

### **5.3. WATER AND WASTEWATER QUARTERLY REPORT FOR THE PERIOD ENDING 31 DECEMBER 2021**

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<b>DEPARTMENT</b>	Water and Wastewater
<b>MANAGER</b>	Rachel Brophy, Chief Executive Officer

#### **RECOMMENDATION**

**That Council receives and notes the progress of the Quarterly Report of the Water and Wastewater department for the period ending December 2021.**

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#### **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 1 October to 31 December 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.

#### **BACKGROUND**

This report is the October to December Quarterly Report submitted by the Water and Wastewater department during the 2021/2022 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

<b>Economic:</b>	It is essential to adequately maintain water and wastewater infrastructure in order to provide satisfactory services in support of economic development in the Shire.
<b>Environmental:</b>	Failing to provide adequate and compliant water and wastewater services can lead to environmental harm and breaching of licence conditions.
<b>Social:</b>	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

Our visitors and residents deeply value the unparalleled environment in which we live. We recognise our responsibility in protecting and preserving our natural world for generations to come.

We understand the strong link between the environment and the economy: they are interdependent. Douglas Shire will be at the forefront of environmental protection by developing strategies, setting policies, and working with all stakeholders to become the envy of and to inspire locations across Australia and the World.

**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

Strong governance and financial management are the foundations of the way in which Council will conduct its business and implement the initiatives of the Corporate Plan.

**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 2021-2022 Actions:

**3.3.1** – Progress future water security infrastructure solution for secure water supply over the dry season to alleviate current and future water shortages. Perform feasibility analysis on all current proposed water security solutions including the alternate intake and bulk raw water storage solutions to determine most viable option that provides the best outcome for capital investment and water security then progress towards shovel ready stage.

**3.3.2** – Continue the rollout of smart water meters to move beyond Port Douglas and include Mossman and surrounding area.

## 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:

<b>Builder/Owner</b>	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.
<b>Regulator</b>	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

<b>Internal:</b>	Nil
<b>External:</b>	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.
<b>Community:</b>	Nil

## ATTACHMENTS

1. Water and Wastewater Quarterly Report for the period ending 31 December 2021  
[5.3.1 - 25 pages]

## 1 October to 31 December 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

The annual National Water Week event was held between 18-24 October this year. The theme was Caring for Water and Country and encouraged everyone to think about where water comes from, how we use it, and to be more aware of the impacts we all have on our environment that we rely on to support life every day. A display was set up in the Council foyer with lots of different pieces of useful information, including some posters showing the average rainfall and temperatures for Australia over 100+ years (*source - Bureau of Meteorology website*), and lots of activity sheets for our younger community members to take away to colour in/puzzle over. In addition to the foyer display, a couple of activities were held at the Mossman Library. The ultrafiltration cartridge display and supporting information was installed there, as well as some additional information as displayed in the Council foyer. The 'Our Precious Water' was played for anyone interested in learning more about how our great tasting water is sourced and eventually provided to consumers. An under 5s story time session was also held to talk about water, where it goes when the toilet is flushed, and the 3 Ps. The young audience loved the stories that Miss Ali read to them, and they were very keen to talk about what should and shouldn't be put down the toilet with Miss Marie (the grownups enjoyed this part too!).

During National Water Week, the second annual Water Night event was held on 21 October 2021. This event, delivered by Smart Approved WaterMark, encourages everyone to take a fresh look at how much they use their tap water by committing to only using a bucket of water over a twelve-hour period (with some exemptions). The event asks the public to register their involvement and includes some baseline questions on sign, and then post event report on how many times they reached for their tap and answer more questions about how they value water. The data for the night is still being processed, but there were many participants around Australia who signed up for this night. This is a fantastic initiative that helps promote more awareness around every day water use that is often taken for granted. The data from 2020 showed that many participants had been surprised at how often they reached for the tap

unnecessarily in a day and were determined to reduce this waste (see tap guard image for the type of physical reminder used)

All water events are great opportunities to encourage everyone to be more Water Wise and to acknowledge that fresh water is a very precious resource that we are very privileged to access easily from our taps. It helps to reinforce that Every Drop Counts.

Also during National Water Week, the Mossman Support Services held an open day. Various council staff from the Disaster team, Waste team, Library team and Water and Wastewater team, manned a stall at the event. Various water activities were offered to those attending the event, and there was a lot of interest in how to improve on water wise behaviour, rainwater tanks, how much fluoride was added to the reticulated potable water supply (none), and other great questions. Requests were also received for further material to look at which was provided after the event.



**Image 1: Water and Wastewater display set up in the Council foyer for Water Week October 2021**



**Image 2: Tap guard for a physical reminder not to use the tap for 12 hours during Water Night**

## **2. Water reticulation services**

General maintenance was carried out during the reporting period on all schemes, including on all intake valves. Reservoirs and pump stations were regularly inspected while flushing programs were completed on an 'as needed' basis to keep chlorine residuals within the acceptable limits.

To rectify a water leak on Mossman raw water main, contractors fitted an internal band to the raw water main at the Mossman WTP. The leak has been present for some years and took considerable effort to plan and repair. The repair included high risk entry into the pipe and alternate water distribution due to plant shut down during the works.

There were 12 new water service renewals and 213 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.

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

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

<b>Douglas Shire Reticulation (all schemes)</b>	
Settlement Meter Reads	215
New Water Services Connections	20
Service Repairs	131
Water Mains Repairs	25
Water service renewals	12
Water Quality Notifications (Complaints)	1(0)
Dial before you dig	213
Flushing Events: Mossman/Port Douglas/Cooya/ Newell	21
Flushing Events: Whyanbeel/Wonga	3
Flushing Events: Daintree	24

There was one water quality notifications during this reporting period. The customer was concerned about the safety of consuming water at their new residence. The staff investigated the situation and tested the water internally and within the Council's water network. The results indicated that the water quality was within the Australian Drinking Water guidelines and the water was found to be clean and clear during testing.

In preparation for the commencement of the Smart Water Meter (SWM) project, the Water Reticulation team started pre-works inspections of existing water meters in the Port Douglas area to resolve any potential issues that could prevent or delay the smart water meter installations when works start in early 2022. Residents have been helpful and cooperative with field staff and any concerns or questions raised have been responded to directly by the team or via Community Liaison Officer, who is assisting with enquiries for this project.

To assist with community education about smart water meters, some Frequently Asked Questions (FAQs) were uploaded to Council's website Smart Water Meter Program - Douglas Shire Council. In addition, a physical display involving some smart water meter technology and additional information was set up in the main foyer of the Council Administration building, as well as information displays being installed at the Mossman Library, and the Port Douglas Community Hall.

### **3. Water schemes and potable water consumption**

The Water and Wastewater Department implemented Level 1 water restrictions for all properties using the reticulated water supply within Douglas Shire on Wednesday 20 October 2021. The well-established dry season and lack of rain decreased Rex Creek Intake to 360mm on the day restrictions were implemented.



The Rex Creek Intake water level declined to 310mm at the end of October and middle of November, however had bursts of rainfall events since then. The highest rainfall event occurred on 18 November 2021 raising Rex Creek intake to 990mm. On 2 December 2021, the Water and Wastewater Department lifted Level 1 restrictions and implemented Level 0 community water conservation measures for the first time. The water conservation measures continued to promote water wise behaviour, but with much less restriction on use.

ENSO outlook was moved to La Niña by The Bureau of Meteorology, meaning that there is a higher possibility of an early rainfall onset for the 2021–22 season across most of Northern Australia. The latest rainfall outlooks from the Bureau reflect a seasonal signal that broadly resembles a typical La Niña rainfall pattern, with a high chance of above-median rainfall across much of eastern Australia, including Queensland.



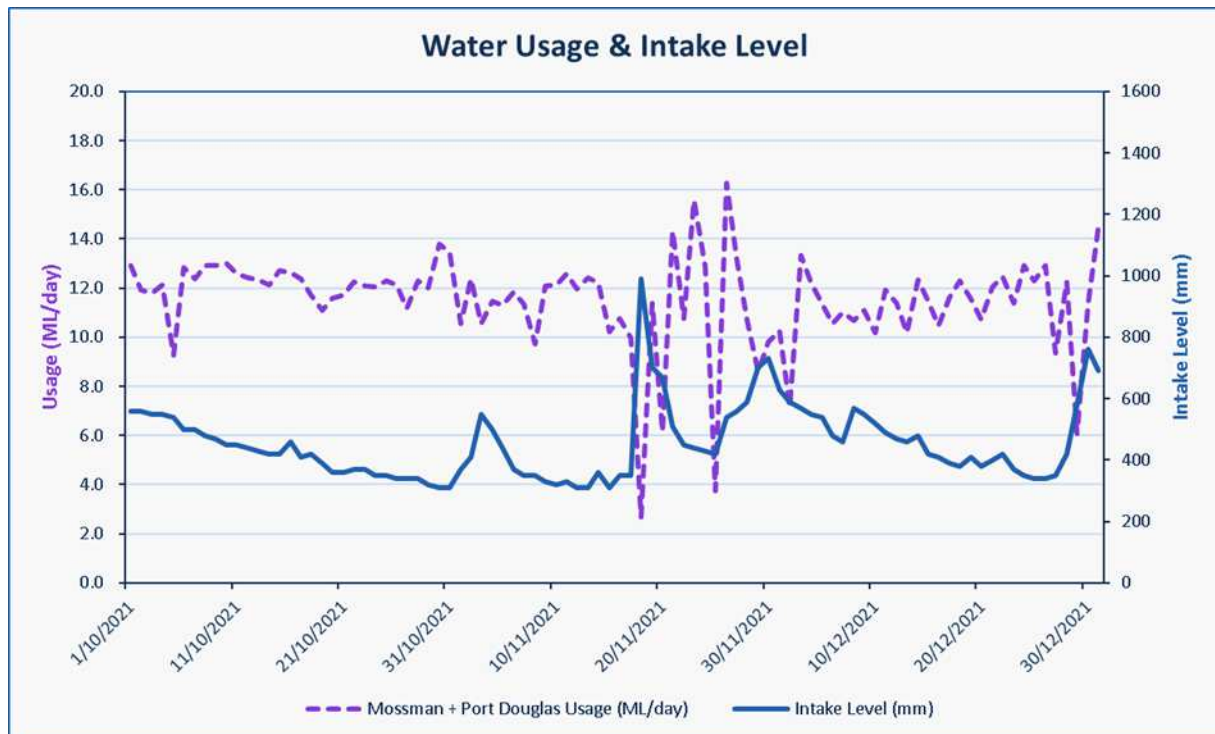
**Image 3: Rex creek intake – 18 November 2021 intake levels showing good levels.**

All intakes and reservoirs had adequate water supply during the reporting period, all water treatment plants met all demand requirements and performed well with no incidents.

