

5.10. WATER AND WASTEWATER QUARTERLY REPORT FOR THE PERIOD ENDING 30 JUNE 2021

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RECOMMENDATION

That Council receives and notes the progress of the Quarterly Report of the Water and Wastewater Department for the period ending 30 June 2021.

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 Department for the period 01 April to 30 June 2021.

Whilst the results are generally positive the areas for improvement are noted and will be the focus of the department over the next quarter. Notable capital improvements include the completion of the Craiglie Reservoir and chlorination system upgrade, various water main renewals, De Meio Drive water bore, the UV disinfection unit at the Port Douglas wastewater treatment plant, sewer pump and flow meter renewals and the replacement of the mobile generator for the wastewater treatment plants.

BACKGROUND

This report is the fourth Quarterly Report submitted by the Water and Wastewater Department during the 2020/2021 Financial Year. This report highlights progress against key performance areas required by the Department of Regional Development, Manufacturing and Water (DRDMW) and required compliance levels by the Department of Environment and Science (DES).

COMMENT

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

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 Department 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 2019-2024 Initiatives:

Theme 3 - Leading Environmental Stewardship

Goal 2 - We will implement programs that reduce and offset our environmental footprint.

Goal 3 - We will continue to build water infrastructure so that the Douglas Shire may enjoy water security and water quality.

Goal 4 - We will partner with the community to educate and monitor.

Theme 5 - Robust Governance and Efficient Service Delivery

Goal 3 - We will make sound financial decisions by ensuring robust strategic planning, financial management and reporting.

Goal 4 – We will work with our communities to ensure they are informed, empowered and supported so that they are resilient to the impacts of disaster events. Through our leadership and capabilities we will plan, prepare, respond and recover from events so as to minimise the impact on people, property, the environment, and our economic stability.

Operational Plan 2020-2021 Actions:

3.3.1 – *Progress the intake as a matter of urgency.*

3.3.2 – *Develop options for long-term water storage capacity of at least one billion litres.*

3.4.1 – *Implement an education campaign targeting schools and residential properties within the Shire to raise awareness of water security, how it is produced, impacts on the reef and how to live a more water efficient life.*

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:

Builder/Owner Council makes a significant investment every year in the infrastructure that underpins the Shire through its capital works program. Council will manage its assets with appropriate frameworks and deliver its projects through robust project management.

Regulator Council has a number of statutory obligations detailed in numerous regulations and legislative Acts. Council also makes local laws to ensure that the Shire is well governed. In fulfilling its role as regulator, Council will utilise an outcomes based approach that balances the needs of the community with social and natural justice.

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 Regional Development, Manufacturing and Water and the Department of Environment and Science.

Community: Nil

ATTACHMENTS

1. Water and Wastewater Quarterly Report for the period ending 30 June 2021 [4G0B]
[5.10.1 - 24 pages]

1 April to 30 June 2021

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 Department.

The Water and Wastewater quarterly report does not include comprehensive progress reporting in terms of Capital Works or Operational Plan; these are dealt with in separate quarterly reports to Council.

This report highlights certain aspects of the activities of the Water and Wastewater Department that are industry benchmark indicators as well as key performance areas and compliance monitoring parameters as required by the Department of Regional Development, Manufacturing and Water (DRDMW) and the Department of Environment and Science (DES).

Water

1. Water Education

As a water service provider, water education is a high priority, particularly when we are faced with changing climate conditions and variable rainfall events within our shire. In this reporting period, education site visits were delivered to two Kindergartens in May. The 4-year-old groups were very well behaved and showed great interest in the various activities delivered. Topics ranged from discussing where water comes from, what needs water to live, why it's important not to waste water, and the 3 P's (Pee, Poo, Paper). Activities included creating posters with various types of life that need water to live, and an interactive toilet game to choose what should or should not go down the loo. Both groups committed to trying to conserve water by using their 4-minute shower timer gift and reporting back in the future on how they are progressing. Further activities were also discussed for the Kindy groups to do in-house, such as making their own signs for the toilet area to remind everyone about the 3 Ps, and using their new Whizzy Water Wise books during story time to learn more about looking after their water and environment.

The Water and Wastewater educational videos were launched to the public in June. The new videos showcase the journey that Douglas Shire's reticulated water supply follows from source to sea and are intended to assist the community with understanding the complexities of how their water is extracted, treated and delivered, and to convey how important it is to value the good quality water they have on tap. In addition to the education videos, 360-degree interactive footage of various locations throughout the water and wastewater network, video shorts, and new images of the Douglas Shire intakes, treatment plants and staff at work are also now available on Council's website for the public to explore.



Port Explorers Kindy visit in May 2021

2. Water reticulation services

General maintenance was carried out on all schemes for this quarter including all intakes. Hydrant and valve maintenance was performed two days each week to identify their locations, ensure accessibility and attend to any maintenance issues. The water reticulation team continued recording the number of water service renewals and Dial Before You Dig service locations (DBYD).

There were 12 new water service renewals and 216 DBYD in this reporting period. Water service renewals are replacing water services which have reached their life expectancy and are at risk of failing.

Providing DBYD service locations on council infrastructure assists in preventing damage and disruption to water, sewer and drainage services within the Douglas Shire. Water flushing programs were implemented due to the maintenance and functionality of hydrants, maintaining water quality that relates to aesthetic parameters and for maintaining acceptable chlorine residuals within the schemes. Response/reaction time for all water reticulation incidents was within the customer service standards. See table 1 showing results on water reticulation maintenance activities across all schemes.

Three staff from the water reticulation team completed leak detection training in this reporting period. Their training skills and knowledge will be passed onto the rest of the water reticulation team members. The leak detecting instrument connects to a water main, water acoustics are interpreted and the display screen of the unit can pinpoint the water leak within the water main. This technology will greatly assist our water reticulation team to implement proactive maintenance by identifying water leaks within the shire.



Water reticulation team performing a leak test

The swift response from our water reticulation team to repair a water issue in Noli Cl, Mossman was greatly appreciated from a young boy who lives in the street. He was so grateful to the team that he made them a “Superhero Thank You” card to show his appreciation.



A thank you card from Alex in Noli Cl, Mossman

Regular reservoir and pump station checks and intake maintenance was performed on all three schemes.

21 April 2021 was our wettest day in this reporting period, over 200 mm of rain was recorded at various weather stations within our shire. The turbid water from this heavy rainfall event created operational issues at the Mossman Water Treatment Plant. The intake recorded a water level of 1490mm, resulting in high turbidity which caused the Mossman Water Treatment Plant temporarily to shut down until the turbidity cleared.



High water flow at Rex Creek Intake – April 2021

Table 1. Water reticulation services maintenance activities undertaken across all schemes

Douglas Shire Reticulation (all schemes)	
Settlement Meter Reads	228
New Water Services Connections	11
Service Repairs	142
Water Mains Repairs	9
Water service renewals	12
Water Quality Notifications (Complaints)	1(0)
Dial before you dig	216
Flushing Events: Mossman/Port Douglas/Cooya/ Newell	8
Flushing Events: Whyanbeel/Wonga	3
Flushing Events: Daintree	1

There was one water quality notification during this reporting period. The customer was concerned about the colour of their water, our water quality staff investigated the issue and tested the water internally and within the council's water network. The results indicated that the water quality both internal and within the water network was within the Australian Drinking Water guidelines. The water was found to be clean and clear during testing. All water quality notifications/complaints were handled under customer service standards.

Water and Wastewater team views all water quality notifications and complaints seriously and endeavour to achieve outcomes where customer satisfaction is priority.

Table 2 below details the nature of the notification, how it was resolved and the response time. All water quality parameters measured were within the health guideline limits in the Australian Drinking Water Guidelines (ADWG).

Table 2. Water Quality Notifications

Address	CRM No & Date	Nature of water complaint	How it was resolved	Response Time
Bougainvillea St, Cooya Beach	98508/2021 14/05/2021	Discoloured water	Tested water internally and externally. All water quality parameters were within Australian Drinking Water guidelines and water was found to be clean and clear.	30 mins

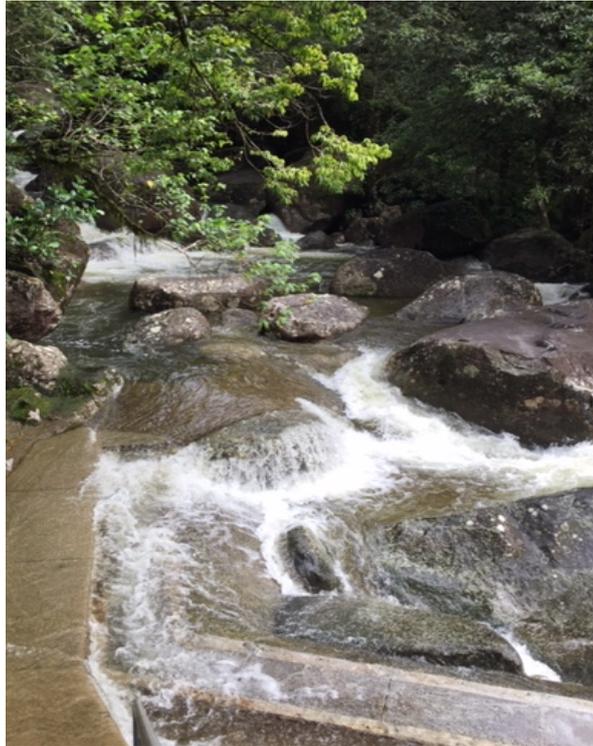
This reporting period is the end of the financial year 2020/2021 capital works programme. Completion of most projects are progressing as scheduled within water quality and reticulation. Completed projects are the Craiglie Reservoir and chlorination system upgrade, installation of fencing around the Flagstaff reservoir, security swipe card installations and the final stages to repair the raw water line at the Mossman Water Treatment Plant.

Water Reticulation projects completed include the Killaloe transfer station water main renewal, McCracken Rd water main renewal and the final water sampling stations have been installed at Davis Park, Mossman and Daintree township. Additionally, a new bore was installed at De Meio drive and water quality testing of the bore is currently being carried out.

