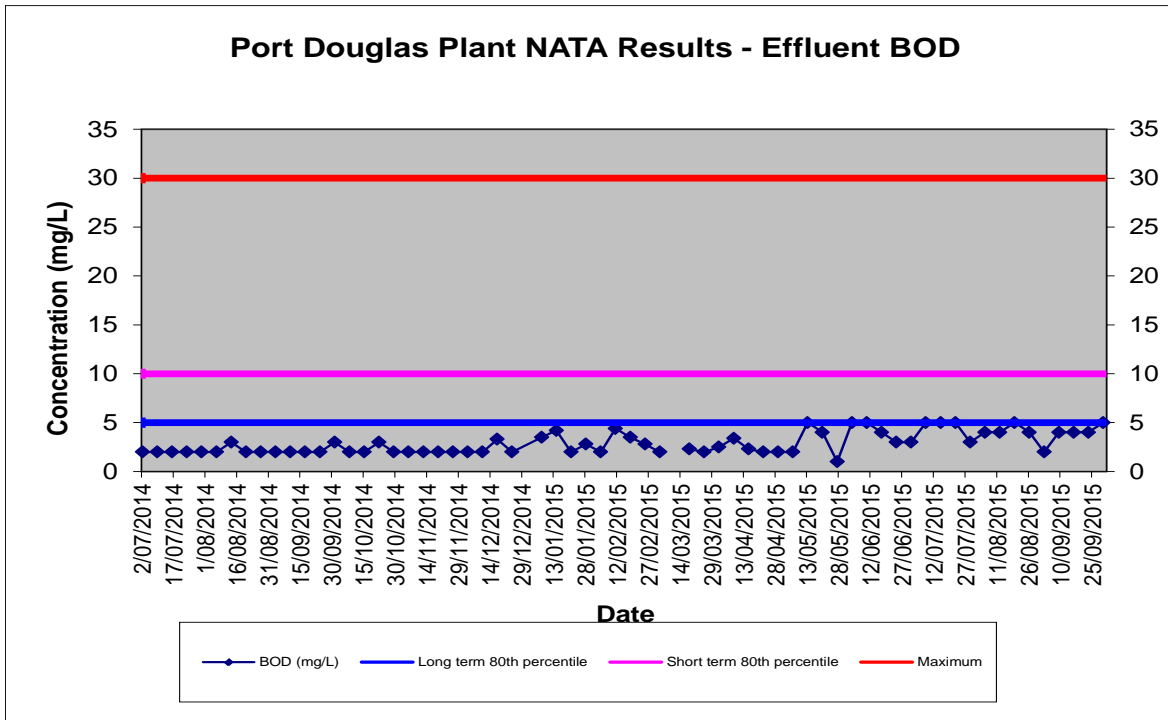


Fig. 18 Port Douglas Wastewater Treatment Plant Final Effluent Test Results for BOD₅ (Biochemical Oxygen Demand)