The average water consumption for the months from October to December was 8.41 ML/day for the Port Douglas network and 2.81 ML/day for the Mossman network. The graph below displays the total water use between Mossman and Port Douglas networks and Rex Creek intake level during the reporting period.

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 October to 30 December 2021**

#### 4. All Schemes

Water quality operations within all schemes have been performing well throughout this reporting period although raw water turbidity during wet weather events has caused some water treatment plant shutdowns. All water scheme pump stations performed well with no incidents.

General maintenance was carried out during the reporting period on all schemes, including on all intake valves. Reservoirs and pump stations were regularly inspected while flushing programs were completed on an 'as needed' basis to keep chlorine residuals within the acceptable limits.

##### **Mossman/Port Douglas Scheme**

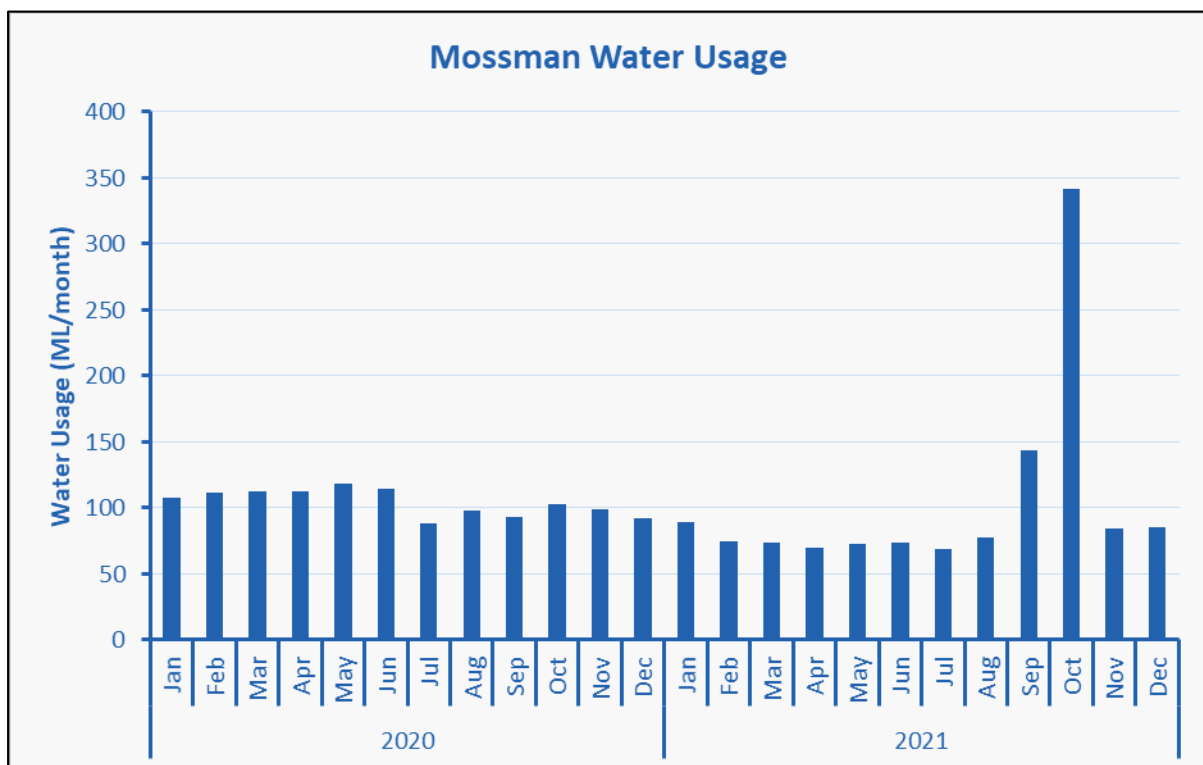
All operations were undertaken as well as all general service works, routine inspections and maintenance within the Mossman/Port Douglas Scheme. Mossman water treatment plant met all consumer demand requirements throughout this reporting period.

A contractor has been recommissioning the Craiglie Reservoir electrochlorination system to assess the functionality of the chlorination system in all scenarios, including during mains break situations and extended storage periods. During the reporting period, Craiglie reservoir was used as a supplementary supply via Crees Rd Reservoir which re-chlorinates the water to the required level prior to distribution. Until the functionality of the chlorination system is resolved to allow for direct distribution, Craiglie reservoir can continue to be used as supplementary supply via Crees Rd Reservoir.

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.

### Mossman Water Supply

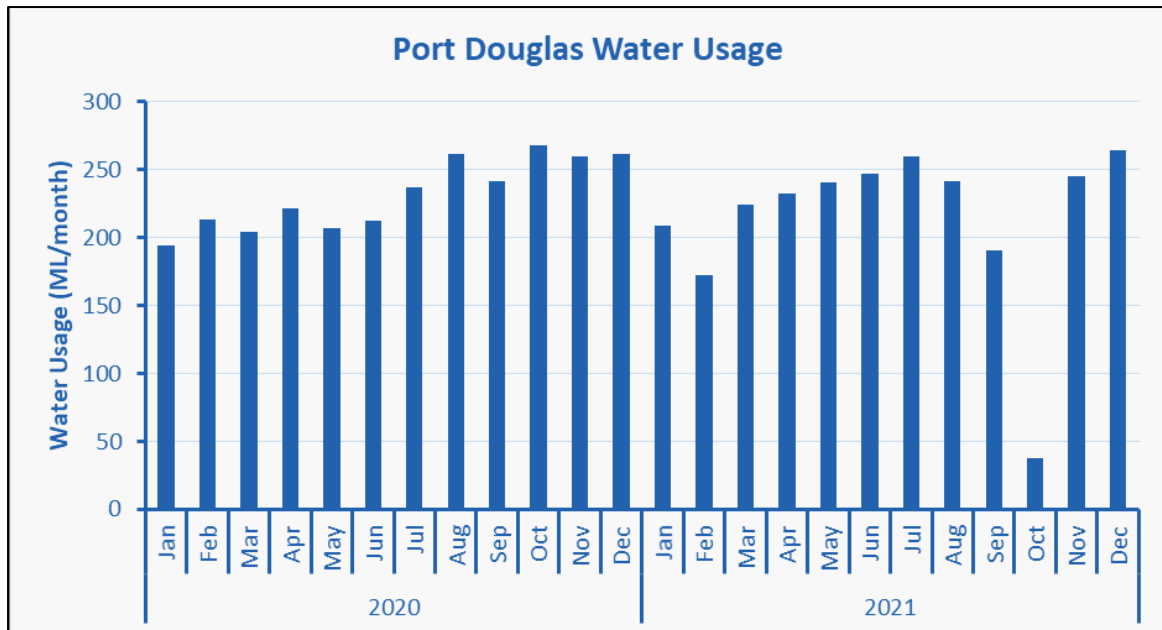
The total monthly consumption of water in Mossman, Cooya Beach and Newell Beach areas can be seen in Figure 2. Elevated consumption in September and October 2021 was due to a main break that resulted to a need to transfer treated water from the Mossman reservoir to both networks in Port Douglas and Mossman. Due to this, all water consumption was monitored through Mossman flow meter.



**Fig 2. Mossman Scheme Total Monthly Consumption Figures**

### Port Douglas Water Supply

The total monthly consumption of water in Port Douglas, Craiglie and Mowbray areas can be seen in Figure 3. Reduced consumption in September and October 2021 was due to a main break that resulted to a need to transfer treated water from the Mossman reservoir to both networks in Port Douglas and Mossman.

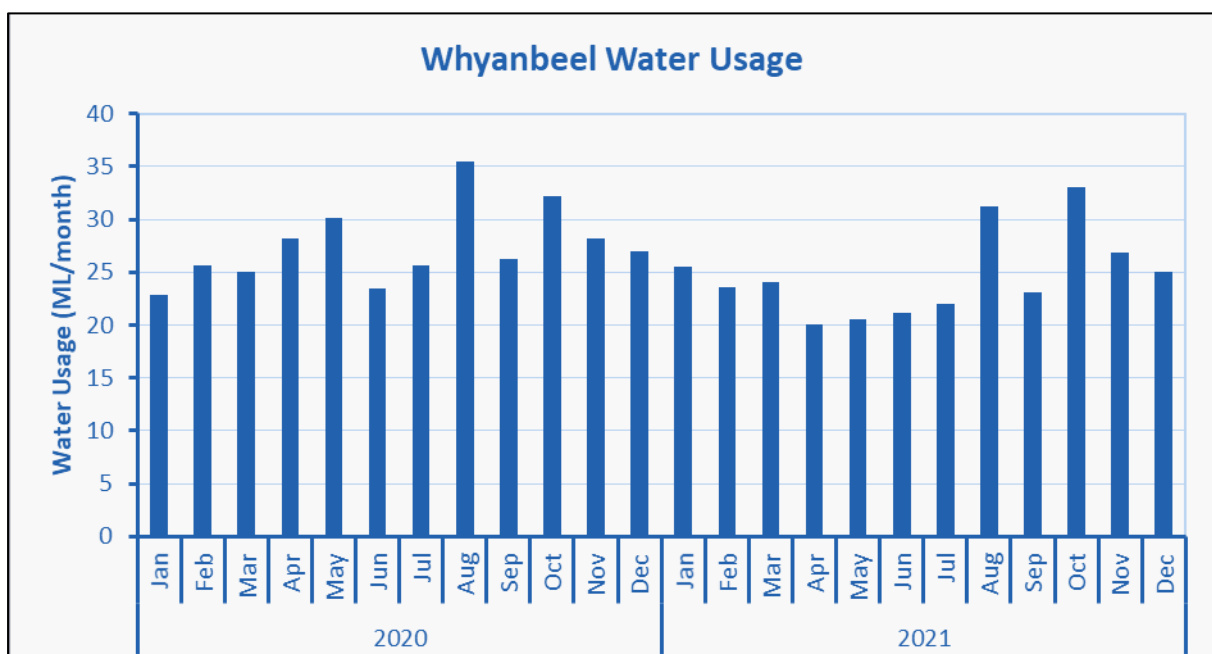


**Fig 3. Port Douglas Scheme Total Monthly Consumption Figures**

### Whyanbeel Scheme

Whyanbeel Water Treatment Plant met all demand requirements during the reporting period. There were no water quality reportable incidents in the Whyanbeel water scheme for the reporting period. CIP filter maintenance was carried out at the Whyanbeel and Mossman Treatment Plants.