Smart water meters project trialed two external candidates with their services and products at several properties within the shire. Several properties throughout Douglas Shire were selected to test the equipment and connectivity to its full extent. As part of a smart water meter demonstration a leak was discovered at Four Mile Beach Park. The leak was located and repaired, this clearly shows the benefits of this technology. The trial did not impact residents water service in any manner.

3. Water schemes and potable water consumption

This reporting period is the start of Autumn and is generally our dry season, however April and May did produce some heavy rain fall events. The climate rainfall outlook forecasted by BoM is likely to be above average which may help us through the 2021 winter/spring period within our shire. It is important for our community within Douglas Shire to maintain water conservation practices to defer or prevent water restrictions being implemented.



Rex creek intake – 21 April 2021 intake level at 1490mm.

The average water consumption for the Mossman/Port Douglas scheme for the months April to June was **7.91 ML/day** for the Port Douglas network and **2.37 ML/day** for the Mossman network. The graph below displays the comparison use between Mossman and Port Douglas networks and Rex Creek intake level.

The Figure 1 displays the comparison use between Mossman and Port Douglas treated water supply and Rex Creek intake levels.

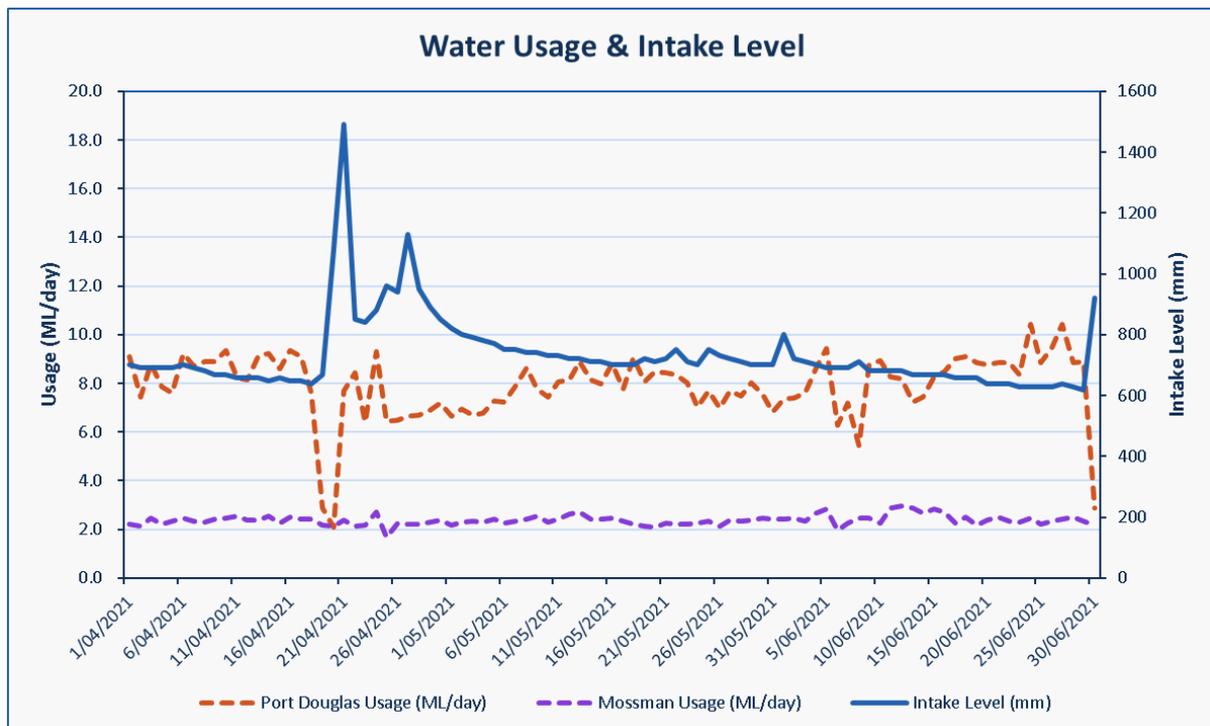


Fig 1. Mossman and Port Douglas water usage and Rex Creek intake levels for the period 1 April to 30 June 2021

4. All Schemes

Water quality operations within all schemes have been performing well throughout this reporting period with the raw water turbidity averaging below 1 NTU. All water scheme pump stations performed well with no incidents.

During the reporting period, general maintenance works and routine service inspections were performed at all water treatment plants for efficient operations. Clean in place (CIP) activities were undertaken on ultrafiltration (UF) cartridges throughout the reporting period to identify leaking UF cartridges which maintains the efficiency of the filtration rack operations and maintains the UF cartridges within the integrity test limits.

Water and Wastewater's Drinking Water Quality Management Plan (DWQMP) was audited by the regulator in April 2021. This was a two-day audit covering water treatment with the water quality team, the reticulation network with the water reticulation team and water sampling with the environmental technical officer. The DWQMP sets the standard and performance criteria for the delivery of safe drinking water to our customers.

All councils within the FNQROC area were audited over two weeks and the feedback from the auditor was that he was impressed with the DWQMP and how well it was being implemented. The Douglas Shire Council team was a standout from all the audits.



Images: Regulator auditor inspecting Rex creek intake and reservoir with DSC water quality officer

Mossman/Port Douglas Scheme

All operations were undertaken as well as all general service works, routine inspections and maintenance within the Mossman/Port Douglas Scheme.

Mossman water treatment plant met all consumer demand requirements throughout this reporting period. To replace older UF cartridges, new UF cartridges were ordered and delivered in June 2021. Integrity checks remained within acceptable levels with zero breakthrough occurrences. Operators have trialled the operation of the UF cartridges with less chemical cleaning. During the trial, trans membrane pressures have been constantly monitored to assure that operations are maintained to a high standard. Reduction of chemical cleaning sequence can increase cartridge life and reduce operational costs by reducing chemical usage and waste pump out requirements. During monitoring and physical examination of UF cartridges, it was discovered that a module 2300 membrane required fibre pinning to repair the module. With aging cartridges, the fibre repair requirement increases to maintain acceptable performance.

The water treatment plant backwash recovery system failed in November 2020 due to engineering issues, on investigation the issue has been reoccurring with prior attempts to repair not successful. Successful rectification works were conducted and trialled in-house and the plant is now operational. A successful major repair was performed by the water quality officers on the 600-diameter water main flange located at the Mossman Water Treatment Plant.

There were no water quality reportable incidents in the Mossman water scheme within this reporting period. High water levels were maintained in all reservoirs in the Mossman/Port Douglas Scheme. Operational SCADA processes were assessed to determine if current water operator actions are appropriate. An operational process change has been implemented, this has increased operator awareness which has resulted in lower contractor attendance and water operator after hours call outs.

The refurbishment of Craiglie reservoir has been completed with a new electro-chlorination dosing system to replace the gas chlorine system. The commissioning of the reservoir is expected to occur in July 2021.

Mossman Water Supply

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

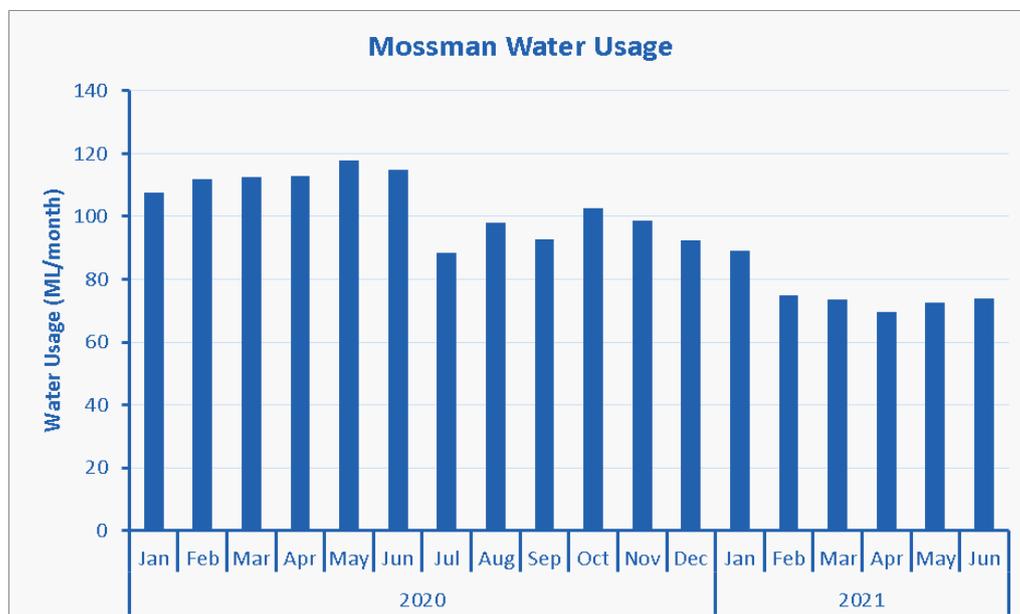


Fig 2. Mossman Scheme Total Monthly Consumption Figures 2020-2021

Port Douglas Water Supply

The total monthly consumption of water in Port Douglas, Craiglie and Mowbray areas can be seen in Figure 3.