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

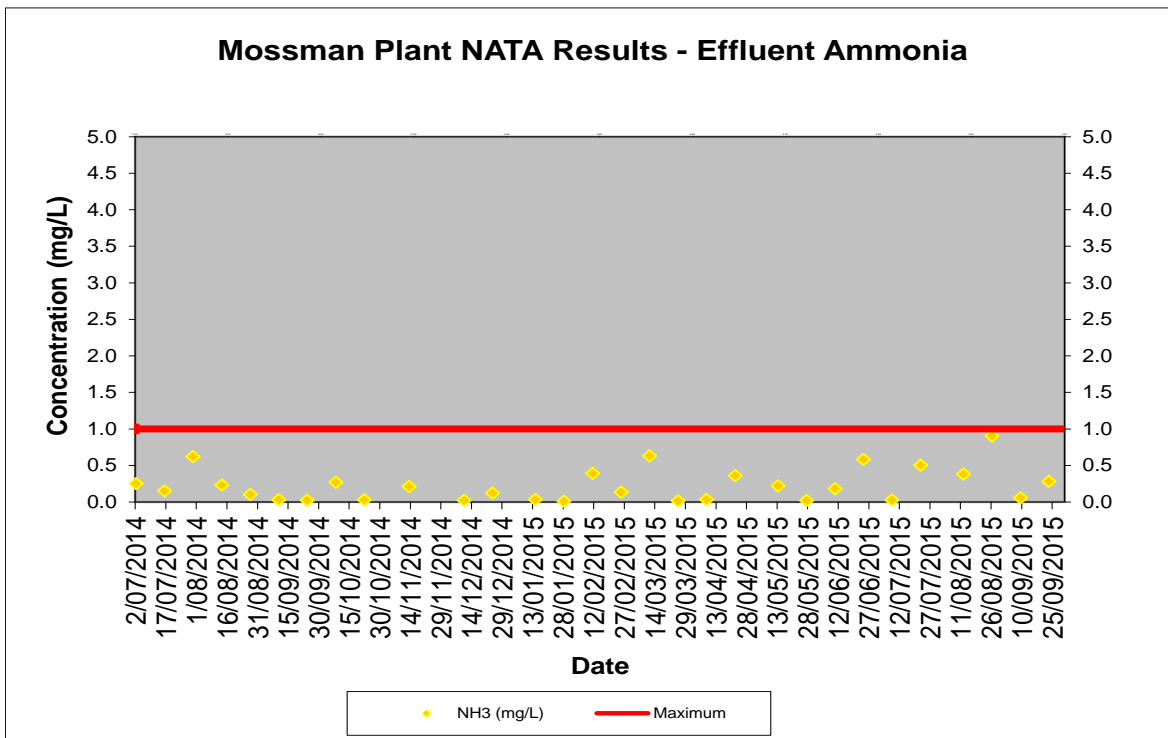


Fig. 20 Mossman WWTP Final Effluent Test Results for Total Phosphorous

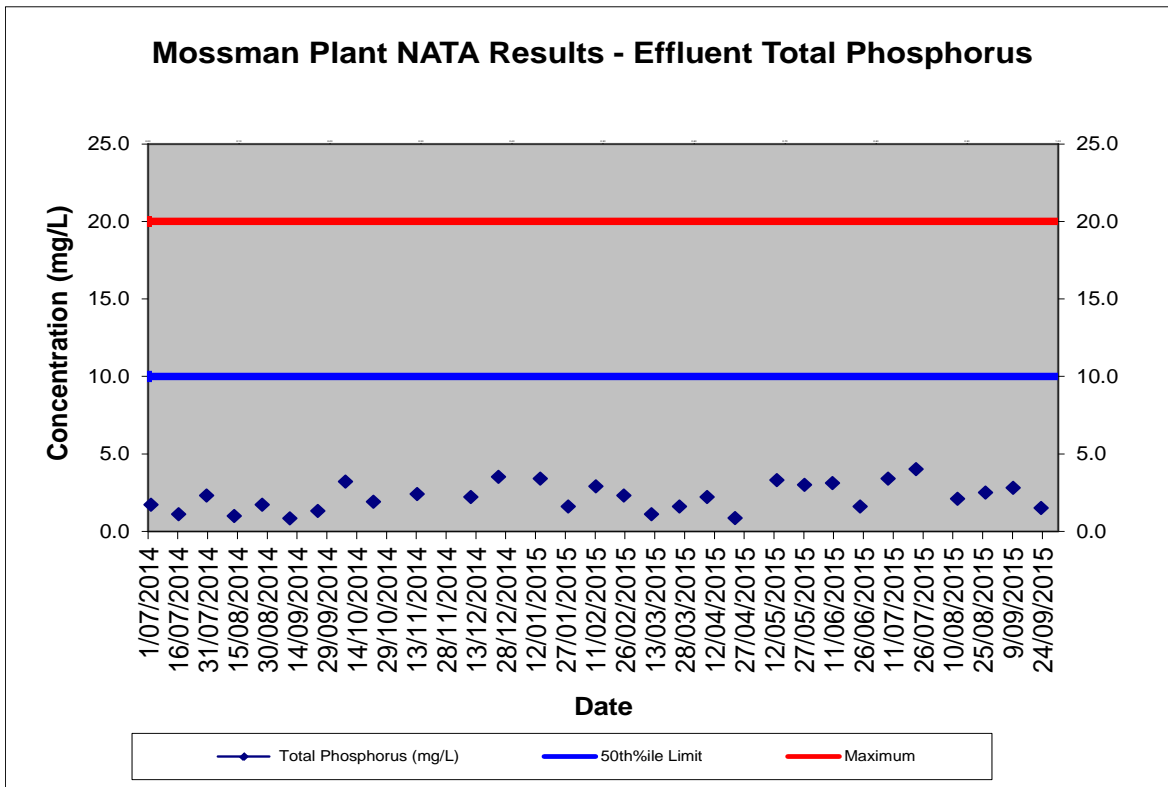