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 together with general service and maintenance works.

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

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

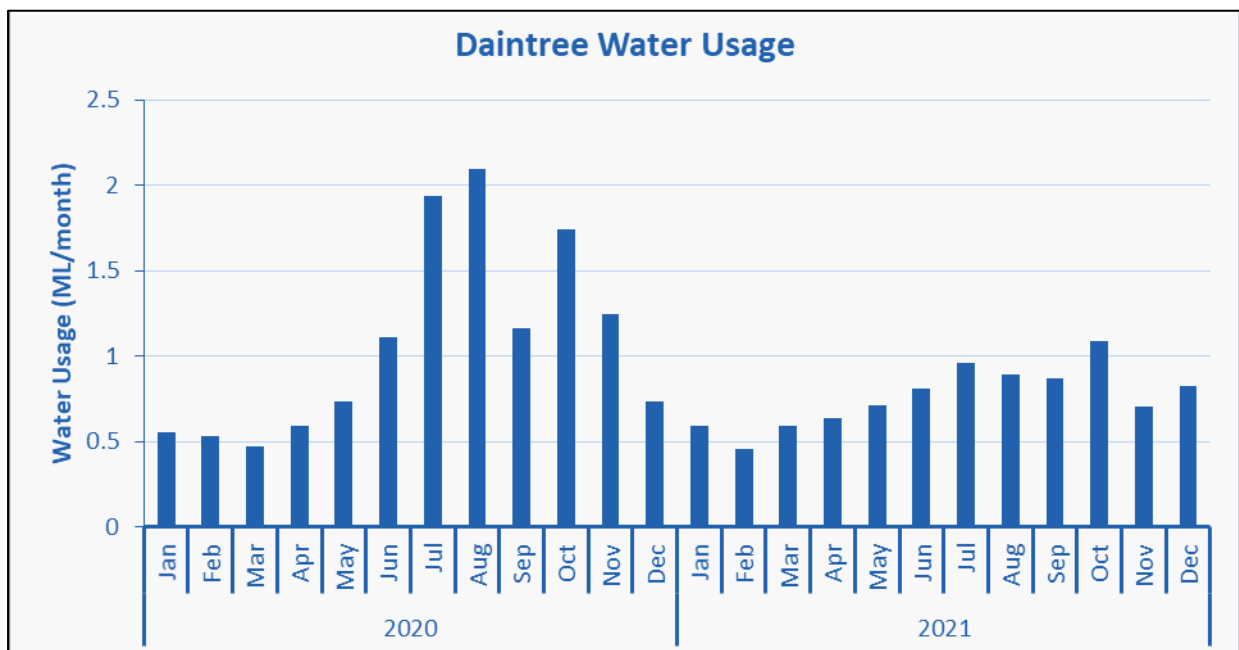


Fig 5. Daintree Scheme Total Monthly Consumption Figures

## 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 95 treated water E.Coli compliance samples were taken in the three drinking water schemes. A total of 48 E.Coli samples were tested in the Douglas water laboratory and 47 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.

In addition, raw water quality was monitored at all of the intakes and Daintree Bore site, including 12 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**

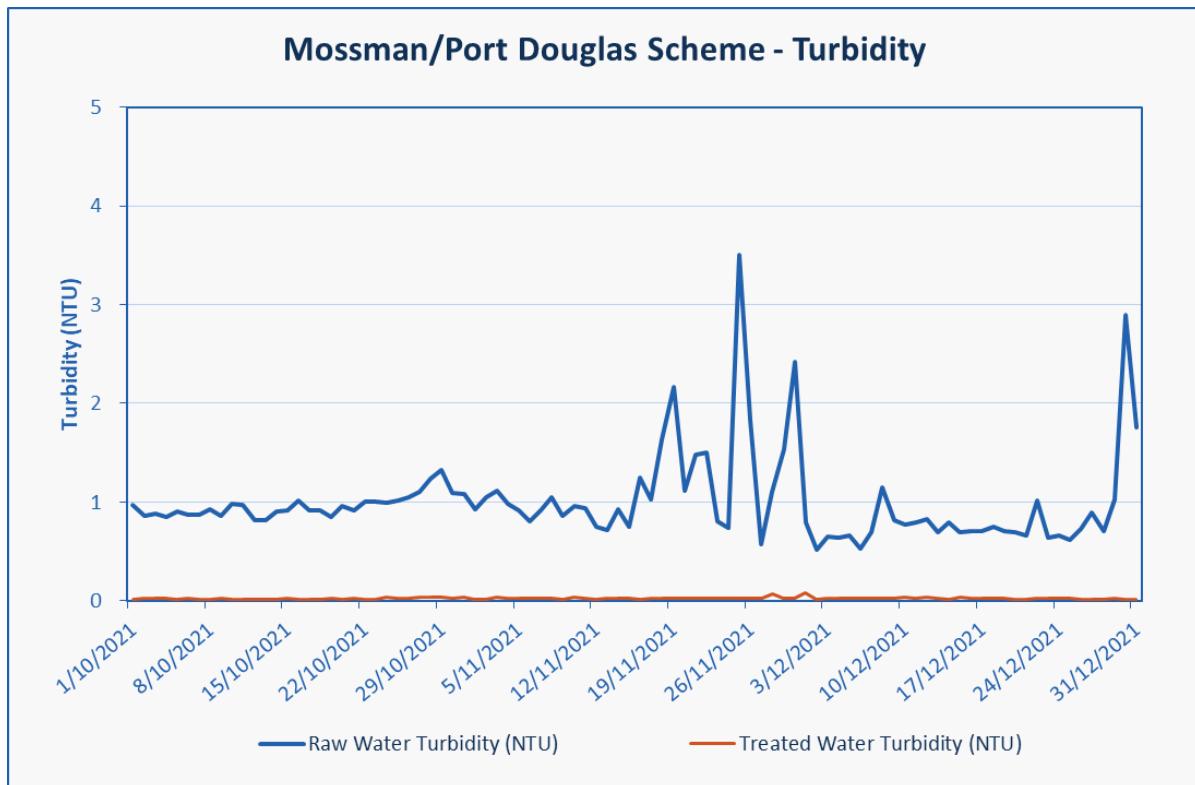
Average monthly values for key operational and compliance parameters are detailed in Tables 3 and 4 for treated water at Port Douglas Reservoirs and Port Douglas/Mossman Reticulation network respectively. Figure 6 indicates the daily turbidity trends at the intake and treated water as recorded at the Mossman Water Treatment Plant for the period October to December 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 <sub>3</sub> /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
Oct-21	7.5	27.0	9.7	1.0	1.1	<1
Nov-21	8.0	28.3	11.0	1.0	1.0	<1
Dec-21	7.5	28.5	11	1.1	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 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
Oct-21	7.1	27.5	0.9	0.9	<1	0.008	0.003	<0.0002	<1
Nov-21	7.0	28.6	0.6	0.6	<1	0.010	0.006	<0.0002	<1
Dec-21	7.0	28.7	0.7	0.8	2	0.011	0.005	0.008	<1



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

### Whyanbeel Supply Scheme

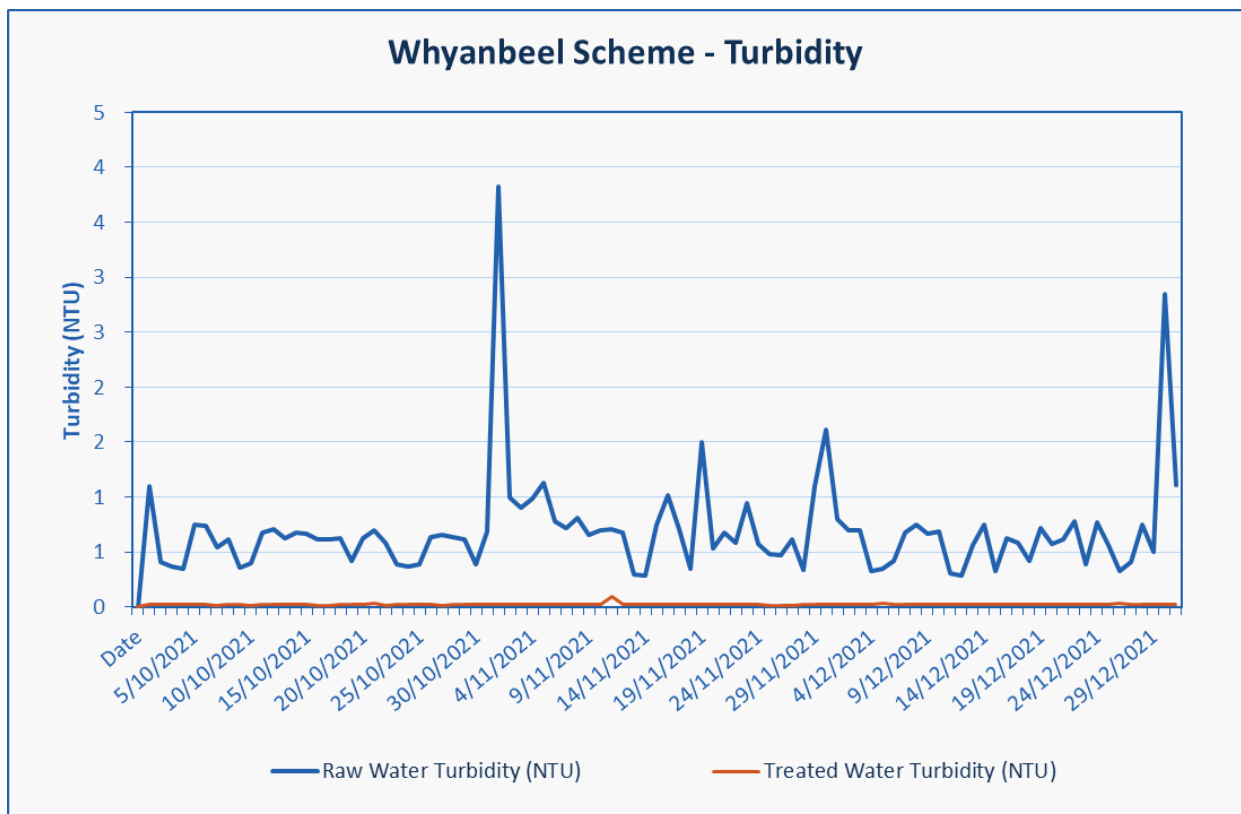
Average monthly values for key operational and compliance parameters are detailed in Tables 5 and 6 for treated water at the Whyanbeel Reservoir and Whyanbeel Reticulation Network respectively. Figure 7 indicates the daily turbidity trends at the intake and treated water as recorded at the Whyanbeel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