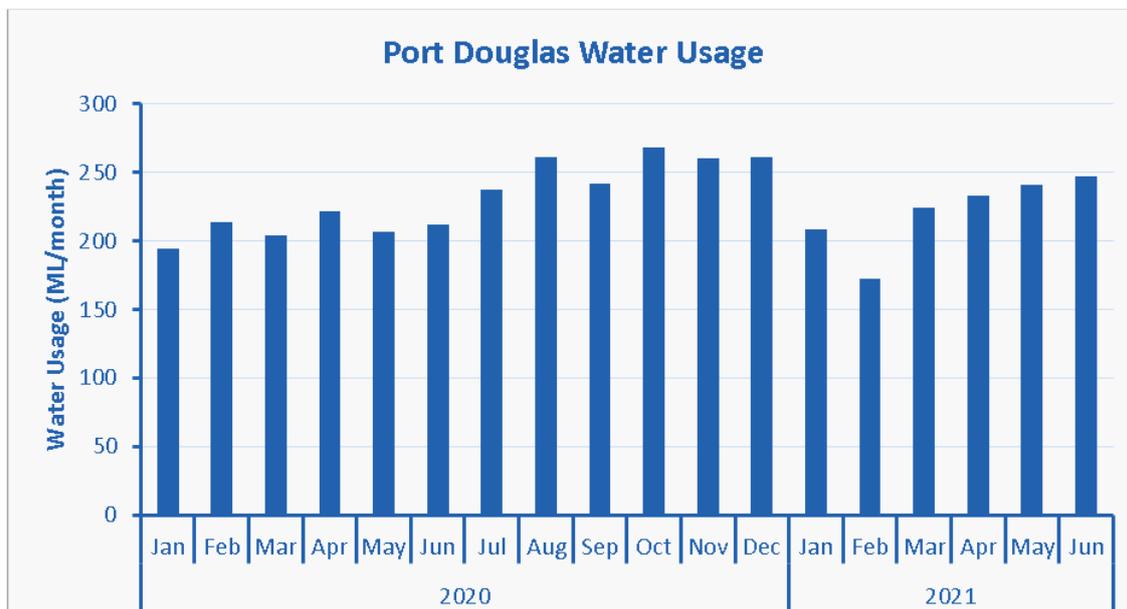


Fig 3. Port Douglas Scheme Total Monthly Consumption Figures

Whyanbeel Scheme

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

The UF rack was operational during the reporting period. To maintain UF filter efficiency chemical CIP operations were undertaken, general service and maintenance works continued to maintain efficient operation of the plant. The backwash water pH correction/treatment upgrades are in progress, new tanks are installed and equipment monitoring discharge to the environment is 80% completed.

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

The total monthly consumption of water in Whyanbeel, Wonga Beach, Miallo, Rocky Point, Syndicate and Bamboo can be seen in Figure 4.

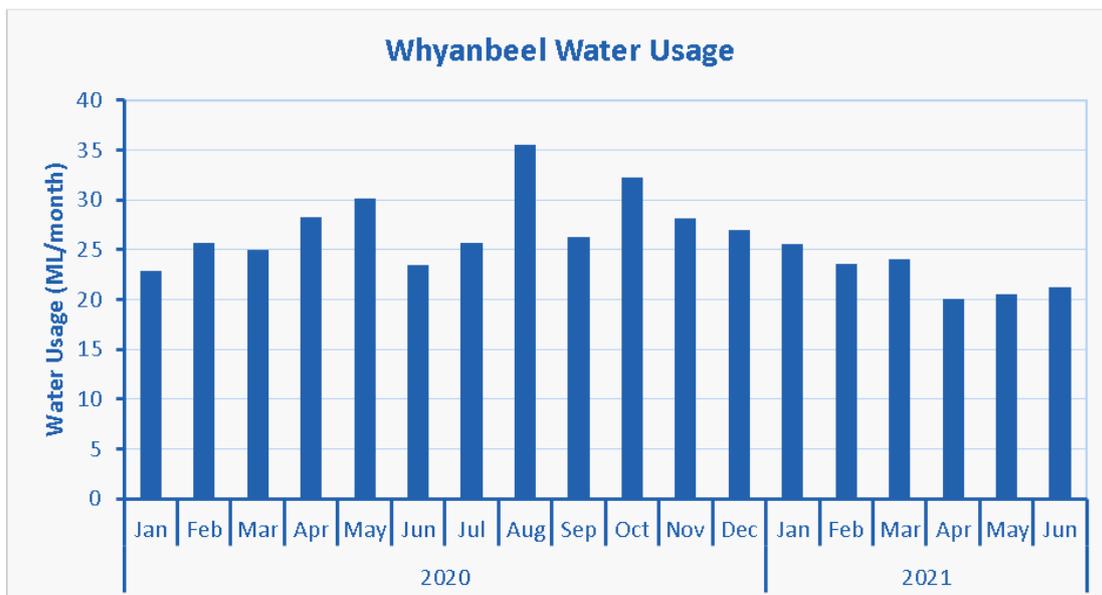


Fig 4. Whyanbeel Scheme Total Monthly Consumption Figures

Daintree Scheme

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

To maintain UF filter efficiency chemical CIP operations were undertaken, general maintenance and service works continued to maintain efficient operation of the plant.

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

Process control improvements have continued with the handling of sodium hypochlorite at the Daintree water treatment plant.

The total monthly consumption of water in Daintree can be seen in Figure 5.

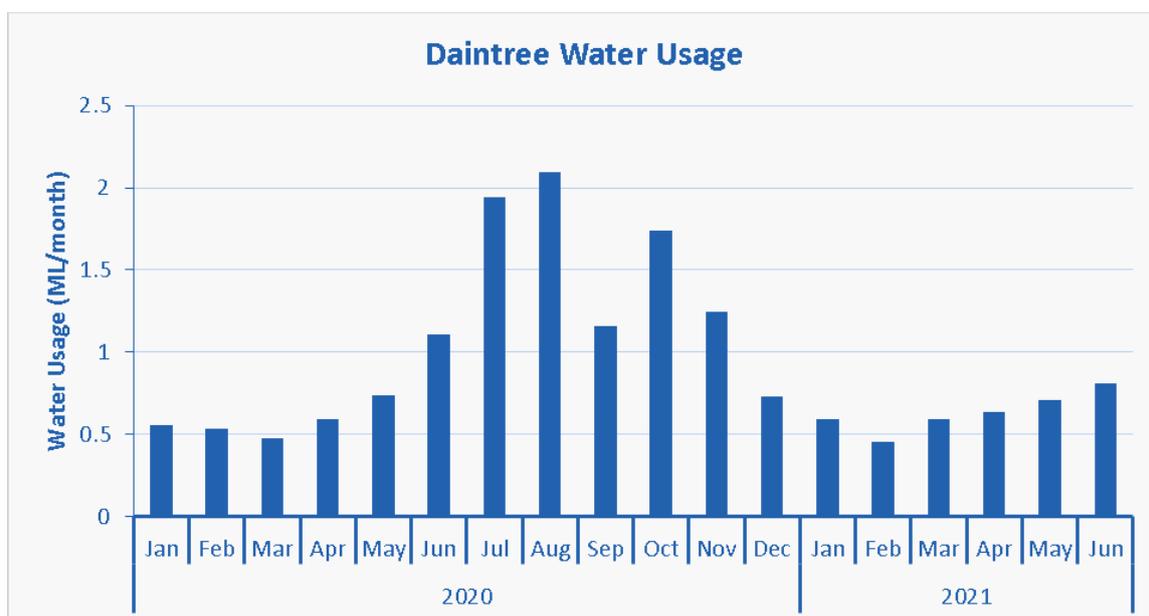


Fig 5. Daintree Scheme Total Monthly Consumption Figures

5. Water quality monitoring and results

Drinking water sampling occurs at intakes, reservoirs and in the reticulation network to ensure compliance with the ADWG.

Water quality verification monitoring includes regular testing of individual reticulation zones with monthly sampling at the reservoirs. Supporting programs for the verification of drinking water quality include;

- Water treatment plants and reservoirs that have SCADA alarms for action and critical limits and are operated under critical control points,
- Reservoir inspections that are done regularly to ensure that the reservoirs are intact and that any points of ingress are repaired, and
- Network operations that have a flushing program that ensures the chlorine residual is above 0.2 mg/L.

For the reporting period, a total of 77 treated water E.Coli compliance samples were taken in the three drinking water schemes. A total of 38 E.Coli samples were tested in the Douglas water laboratory and 39 in a NATA accredited laboratory. Other parameters monitored allow the Water and Wastewater Department to observe trends in water quality through the schemes.

All tested parameters in drinking water samples during the reporting period were compliant with ADWG health guideline values and standards required by the Water Supply Regulator and Queensland Health.

The Water and Wastewater team has started water quality investigative monitoring of Chlorates in the Daintree Water Scheme. Chlorates are a disinfection by-product and can cause a potential health risk to consumers if exposed to high concentrations over a prolonged period of time. There is currently no Australian drinking water guideline value for Chlorates, however Queensland Health has released an interim value of 0.8mg/L. Results have been found to be well below the Queensland Health interim value. Disinfection management processes have been implemented to prevent the likelihood of chlorates forming.

In addition, raw water quality was monitored at all of the intakes and Daintree Bore site, including 18 raw water E.Coli samples. Raw water sampling assists us to understand the treatment plant needs and the health-based targets.

Mossman/Port Douglas Supply Scheme

Average monthly values for key operational and compliance parameters are detailed in Tables 3 and 4 for treated water at 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 April to June 2021.

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 Cl mg/L	Total Cl mg/L	E.coli MPN
Standard	6.5 - 8.5	10 - 30	0 - 200	0.2 - 5.0	0.2 - 5.0	<1
April-21	7.6	27.7	9.6	1.1	1.1	<1
May-21	7.5	26.3	10.0	1.2	1.2	<1
June-21	7.5	24.6	10.3	1.2	1.2	<1

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

Month	pH	Temp °C	Free Cl mg/L	Total Cl mg/L	Colour PCU	Cu mg/L	Fe mg/L	Mn mg/L	E.coli MPN
Standard	6.5 - 8.5	10 - 30	0.2 - 5.0	0.2 - 5.0	<15	<1	<0.3	<0.1	<1
April-21	7.2	27.0	0.8	0.9	<1	0.009	<0.015	<0.0002	<1
May-21	7.2	25.8	0.9	0.9	<1	0.012	<0.015	<0.0002	<1
June-21	7.0	24.7	0.9	1.0	<1	0.011	<0.015	<0.0002	<1

