

WATER AND WASTEWATER

The Water and Wastewater Department met all expectations for the January to March 2023 reporting period.

Water

Capital Works

Smart Water Meter project

The final phase of the smart water project commenced during the reporting period with 95% of the remaining 3,500 meters now installed. Council is realising significant efficiencies in water supply with customers now being able to be notified of leaks within their property and respond in a timely manner.

Mossman Water Treatment Plant Ultrafiltration Upgrade

The first of five racks of membranes at the Mossman Water Treatment Plant ultrafiltration system have been replaced and commissioned successfully. This improves the reliability of the water treatment plant and once all five racks have been replaced, the plant will operate more efficiently with less unscheduled maintenance. The remaining four racks are anticipated to be replaced over the next two years.



Image: Completed first membrane rack at Mossman Water Treatment Plant

Operations

Water Quality

Level 0 water conservation measures commenced on 10 January 2023 after a period of heavy rainfall which supplemented water supply levels, ending the Level 1 water restrictions that had been in place since 18 November 2022.

The water level at Rex Creek intake was above 740 mm for the duration of the reporting period, peaking at 2,100 mm on 16/02/2023 with regular bursts of rainfall throughout February and early March maintaining good flow in the creek.

All intakes and reservoirs had adequate water supply during the reporting period despite multiple leaks occurring, including a large leak occurring at the Parker Creek site in Mossman where Main Roads capital works were being undertaken.

In addition, upgrade works being delivered at the Mossman water treatment plant (WTP) were well prepared for to ensure supply was available. All reservoirs were kept topped up in advance of any works and repairs being completed and no impact to supply occurred to customers, with supply maintained throughout the period. The graph below reflects the periods when operations were temporarily offline for the various works undertaken.

The average water consumption was 7.17 ML/day for the Port Douglas network and 2.52 ML/day for the Mossman network. The graph below displays the water usage for the Mossman/Port Douglas scheme and shows the creek level recorded at Rex Creek intake throughout the reporting period.

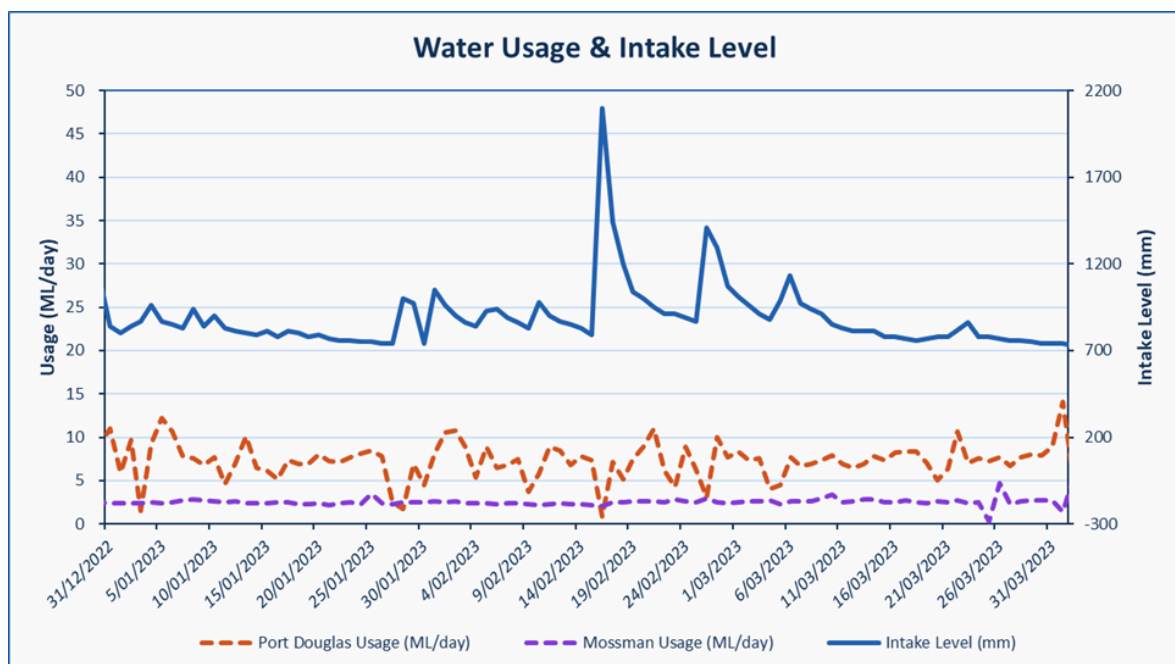


Image: Water Usage for Mossman/Port Douglas Scheme and Rex Creek Intake Level

Total water consumption for the period:

- Mossman, Cooya Beach and Newell Beach consumed 227 ML
- Port Douglas, Craiglie and Mowbray consumed 646 ML
- Whyanbeel, Wonga Beach, Miallo, Rocky Point, Syndicate and Bamboo consumed 70.4 ML
- Daintree consumed 5.6 ML

Mossman/ Port Douglas Scheme

Raw water turbidity during wet weather events caused a few interruptions to water production at the Mossman WTP throughout this reporting period. High turbidity can be seen between 4-6 March 2023 during one particularly heavy rainfall event.

The graph below indicates the daily turbidity trends at Rex Creek intake and treated water as recorded at the Mossman WTP for the current period.