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

Month	pH	Temp °C	Total Alkalinity mg CaCO <sub>3</sub> /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
Oct-21	8.2	28.2	10	0.9	0.9	<1
Nov-21	8.1	29.2	11	1.0	1.0	<1
Dec-21	8.3	29.2	13	1.0	1.0	<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
Oct-21	7.8	27.3	0.9	0.9	<1	0.009	<0.015	<0.0002	<1
Nov-21	7.7	28.3	0.8	0.8	<1	0.009	<0.015	<0.0002	<1
Dec-21	7.8	28.1	0.8	0.8	1	0.006	<0.015	<0.0002	<1



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

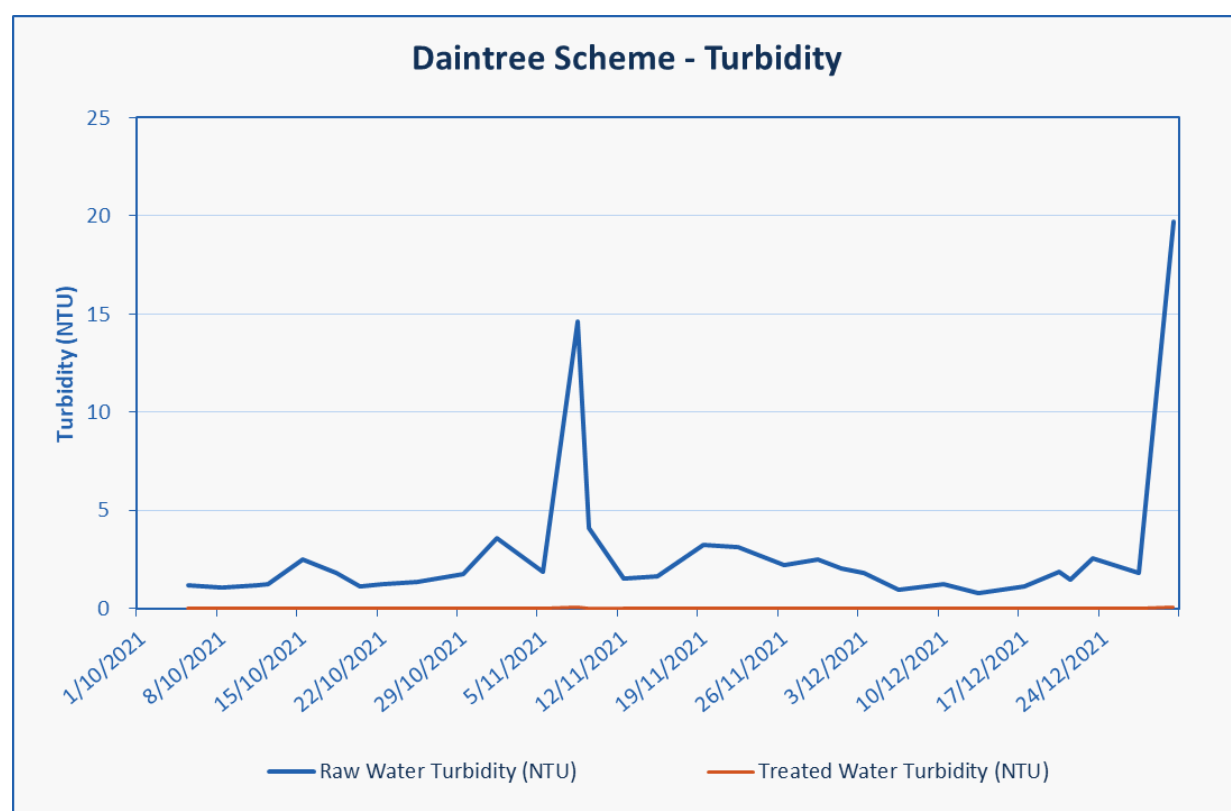
### Daintree Supply Scheme

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 October to December 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
Oct-21	7.7	26.8	1.0	1.0	<1	0.003	<0.015	0.0002	<1
Nov-21	7.7	27.9	0.9	1.0	<1	0.004	<0.015	0.0002	<1
Dec-21	7.8	28.1	0.9	0.9	1	0.008	0.016	0.0006	<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 on the reticulation networks and 32 pump stations in the Mossman and Port Douglas catchments. Wastewater Treatment Plants operated with in license requirements throughout this heavy tourist period.

Capital works programs during the reporting period for the Wastewater Department included:

- Manhole Raising Project - this project focused on Cooya Beach Estate and involved finding manholes and manufacturing and installing risers to allow access to sewer mains and effective rectification of blockages, as well as identifying the integrity of the sewer mains.
- A new auto sampler for Mossman Wastewater Treatment Plant was procured as part of the capital program.
- The refurbishment of the odour control unit continued at Port Douglas WWTP. The roof on the odour control unit was lifted off for easy removal of the old bark and zeolite along with the false flooring system, this work was completed by an excavator. The Wastewater team installed new flooring and replaced pine ark within the odour control unit. The false floor system allows foul air from the inlet works to be delivered through pipework and under the false floor through to the pine bark bed. The air with high hydrogen sulphide (H<sub>2</sub>S) content moves through the bark bed where microorganisms break down the odour, utilising biological gas treatment and eliminating odours to the surrounding environment.
- The Wastewater team replaced and replenished continuous backwash filter sand at Port Douglas Wastewater Treatment Plant. During the process, backwash air sparge stainless steel line was removed, inspected for wear and replaced where necessary.

Table 8 below shows the number of sewer reticulation activities and complaints across the wastewater schemes.

**Table 8. Wastewater Reticulation Services**

	<b>Port Douglas Catchment</b>	<b>Mossman Catchment</b>
Pump Blockages	11	1
Sewer Chokes	1	0
Sewer Main Breaks	0	0
HCB Repairs (House Connection Branch)	1	0
Odour Complaints	0	0
Public Complaints	0	0
Reportable Incidents	0	0

## **2. Influent and irrigation flows**

### **Port Douglas Wastewater Treatment Plant**

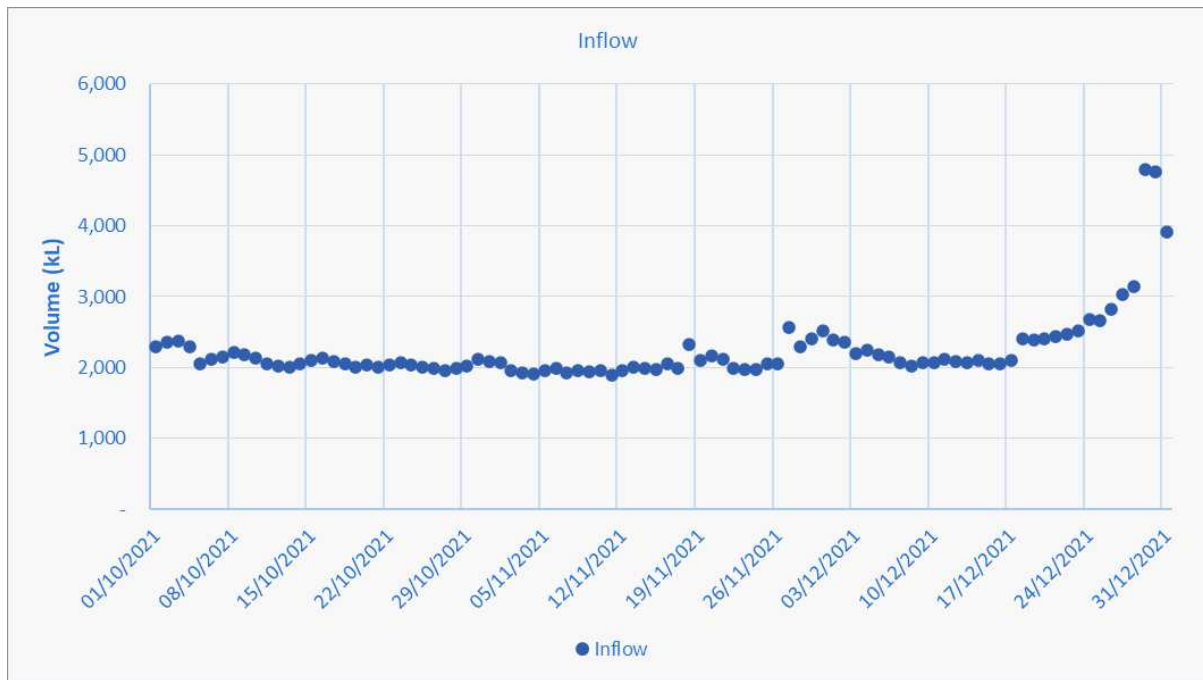
A total of 205,879 kL of influent entered the Port Douglas Wastewater Treatment Plant during the reporting period. The average daily flow was 2,238 kL/day. Tanker truck contractors delivered 448 kL of septage to the plant and 828 kL of Leachate from the Killaloe Landfill and Transfer Station. Influent is treated in a Sequencing Batch Reactor (SBR) which produced compliant effluent during the reporting period. A total of 72% 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 102,778 kL and Palmer Sea Reef received 60,500 kL of treated effluent during this period. Total rainfall on site during the reporting period was measured as 531.5 mm. On 30th December of 2021, the highest rainfall on a day recorded was 133 mm at PDWWTP.