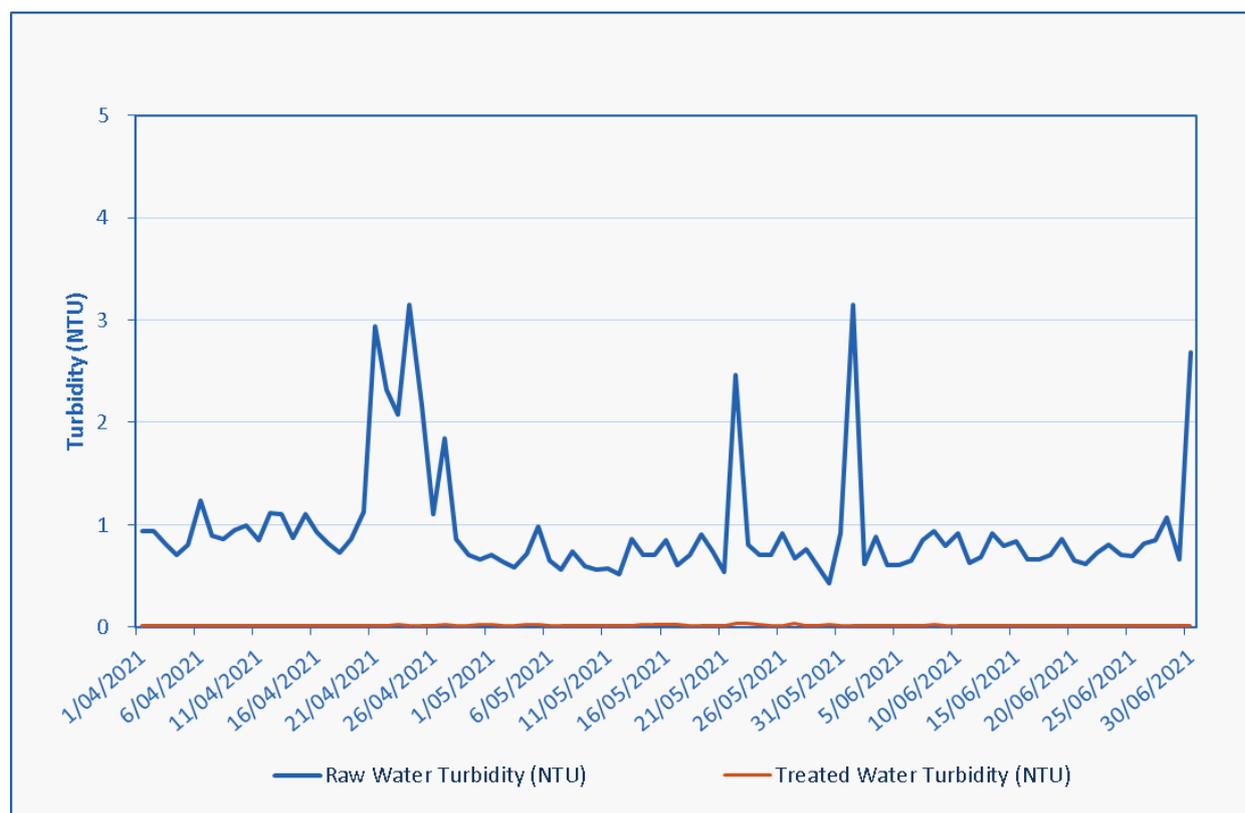


Fig 6. Turbidity trends at the Rex Creek intake and treated water at the Mossman Water Treatment Plant

Whyanbeel Supply Scheme

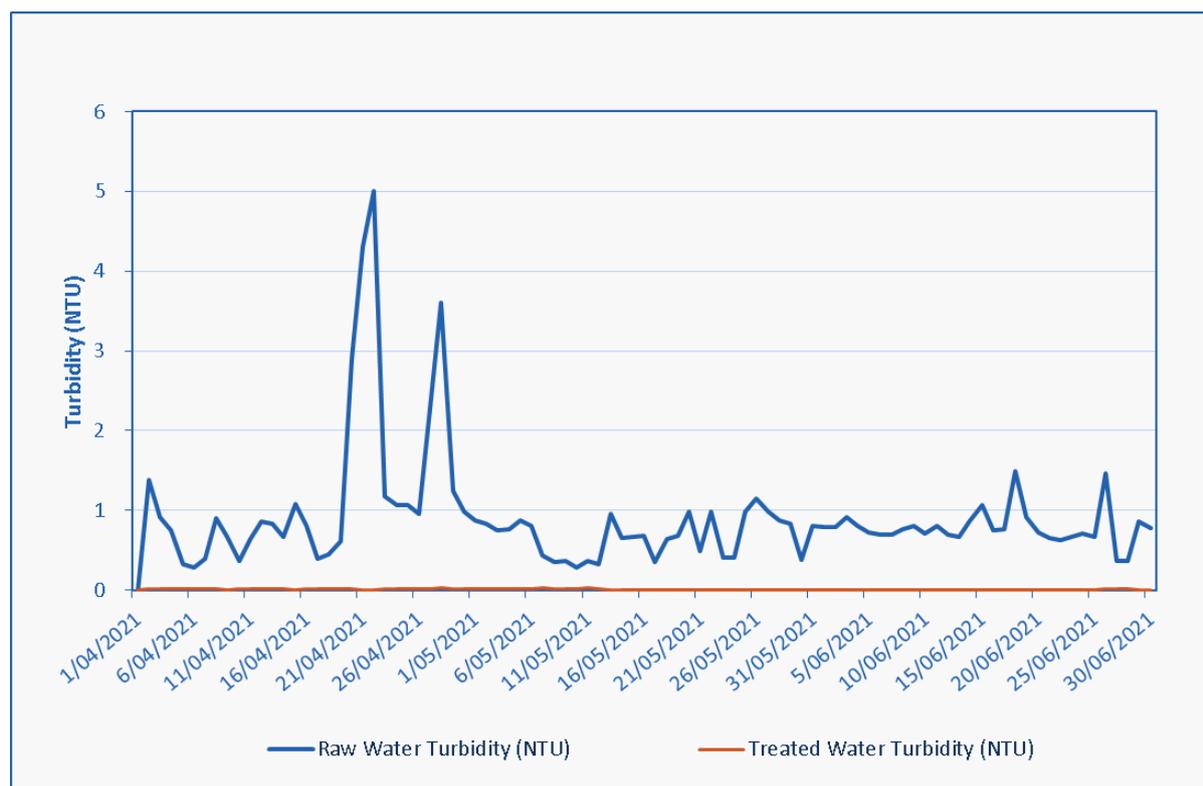
Average monthly values for key operational and compliance parameters are detailed in Tables 5 and 6 for treated water at the Whyanbeel Reservoir and Whyanbeel Reticulation Network respectively. Figure 7 indicates the daily turbidity trends at the intake and treated water as recorded at the Whyanbeel Water Treatment Plant for the period April to June 2021.

Table 5. Average monthly values for key operational and compliance parameters in the Whyanbeel Reservoir.

Month	pH	Temp °C	Total Alkalinity mg CaCO ₃ /L	Free Cl mg/L	Total Cl mg/L	E.coli MPN
Standard	6.5 - 8.5	10 - 30	0 - 200	0.2 - 5.0	0.2 - 5.0	<1
April-21	8.5	27.5	12	0.9	0.9	<1
May-21	8.1	26.2	12	1.1	1.2	<1
June-21	8.2	24.5	11	1.1	1.2	<1

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

Month	pH	Temp °C	Free Cl mg/L	Total Cl mg/L	Colour PCU	Cu mg/L	Fe mg/L	Mn mg/L	E.coli MPN
Standard	6.5 - 8.5	10 - 30	0.2 - 5.0	0.2 - 5.0	<15	<1	<0.3	<0.1	<1
April-21	8.3	27.3	0.9	0.9	<1	0.002	<0.015	0.0003	<1
May-21	8.0	26.1	1.1	1.1	<1	0.002	<0.015	0.0002	<1
June-21	7.9	24.8	1.0	1.1	<1	0.002	<0.015	0.0002	<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 are detailed in Table 7 for treated water at Daintree Reticulation network. Figure 8 indicates the daily turbidity trends at the intake and treated water as recorded at the Daintree water treatment plant for the period April to June 2021.

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

Month	pH	Temp °C	Free Cl mg/L	Total Cl mg/L	Colour PCU	Cu mg/L	Fe mg/L	Mn mg/L	E.coli MPN
Standard	6.5 - 8.5	10 - 30	0.2 - 5.0	0.2 - 5.0	<15	<1	<0.3	<0.1	<1
April-21	7.9	25.9	0.4	0.6	1.3	0.002	<0.015	0.0002	<1
May-21	7.6	25.8	0.5	0.5	1.2	0.002	<0.015	<0.0002	<1
June-21	7.6	24.2	0.4	0.4	<1	0.005	0.016	0.0004	<1

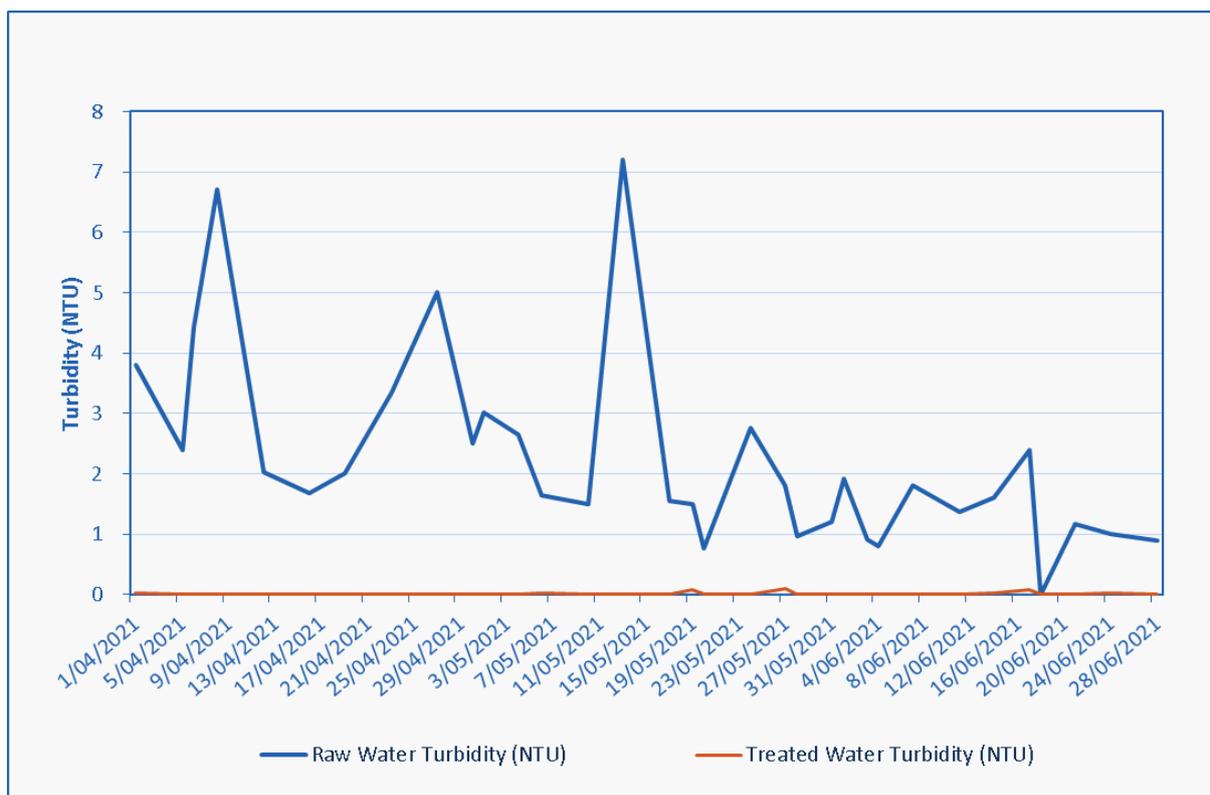


Fig 8. Turbidity trends at the Intake/Martin Creek intake and treated water at the Daintree Water Treatment Plant.