Fig. 21 Mossman WWTP Final Effluent Test Results for Total Suspended Solids

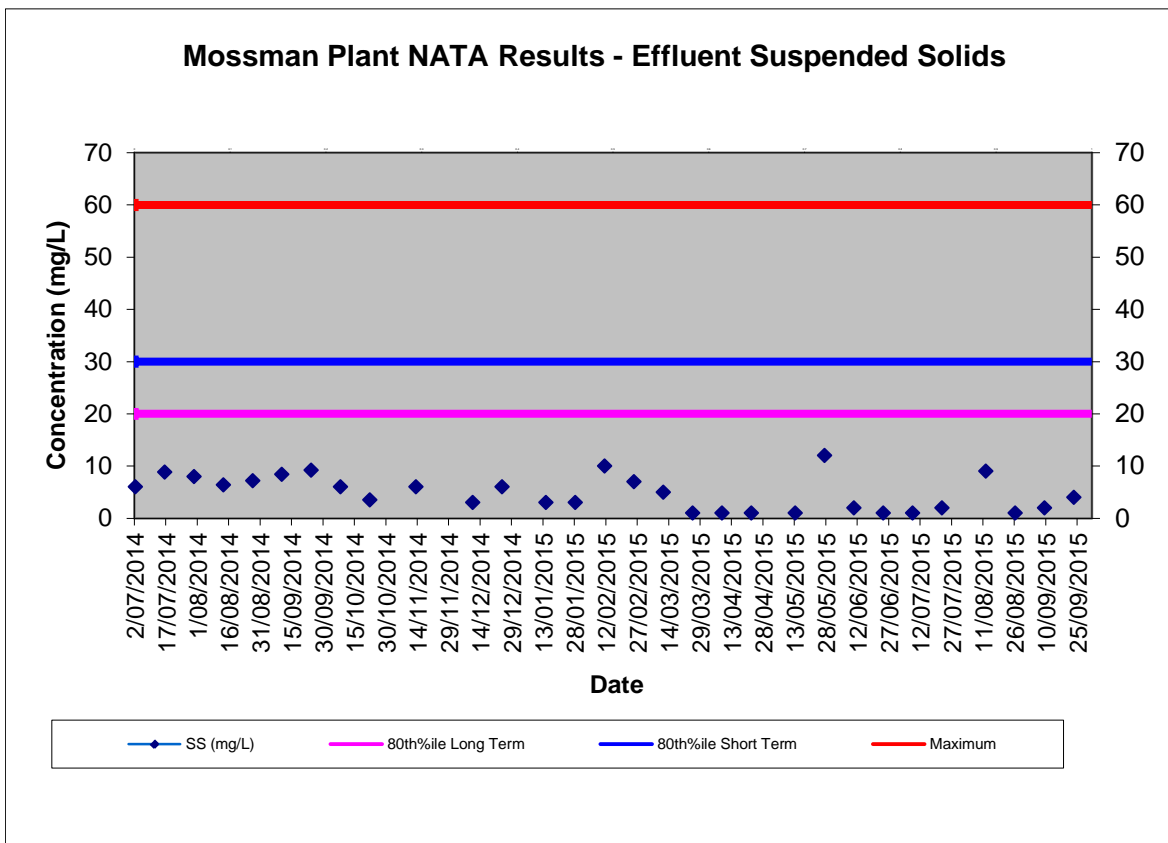


Fig. 22 Mossman Wastewater Treatment Plant Final Effluent Test Results for BOD₅ (Biochemical Oxygen Demand)