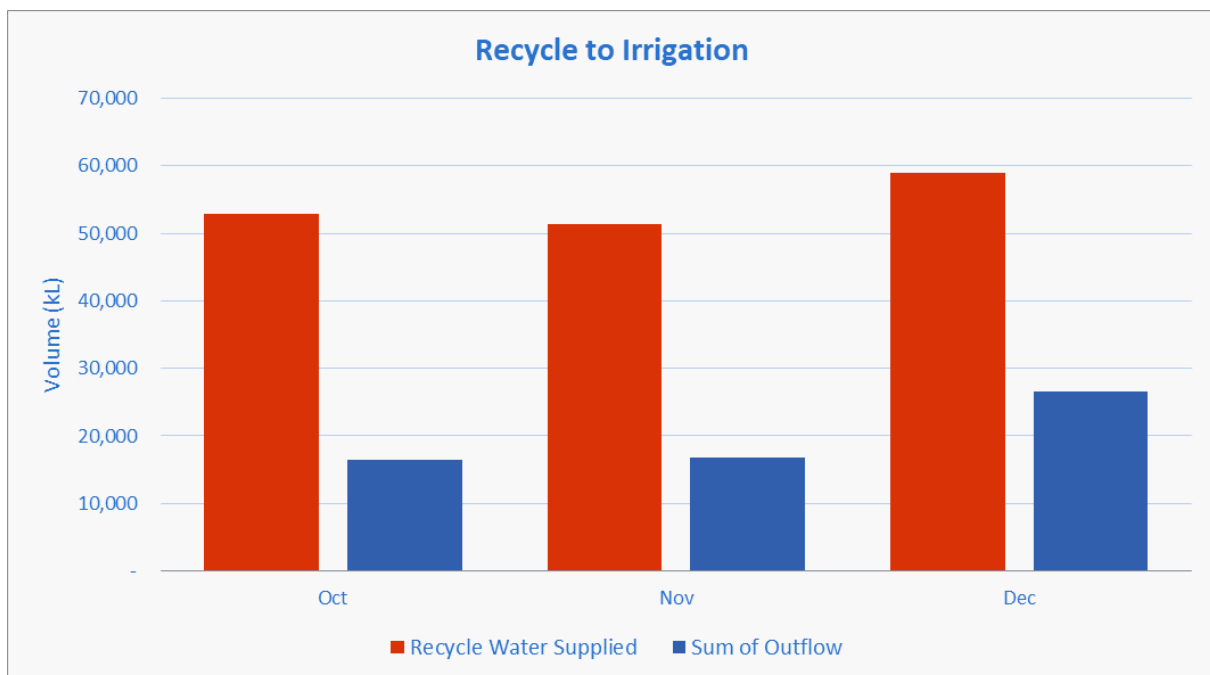
The current COVID-19 safe workplace update within this reporting period has continued with staff within wastewater adhering to the social distancing rules, wearing masks in indoor places and in vehicles as required. The Wastewater team have responded to the pandemic virus COVID-19 by splitting the workforce into two teams to minimise risk to workers, maintain community safety and ensuring essential services are being delivered.

In December 2020, Queensland Health commenced a state-wide wastewater surveillance program for COVID-19. The program finished at the end of 2021 while having a strong support from the Chief Health Officer. Wastewater at both Mossman and Port Douglas wastewater treatment plants was tested under COVID-19 surveillance program. COVID-19 was not detected from our wastewater treatment plants in the reporting period. Our Wastewater team collected samples for the program that was delivered by Queensland Health with the aim of the program to assist the community by providing early warning signs of COVID-19 in the area. With the fast-changing COVID-19 situation, QLD Health has advised that the sampling is no longer needed, and the collection of wastewater samples has now ceased.

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**



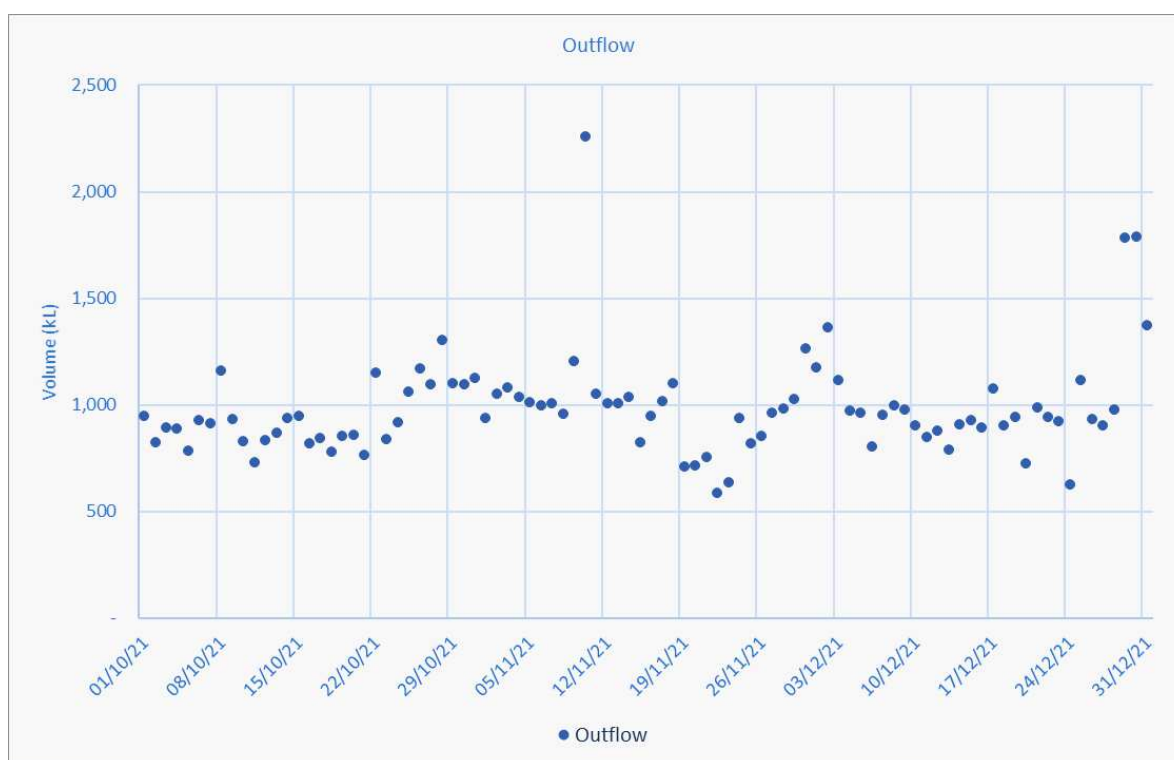
**Fig 10. Port Douglas Total Monthly Outflow**

### **Mossman Wastewater Treatment Plant**

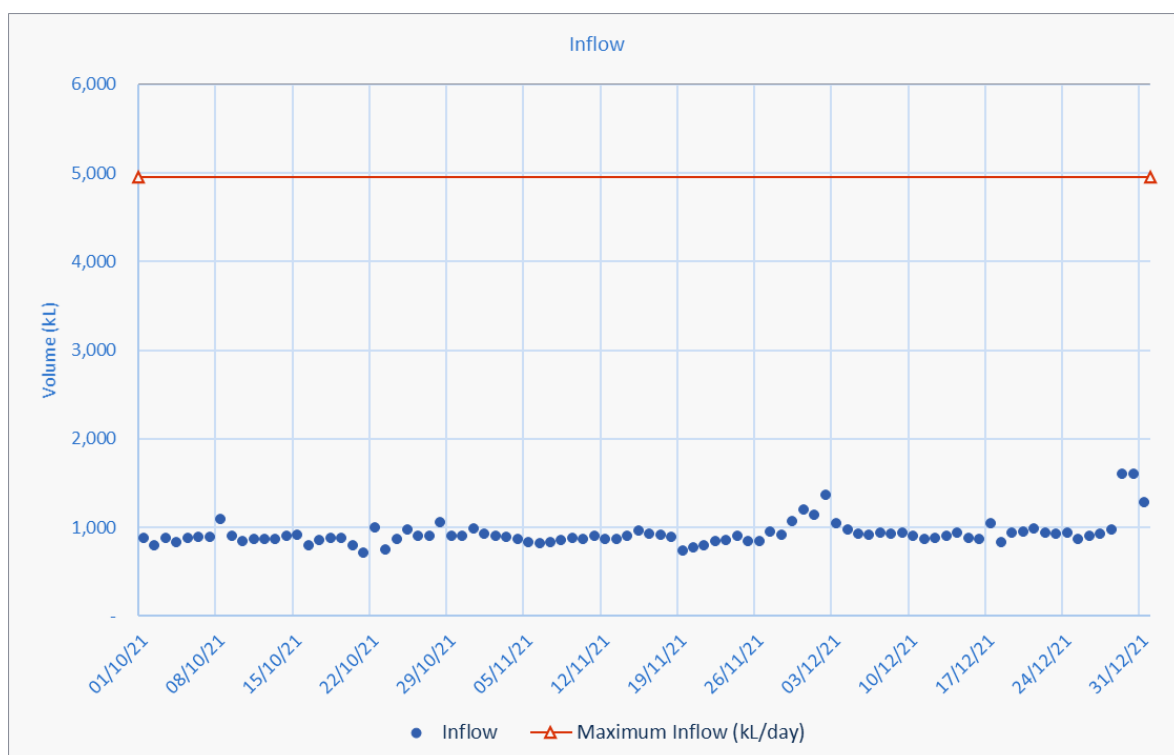
The Mossman Wastewater Treatment Plant received a total influent flow of 84,861 kL during the reporting period. The average daily flow was 922 kL/day. Influent is treated in an Oxidation Ditch system and compliant effluent is discharged into the Mossman River.

A total of 515.5 mm of rain fell on site for the reporting period with the highest daily rainfall measured at 119 mm on 30th of December 2021 at MWWTP.

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**

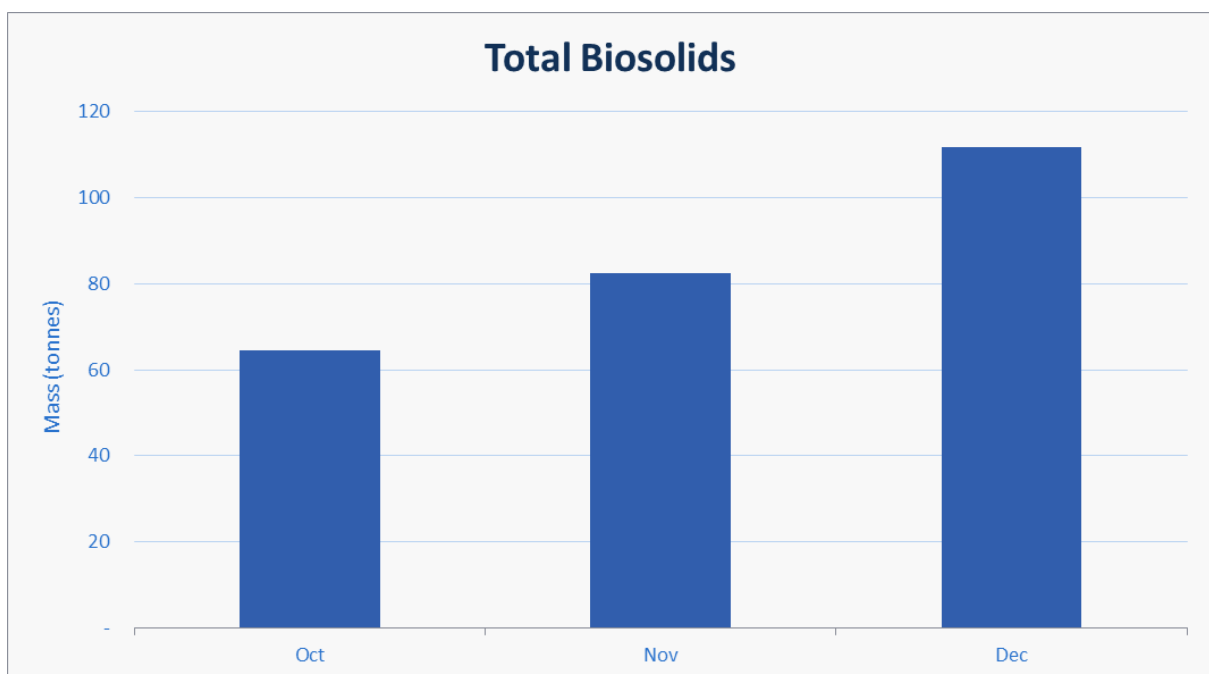
### 3. Bio-solids Production

Bio-solids were produced at the dewatering plants at Port Douglas Wastewater Treatment Plant (11% solids) and Mossman Wastewater Plant (10% 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, 288.71 tonnes of wet bio-solids were produced during the reporting period and sent to farms for beneficial reuse. This amount of wet bio-solids equates to 31.76 dry tonnes.