Wastewater

1. Wastewater reticulation services

General maintenance programs continued within the reticulation networks and 32 pump stations in the Mossman and Port Douglas catchments. Wastewater Treatment Plants operated within license requirements throughout this period.

Completed capital work projects include the replacement of the UV disinfection unit at the Port Douglas Wastewater Treatment Plant, installation of flow meters to pump stations, pump renewal program and the replacement of the mobile generator. The existing mobile generator was providing only half its capable output on load which couldn't run some of our high-power rated pumps. It also was a loud generator with inadequate sound proofing panels, the new soundproof 90kva mobile generator will be used to run sewer pump stations and wastewater treatment plant pumps during power failures and upgrades.

Most of the capital works projects within wastewater are progressing to be completed by the end of the 20/21 financial year. The Port Douglas Wastewater Treatment Plant diffusers are on track to be installed prior to 30 June; however, the blowers are delayed for delivery due to Covid restrictions.

Table 8 below shows the number of maintenance activities undertaken across all schemes.

Table 8. Wastewater Reticulation Services

	Port Douglas Catchment	Mossman Catchment
Pump Blockages	8	5
Sewer Chokes	2	0
Sewer Main Breaks	0	0
HCB Repairs (House Connection Branch)	8	2
Odour Complaints	1	0
Public Complaints	0	0
Reportable Incidents	1	0

2. Influent and irrigation flows

Port Douglas Wastewater Treatment Plant

A total of 314,782 kL of influent entered the Port Douglas Wastewater Treatment Plant during the reporting period. The average daily flow was 3,459 kL/day. Tanker truck contractors delivered 305 kL of septage to the plant and 3,245 kL 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 except for one breach of faecal coliforms during a high rain event. This event was reported to Department of Environment and Science with no further action. A total of 29% of the treated effluent was pumped to two resort golf courses for irrigation purposes and the remaining discharged into the Dickson Inlet. The Sheraton Mirage received 85,569 kL and Palmer Sea Reef received 12,550 kL of treated effluent during this period. Total rainfall on site during the reporting period was measured as 593 mm. On the 20th of April 2021, the highest rainfall on a day recorded was 211 mm at Port Douglas WWTP Digital rain gauge.

From December 2020, Queensland Health have commenced a state-wide wastewater surveillance program for COVID-19. The program is expected to run until end of 2021 and has strong support from the Chief Health Officer. The Wastewater team will be assisting Queensland Health by conducting weekly wastewater sampling from the Port Douglas Wastewater Treatment Plant. Results from the testing will be used within Queensland Health to inform public health efforts. COVID-19 was not detected at the Port Douglas Wastewater Treatment Plant since December and within this reporting period.

Daily inflows, outflows and recycled water supplied for the reporting period are presented in Fig 9 and 10 respectively.

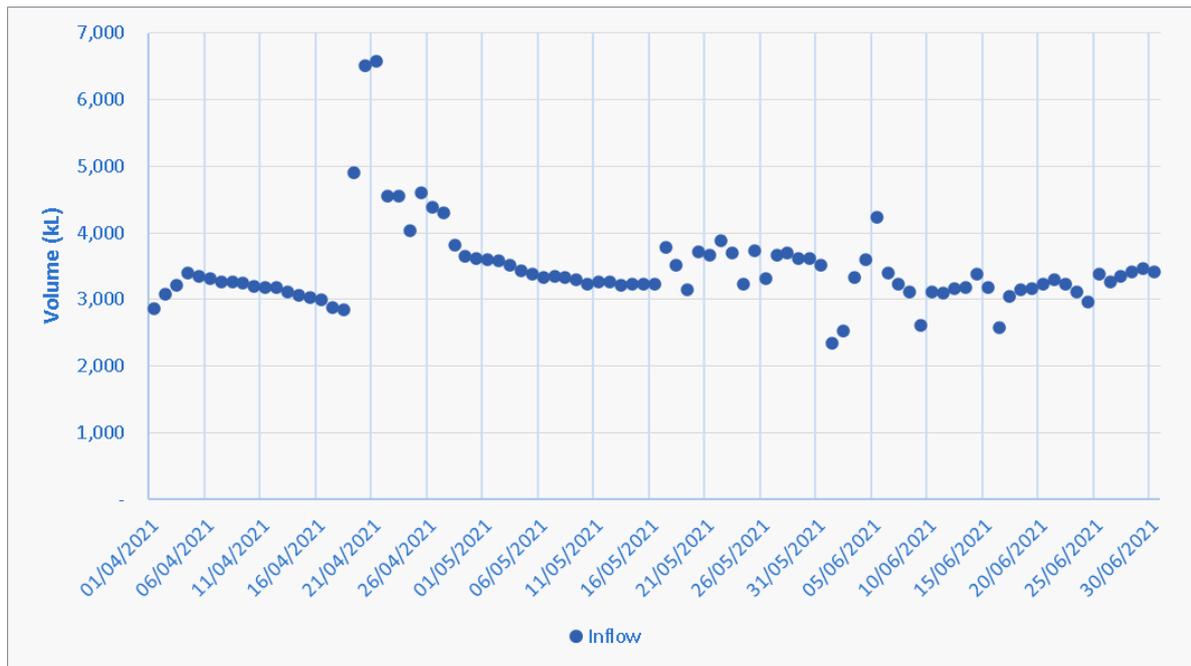


Fig 9. Port Douglas Daily Inflow

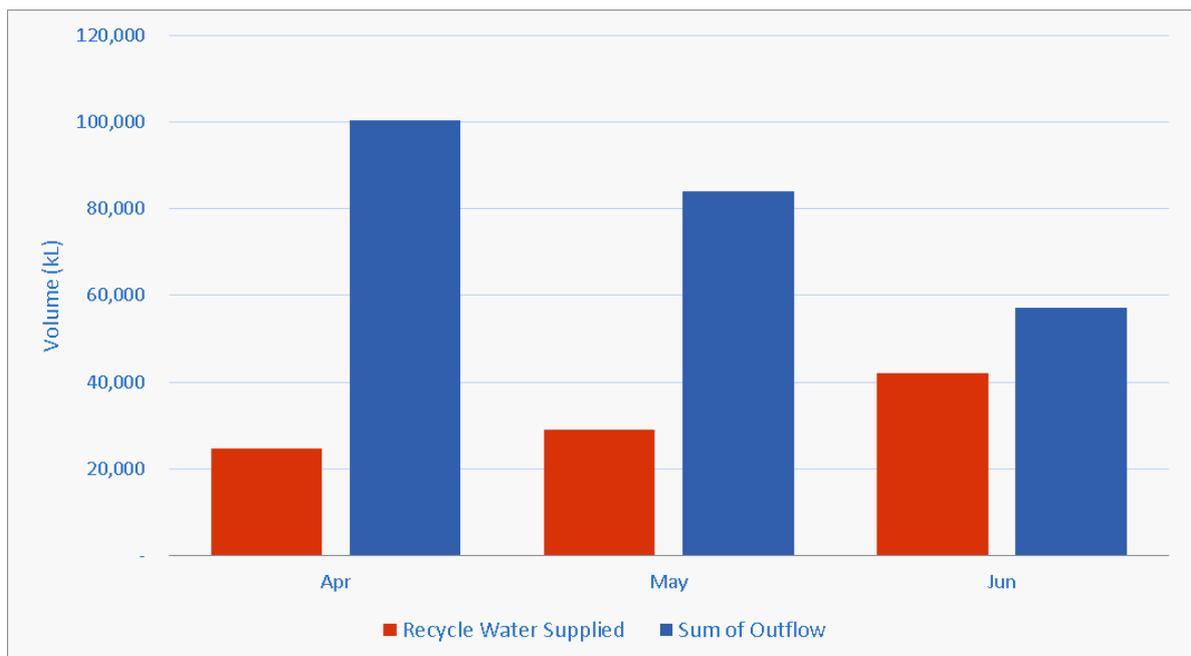


Fig 10. Port Douglas Total Monthly Outflow

Mossman Wastewater Treatment Plant

The Mossman Wastewater Treatment Plant received a total influent flow of 119,155 kL during the reporting period. The average daily flow was 1,309 kL/day. Influent is treated in an Oxidation Ditch system and compliant effluent is discharged into the Mossman River.

A total of 654 mm of rain fell on site for the reporting period with the highest daily rainfall measured at 224 mm on 20 April 2021 at Mossman Wastewater Treatment Plant.

Outflow and Inflow data for the reporting period are shown in Fig 11 and 12 respectively.

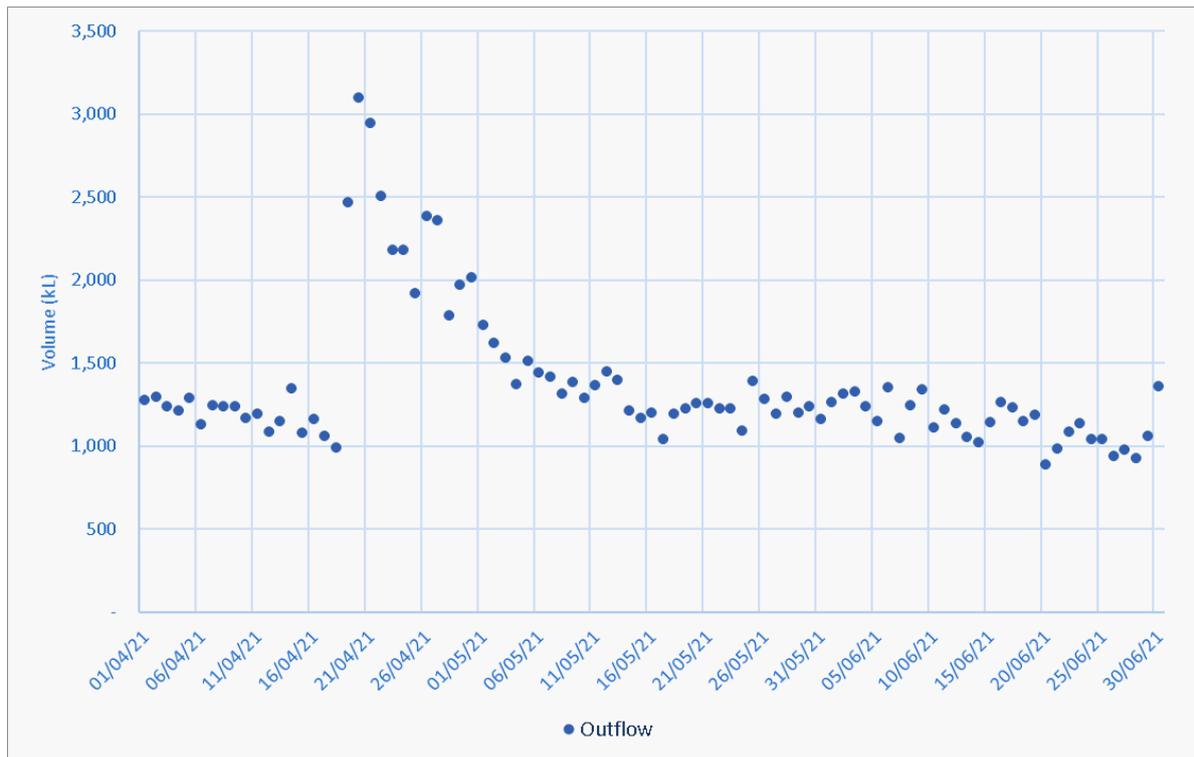


Fig 11. Mossman Wastewater Treatment Plant Daily Outflow

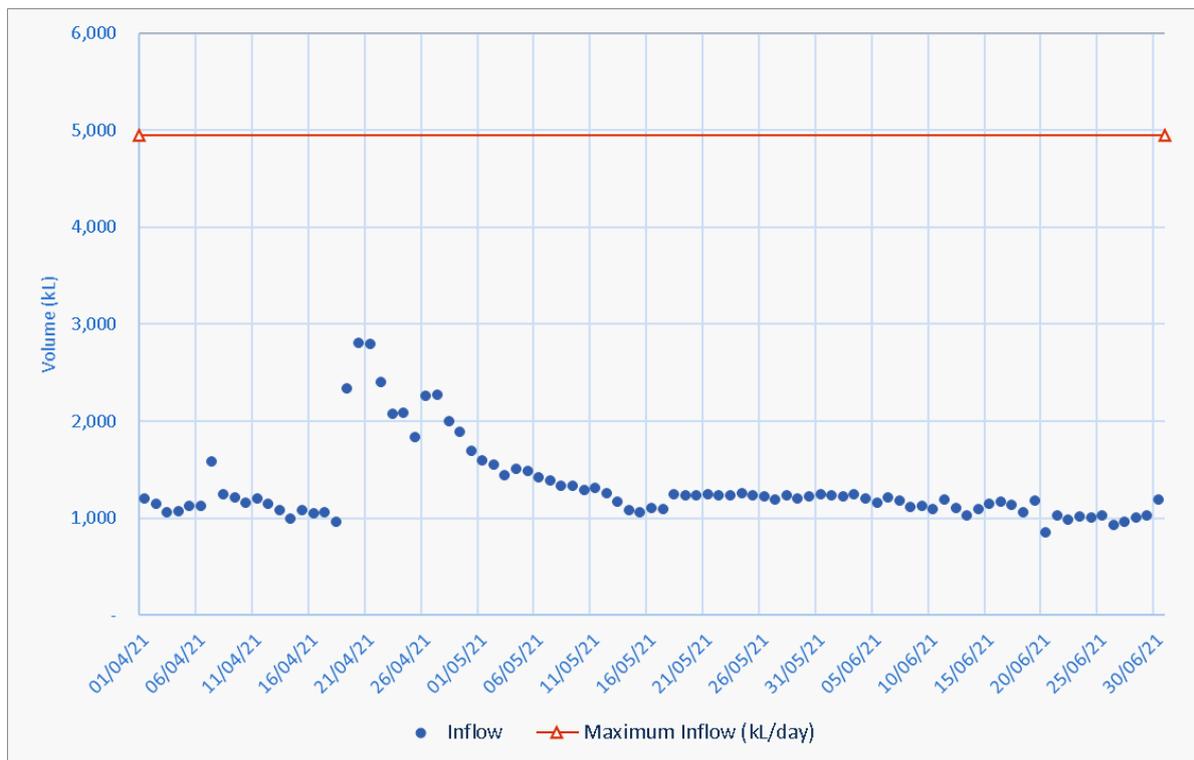


Fig 12. Mossman Wastewater Treatment Plant Total Daily Inflow

3. Bio-solids Production

Bio-solids were produced by the dewatering plants at Port Douglas Wastewater Treatment Plant (11.9% solids) and Mossman Wastewater Treatment Plant (12% solids) this quarter. 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, 655.78 tonnes of wet bio-solids were produced during the reporting period and sent to farms for beneficial reuse. This quantity of wet bio-solids equates to 77.99 dry tonnes.

The monthly bio-solids production trends can be seen in Figure 13.

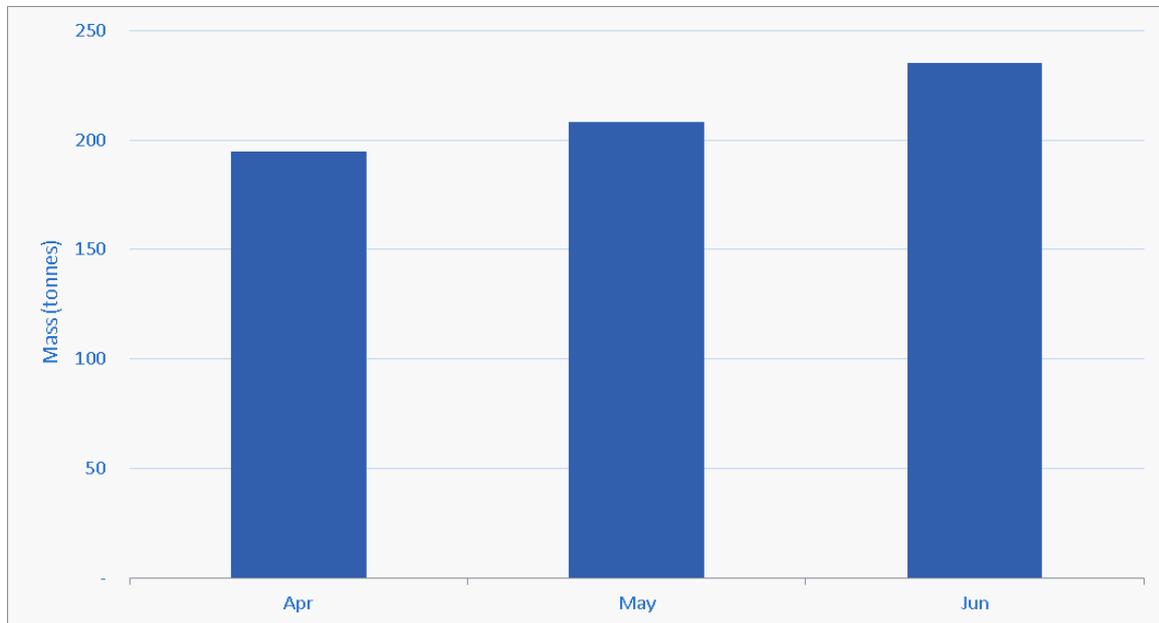


Fig 13. Port Douglas Wastewater Treatment Plant monthly bio-solids production 2021

Mossman Wastewater Treatment Plant

At Mossman Wastewater Treatment Plant, 74.2 tonnes of wet bio-solids were produced during the reporting period and sent to farms for beneficial reuse. This quantity of wet bio-solids equates to 8.9 dry tonnes.

The monthly bio-solids production trends can be seen in Figure 14.

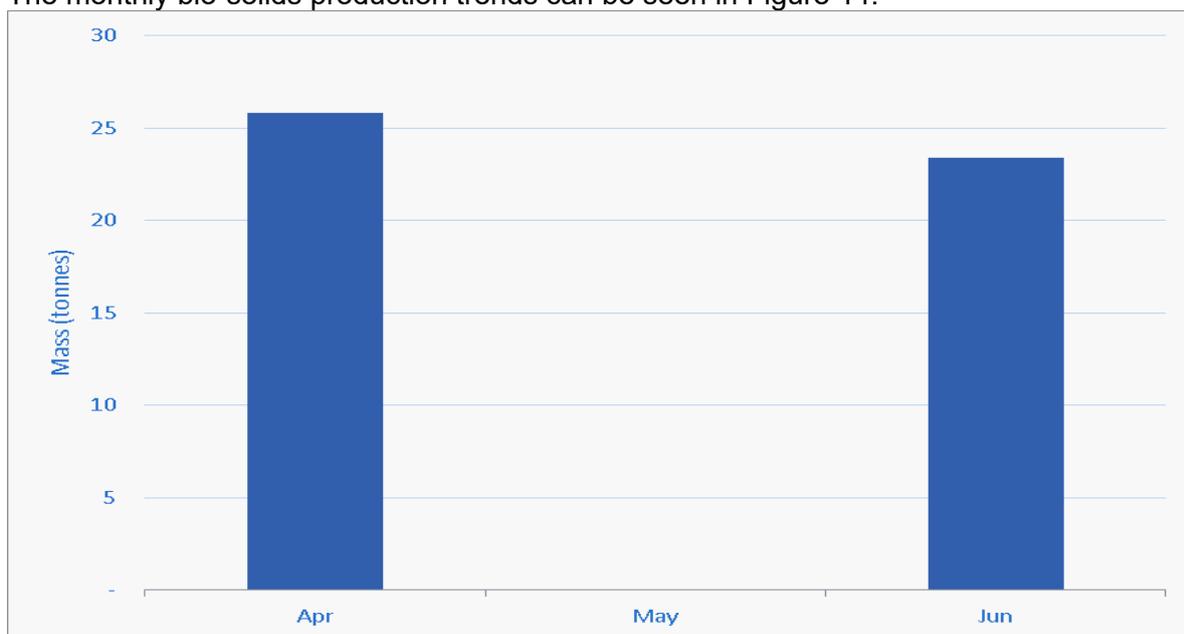


Fig 14. Mossman Wastewater Treatment Plant monthly bio-solids production (nil production in May 2021)

Effluent quality and compliance

During the reporting period compliance sampling was performed as per EPPR01790513 license conditions, see Table 9.