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

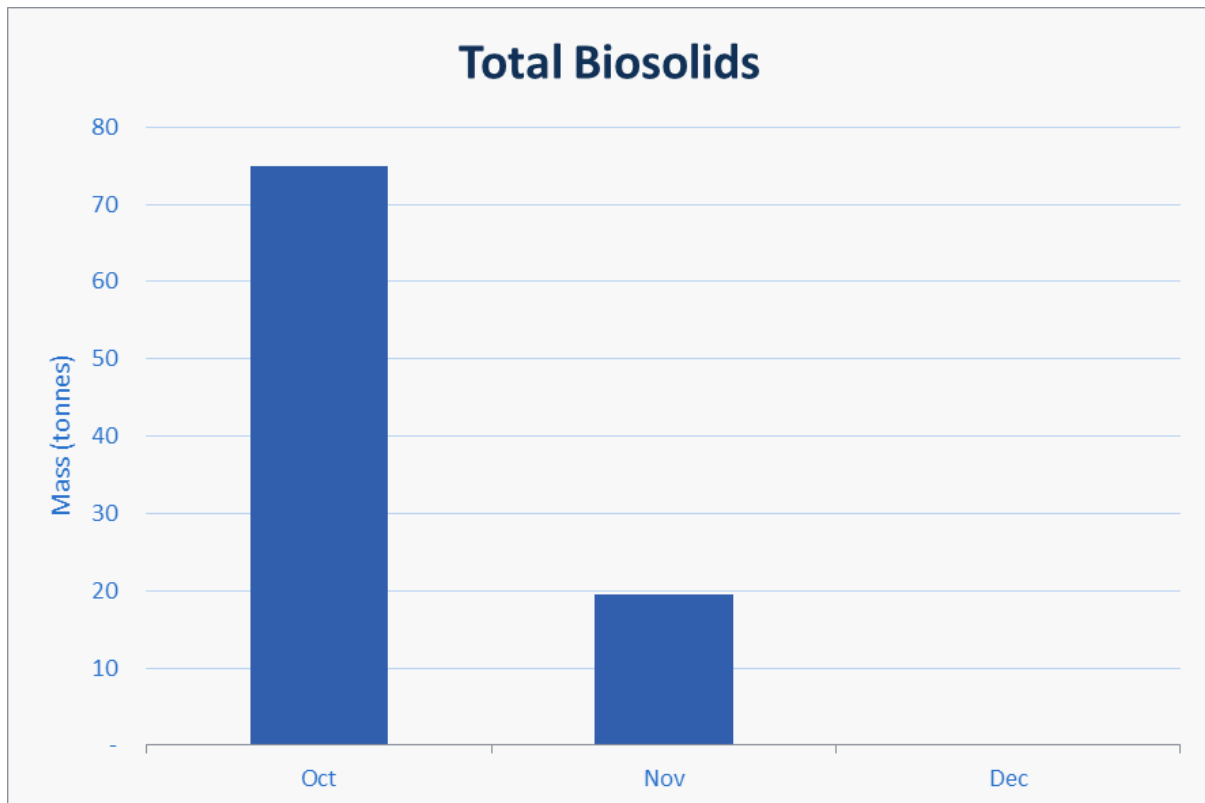


**Fig 13. Port Douglas Wastewater Treatment Plant monthly bio-solids production 2021**

#### Mossman Wastewater Treatment Plant

At Mossman Wastewater Treatment Plant, 94.51 tonnes of wet bio-solids were produced during the reporting period and sent to farms for beneficial reuse. This amount of wet bio-solids equates to 9.45 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 December 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

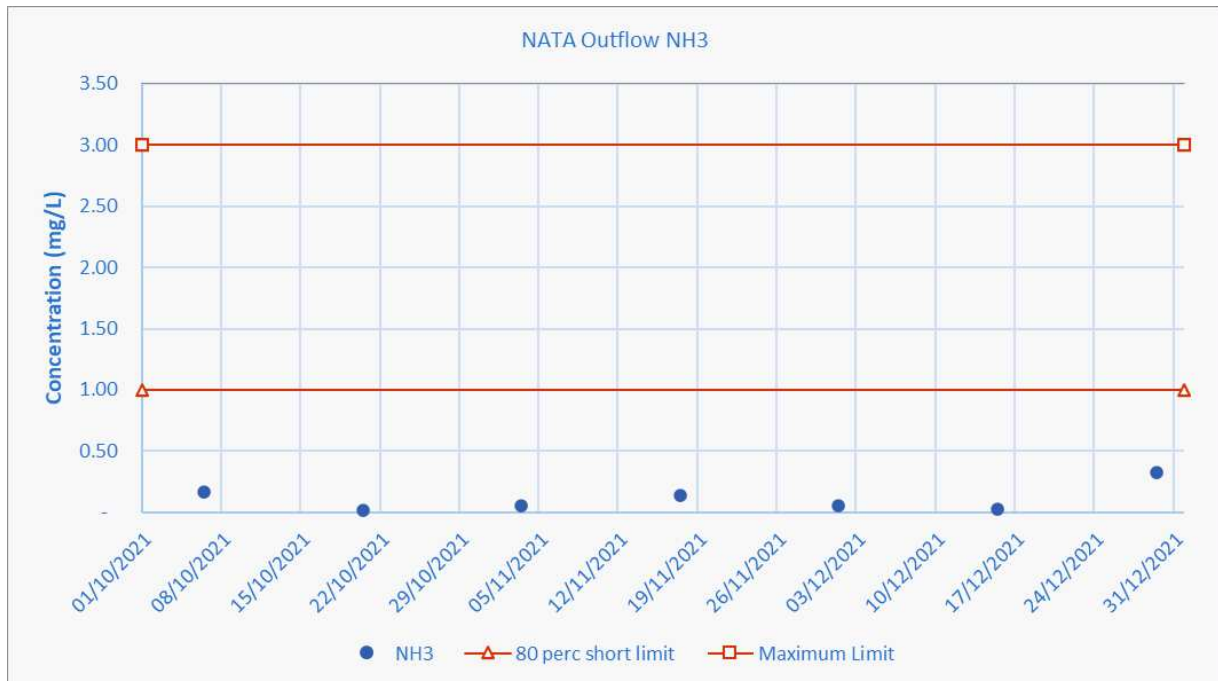
Additionally, more samples are taken from the treatment processes, bio-solids, receiving waters and bores. Samples are tested by a NATA accredited laboratory for physical, chemical and microbiological parameters. All parameters tested during the reporting period from the Port Douglas and Mossman wastewater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

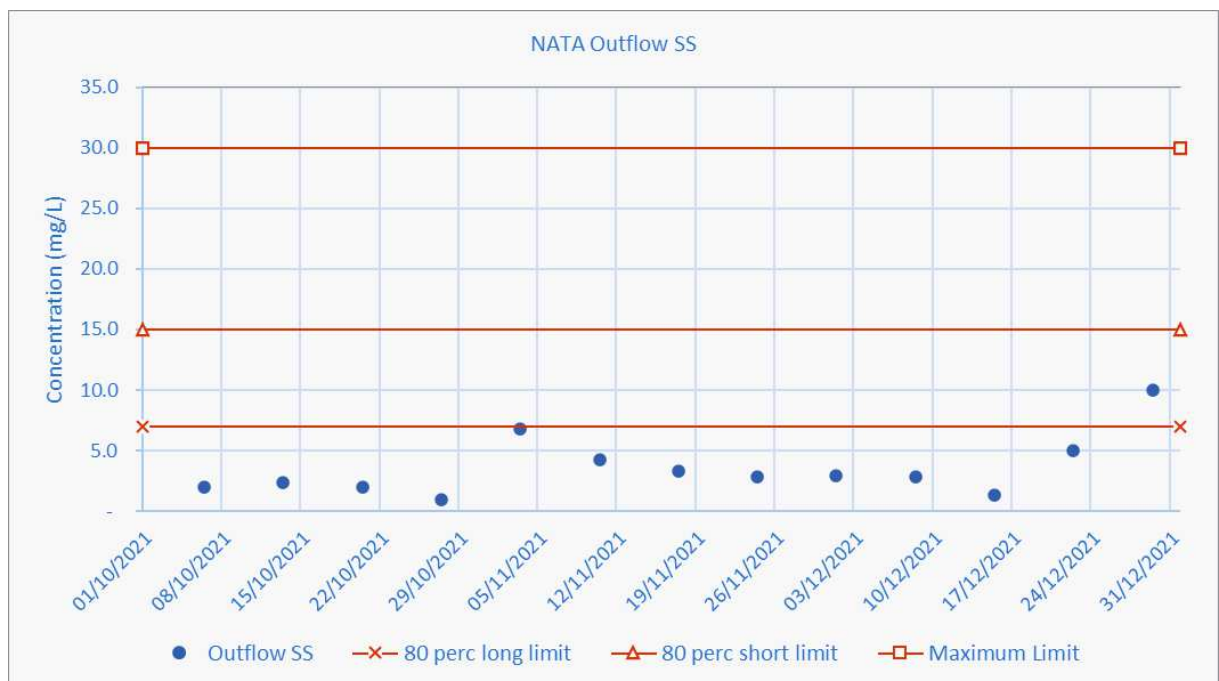
The results for final effluent key licence compliance parameters (Ammonia, Total Phosphorous, Total Suspended Solids, BOD<sub>5</sub> & Total Nitrogen) are shown in Figure 15, 16, 17, 18 & 19.