Table 9. Monitoring of contaminant releases to waters as per Environmental Authority EPPR01790513

Characteristics Determination	PDWWTP Frequency	MWWTP Frequency
5-day Biochemical Oxygen Demand	weekly	fortnightly
Suspended Solids	weekly	fortnightly
pH	weekly	weekly
Dissolved Oxygen	weekly	weekly
Ammonia Nitrogen	fortnightly	fortnightly
Total Nitrogen	fortnightly	fortnightly
Total Phosphorus as P	fortnightly	fortnightly
Oil and Grease	fortnightly	fortnightly
Faecal Coliforms (Organisms/100ml)	fortnightly	fortnightly
Free residual chlorine	-	fortnightly

Additionally, more samples are taken from the treatment processes, bio-solids, receiving waters and bores. Samples are tested by a NATA accredited laboratory for physical, chemical and microbiological parameters. All parameters tested during the reporting period from the Port Douglas and Mossman wastewater treatment plants were compliant.

Treatment process and compliance monitoring is carried out each day by in-house analyses of samples at the wastewater treatment 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, Total Suspended Solids, BOD₅ & Total Nitrogen) are shown in Figure 15, 16, 17, 18 & 19.



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

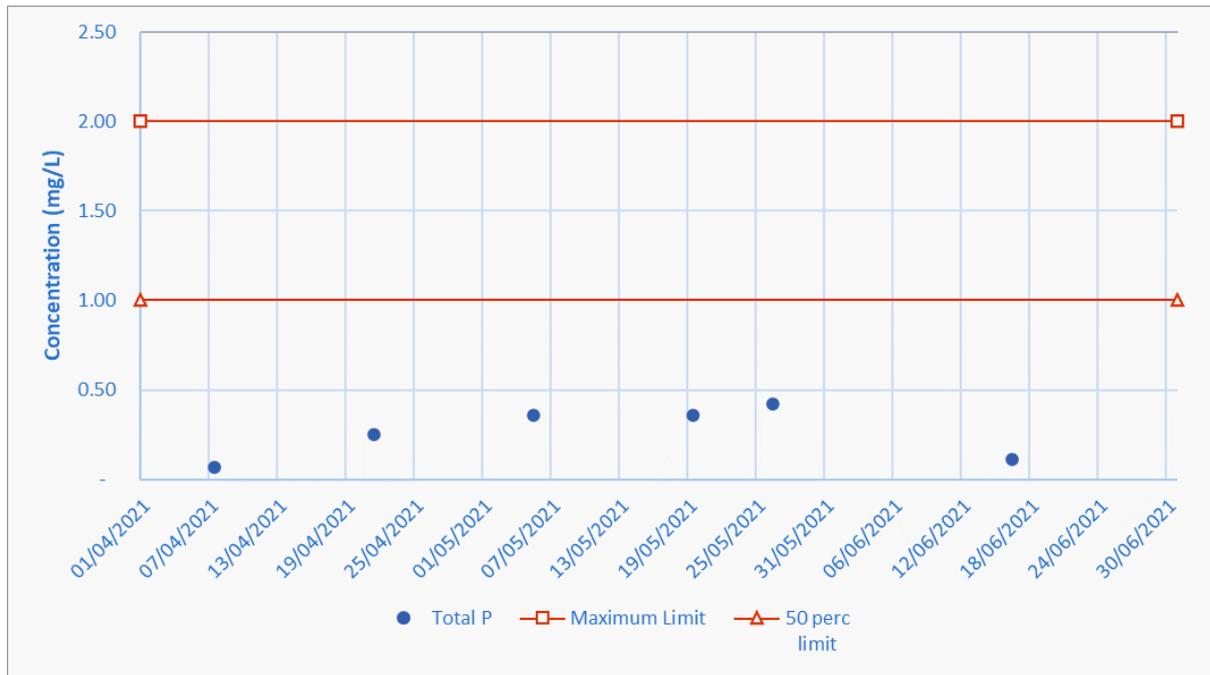


Fig 16. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Total Phosphorous

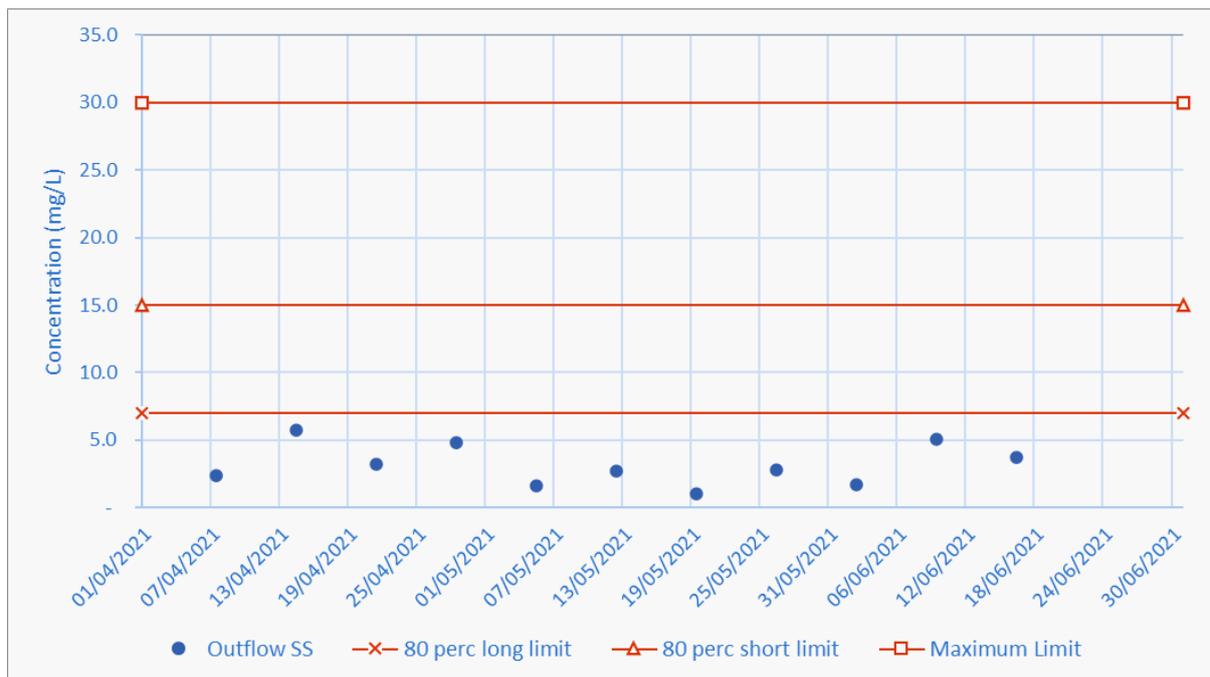


Fig 17. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Total Suspended Solids



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



Fig 19. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Total Nitrogen

Mossman Wastewater Treatment Plant

The results for final effluent key licence compliance parameters (Ammonia, Total Phosphorous, Total Suspended Solids, BOD₅ & Total Nitrogen) are shown in Figures 20, 21, 22, 23 & 24.

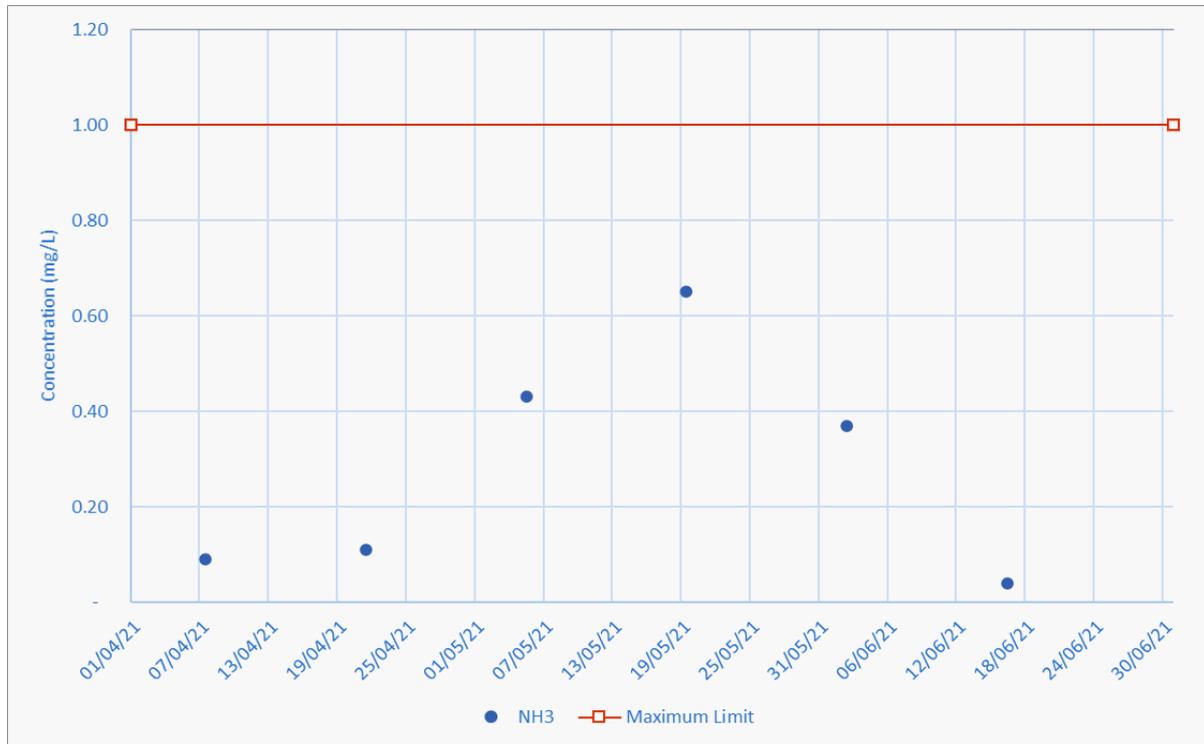


Fig 20. Mossman Wastewater Treatment Plant Final Effluent Test Results for Ammonia

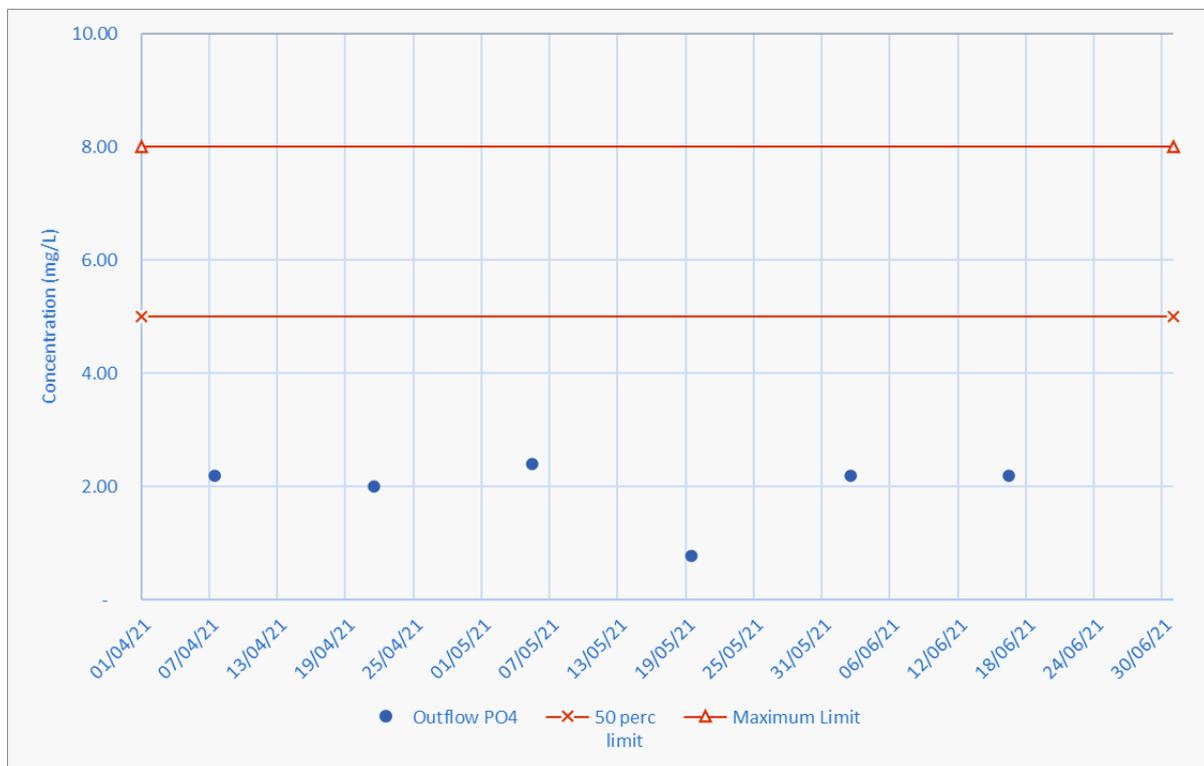


Fig 21. Mossman WWTP Final Effluent Test Results for Total Phosphorous

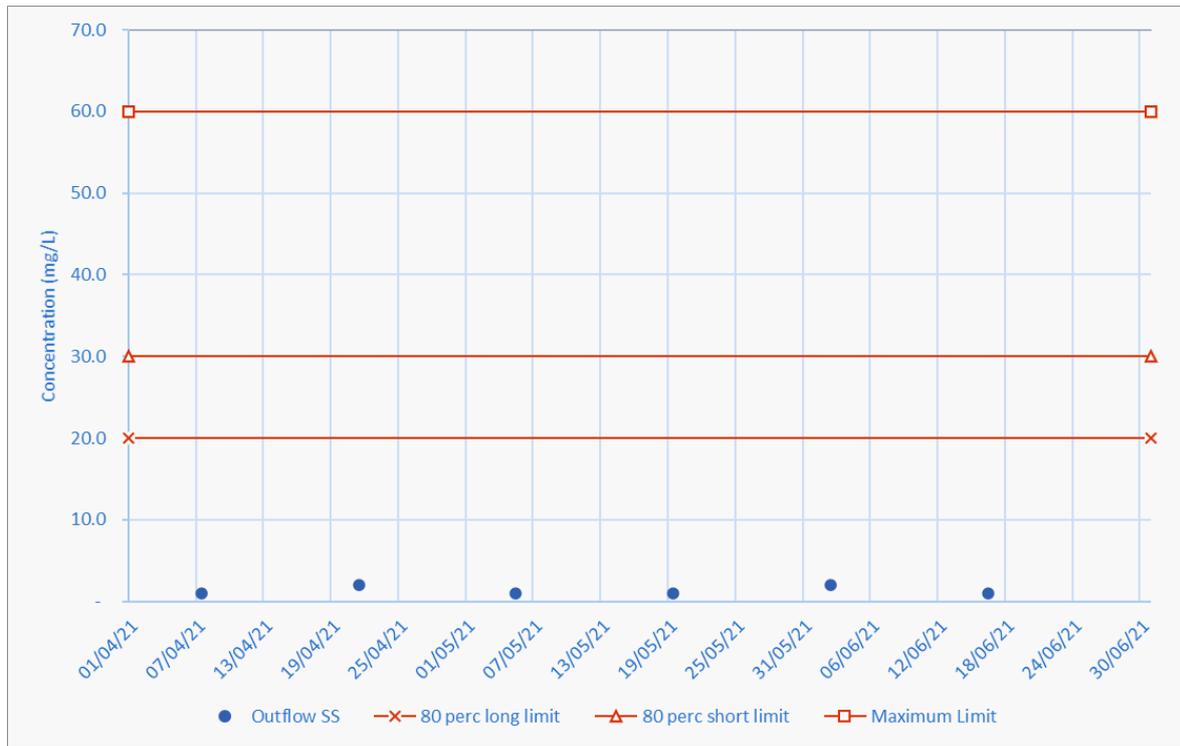


Fig 22. Mossman WWTP Final Effluent Test Results for Total Suspended Solids



Fig 23. Mossman Wastewater Treatment Plant Final Effluent Test Results for BOD₅ (Biochemical Oxygen Demand)

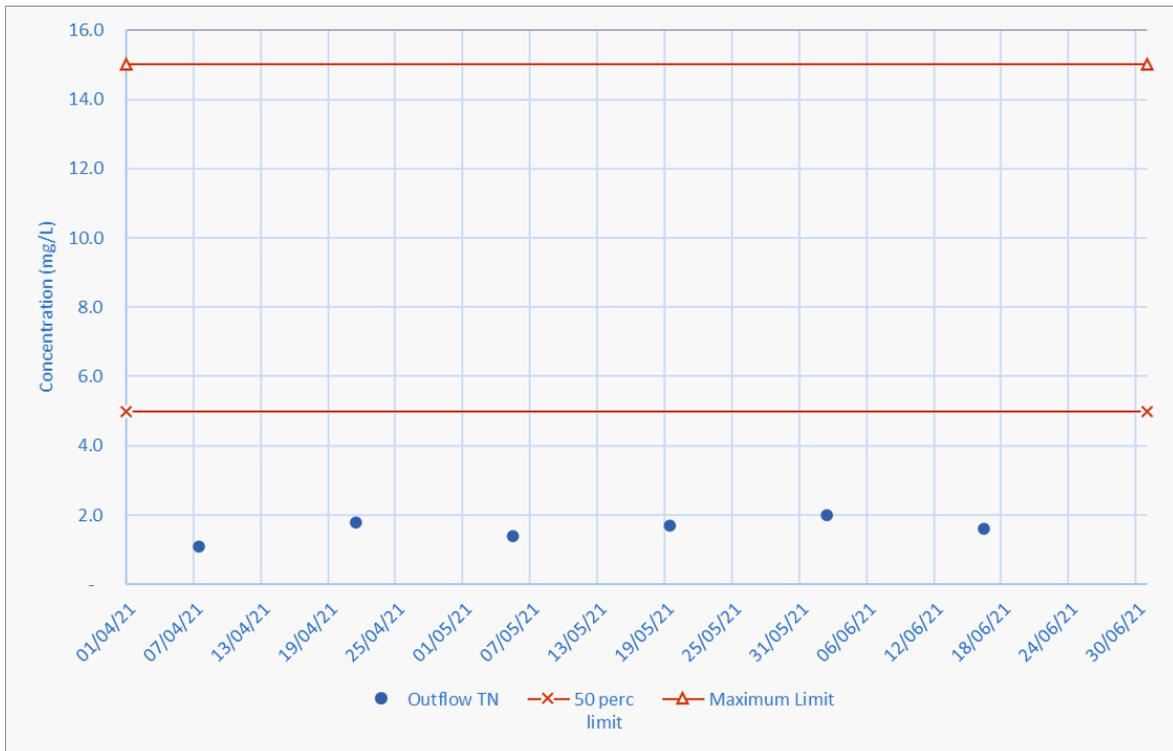


Fig 24. Mossman Wastewater Treatment Plant Final Effluent Test Results for Total Nitrogen