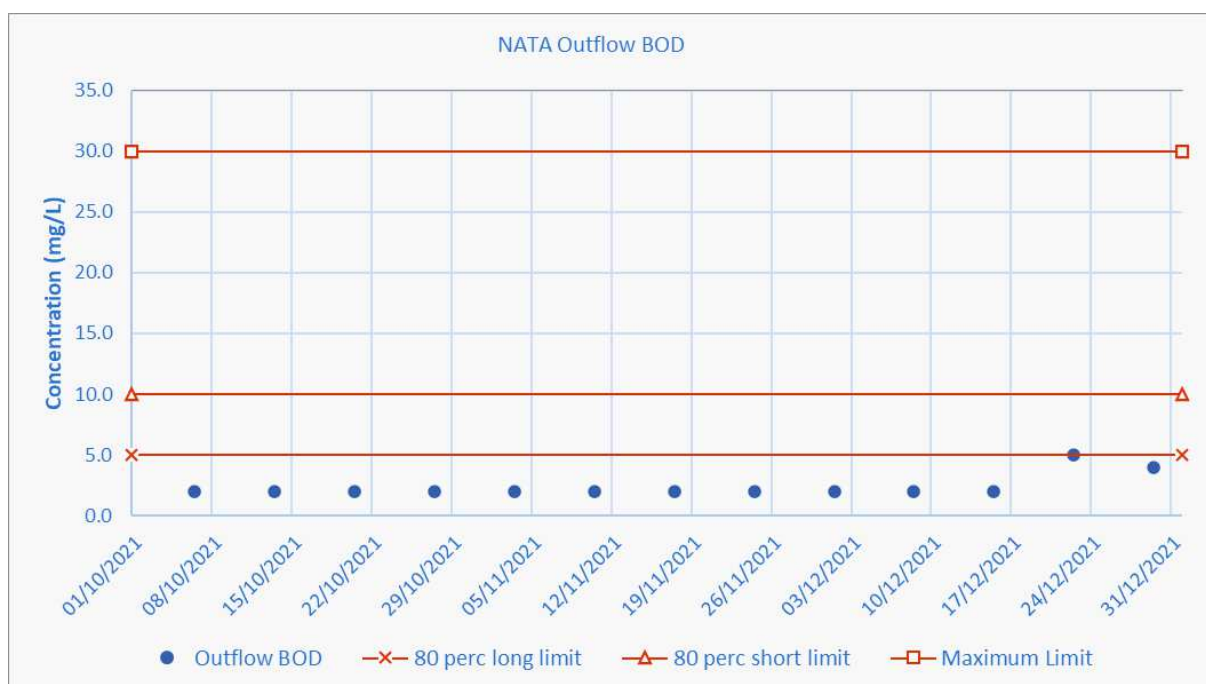
**Fig 15. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Ammonia**



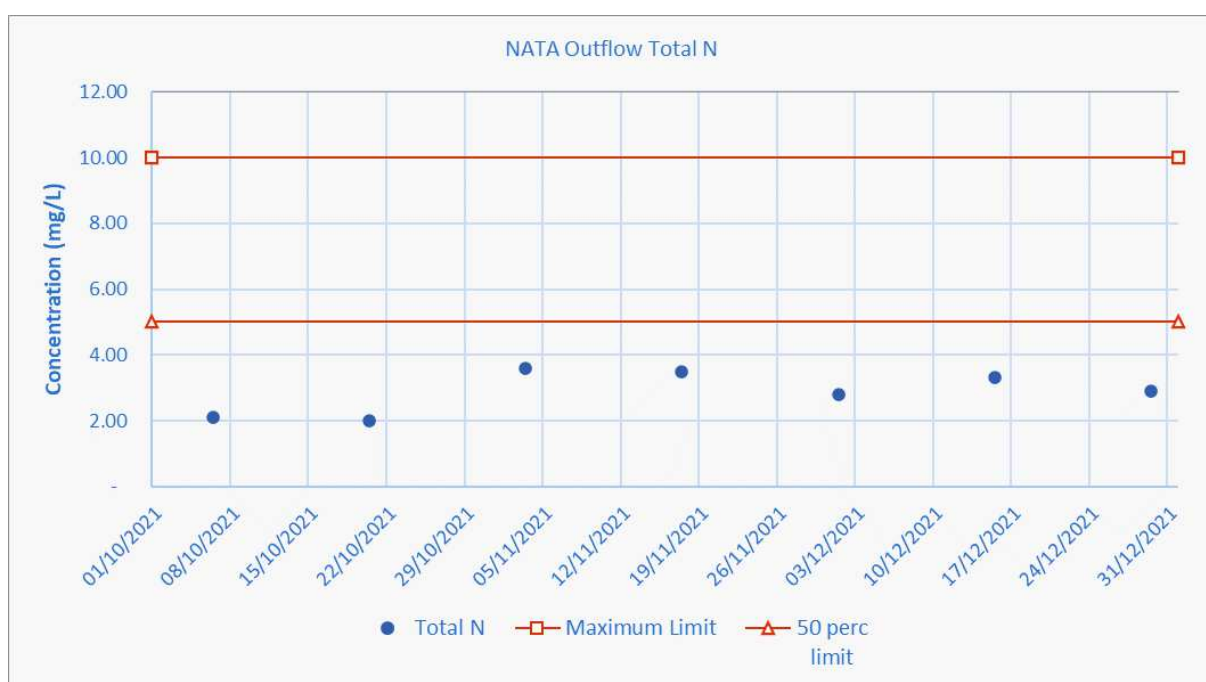
**Fig 16. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Total Phosphorous**



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



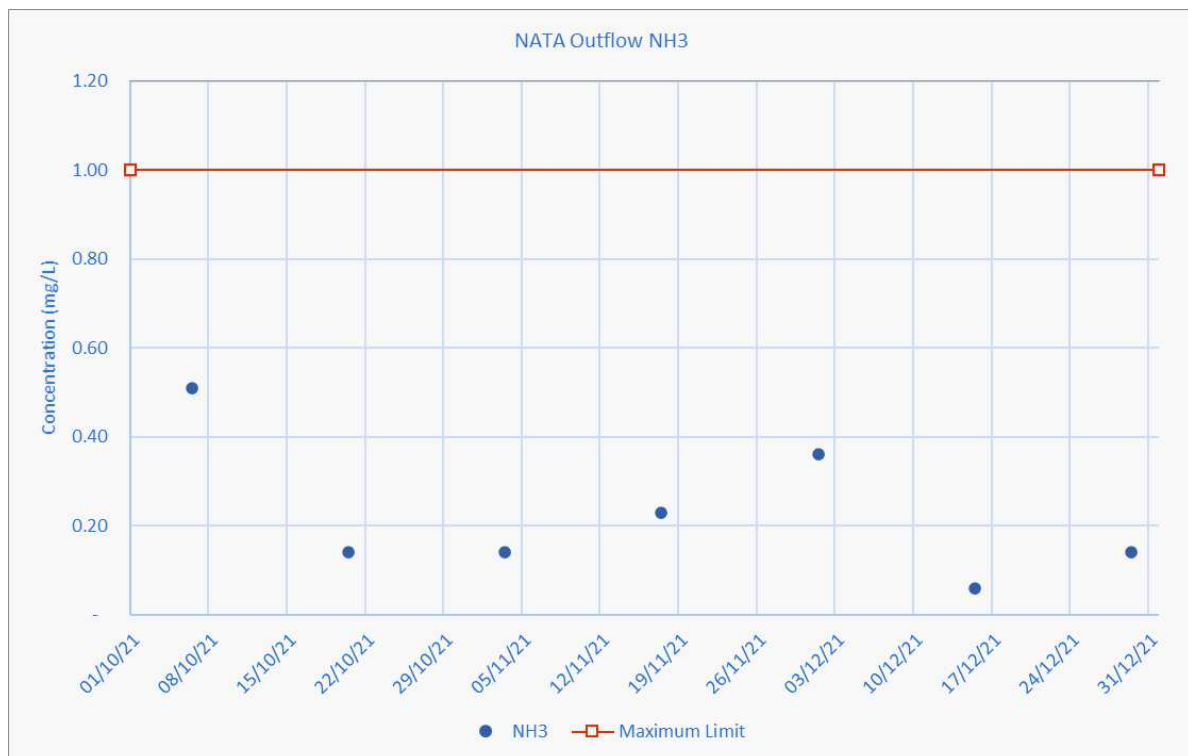
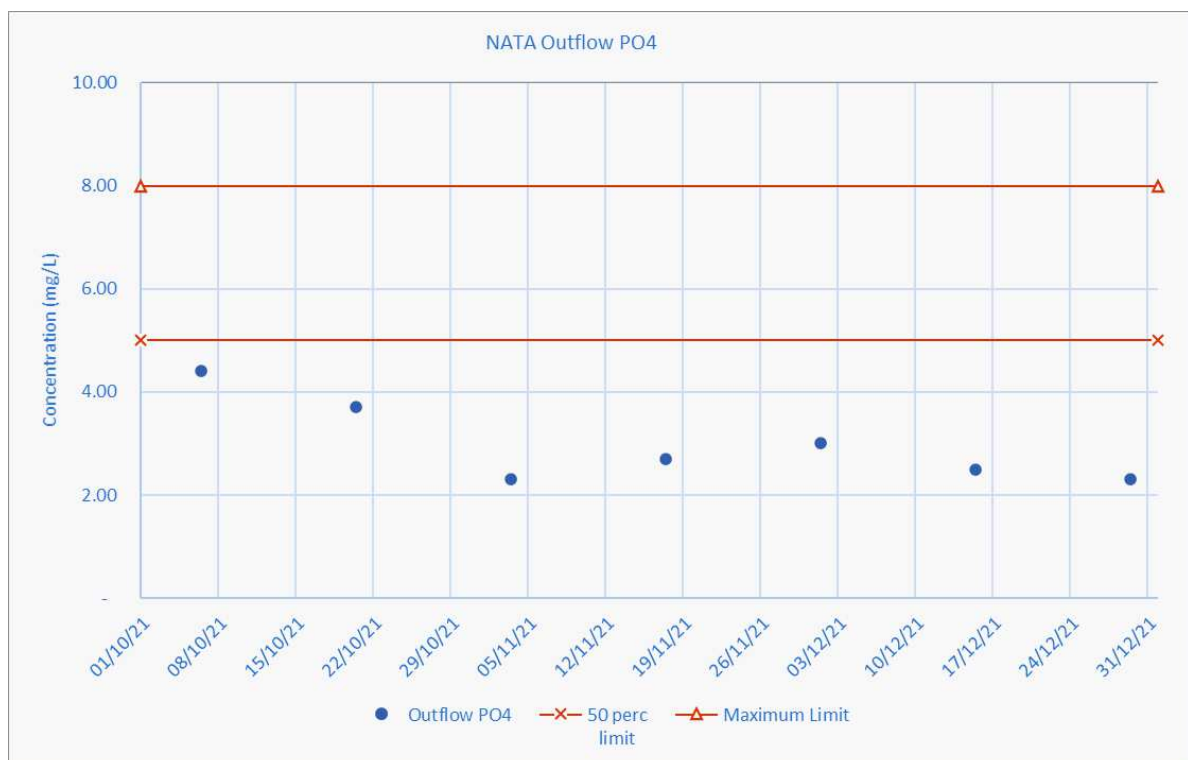
**Fig 18. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for BOD<sub>5</sub> (Biochemical Oxygen Demand)**

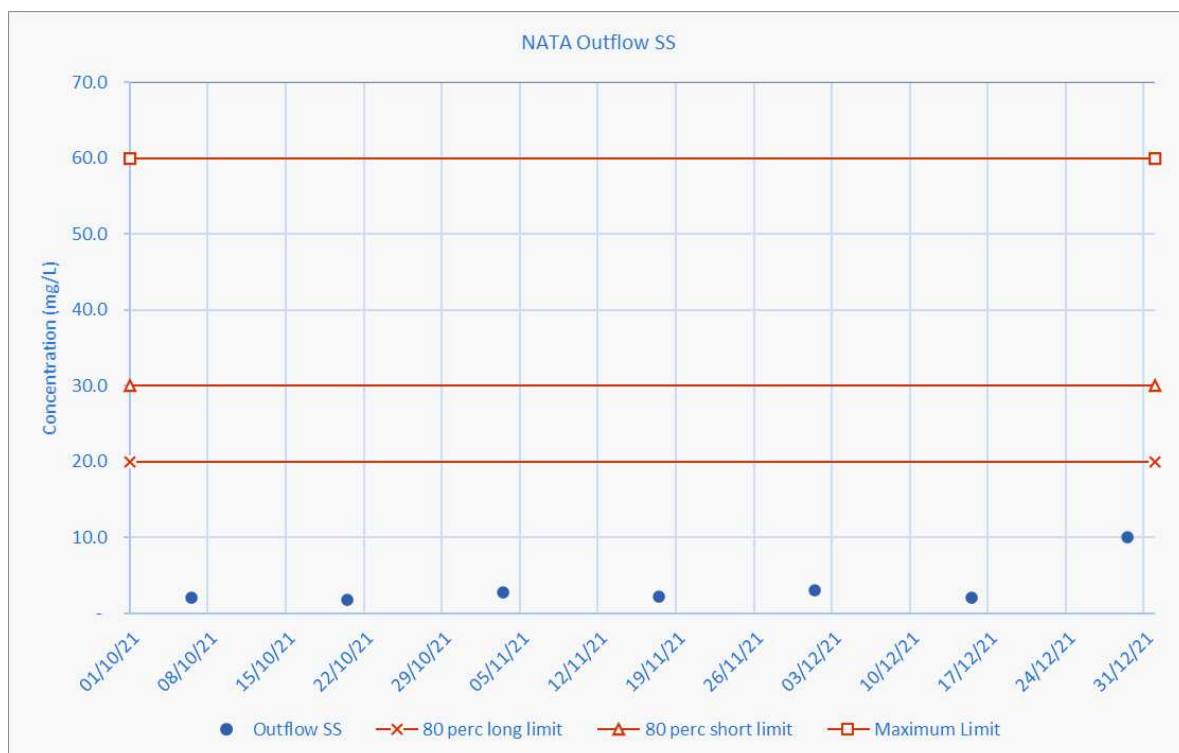


**Fig 19. Port Douglas Wastewater Treatment Plant Final Effluent Test Results for Total Nitrogen**

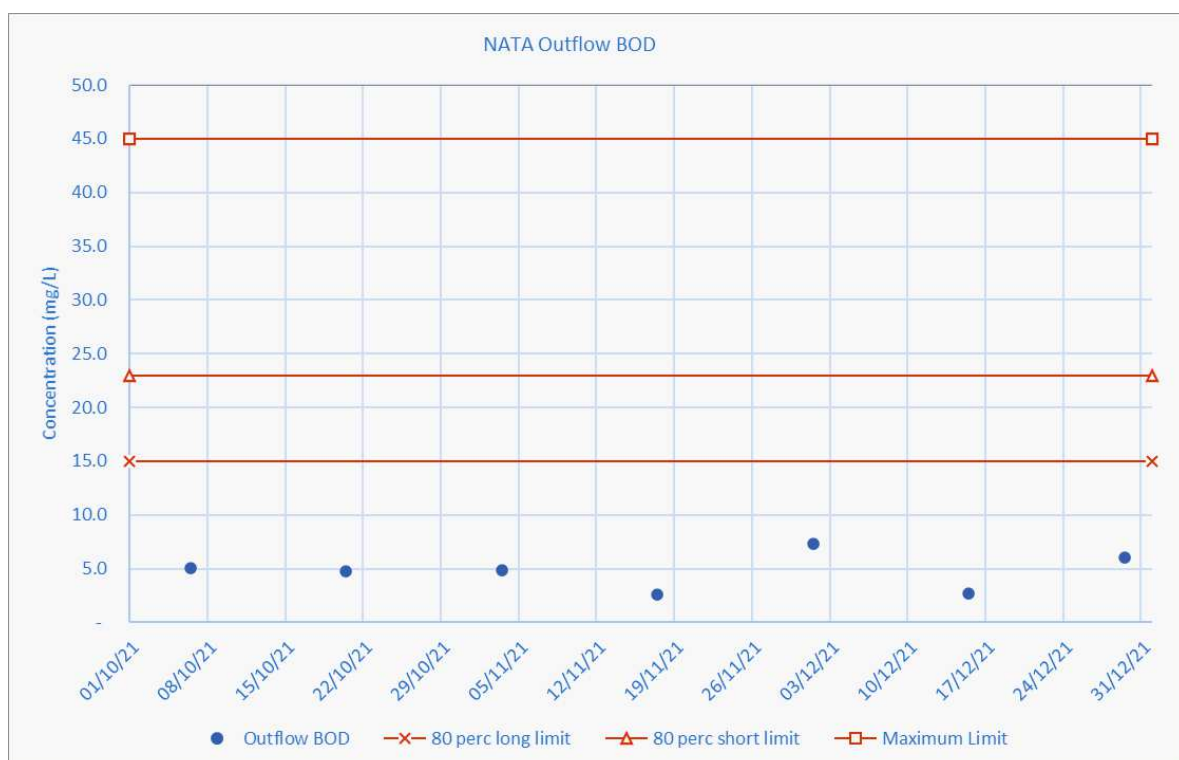
### Mossman Wastewater Treatment Plant

The results for final effluent key licence compliance parameters (Ammonia, Total Phosphorous, Total Suspended Solids, BOD<sub>5</sub> & Total Nitrogen) are shown in Figures 20, 21, 22, 23 & 24.

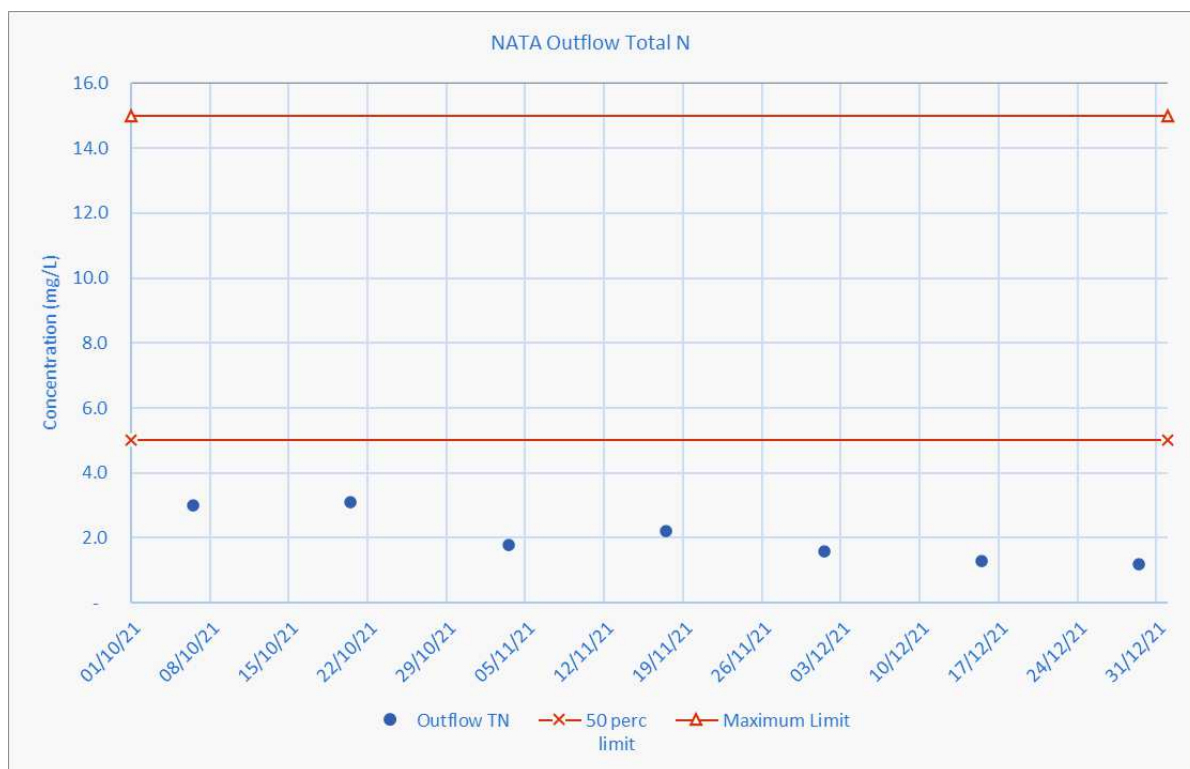
**Fig 20. Mossman Wastewater Treatment Plant Final Effluent Test Results for Ammonia****Fig 21. Mossman WWTP Final Effluent Test Results for Total Phosphorous**



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



**Fig 23. Mossman Wastewater Treatment Plant Final Effluent Test Results for BOD<sub>5</sub> (Biochemical Oxygen Demand)**



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