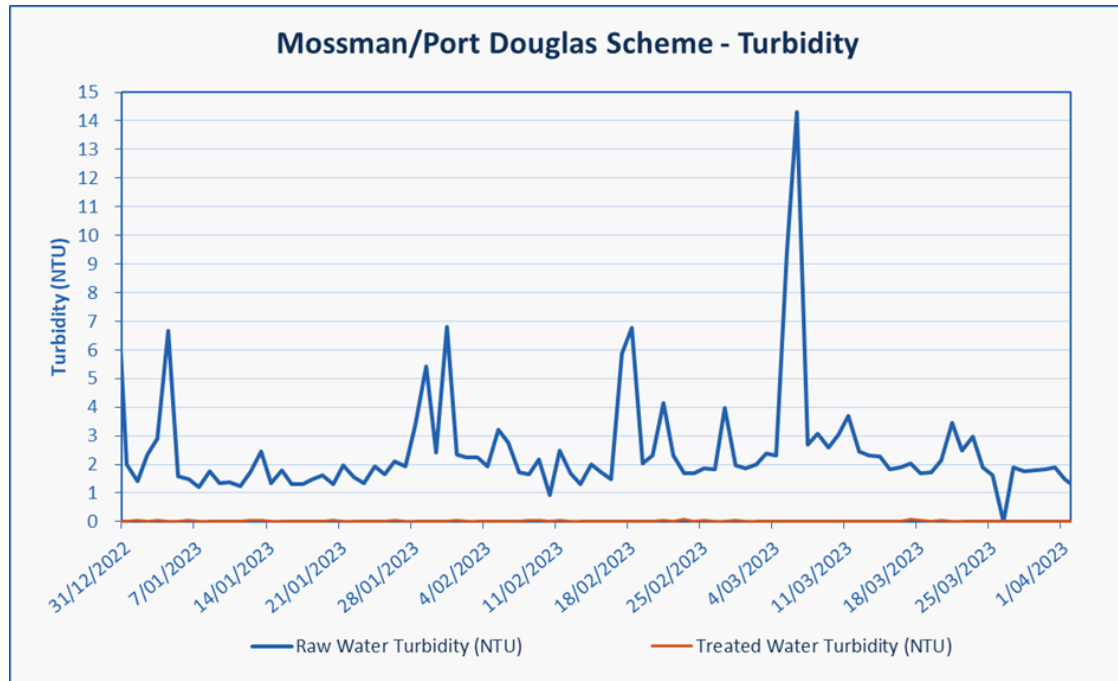


Image: Mossman/Port Douglas Scheme – Turbidity

The Mossman WTP met all demand requirements throughout the reporting period, despite the production interruptions caused by high raw water turbidity, water mains leak losses and capital works.

All routine inspections and planned maintenance operations were carried out within the Mossman/Port Douglas Scheme throughout the period. 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.

Negotiations are continuing with the regulator to have the surface water release limits modified to a less restrictive requirement.

Whyanbeel Scheme

Whyanbeel WTP met all demand requirements throughout the reporting period. There were no water quality incidents in the Whyanbeel scheme for the reporting period.

All routine inspections and planned maintenance were carried out within the Whyanbeel Scheme throughout the period. 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.

The graph below indicates the trends for daily turbidity recorded at Little Falls Creek intake and for treated water recorded at the Whyanbeel WTP for the reporting period.

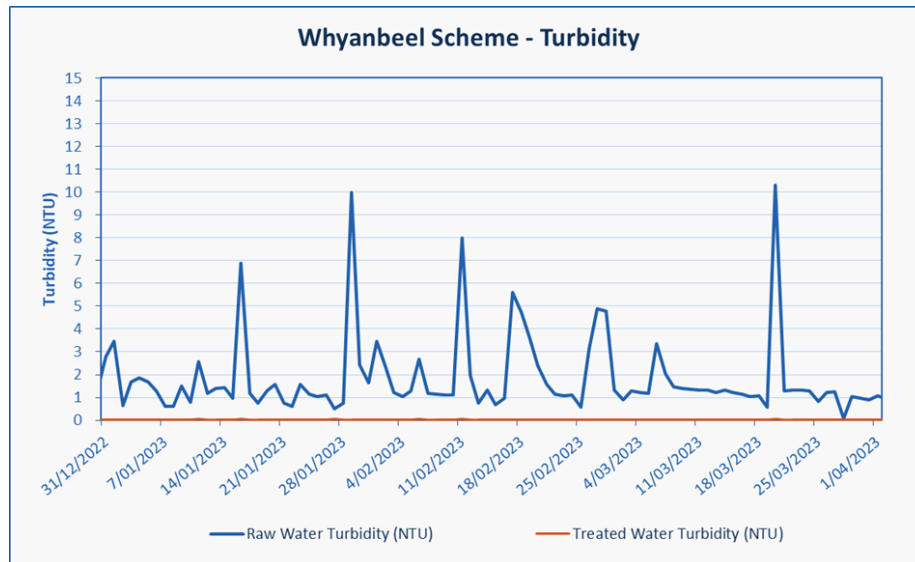


Image: Whyanbeel Scheme – Turbidity

Daintree Scheme

The Daintree WTP met all demand requirements during the reporting period. There were no water quality reportable incidents in the Daintree water scheme for the reporting period.

Heavy rainfall events impacted the Intake Creek site, and the steel access bridge was completely destroyed. Staff were not able to access any of the intake infrastructure due to risks to safety, and to ensure supply continued and able to be treated to standard, the bore that was commissioned during the October-December 2022 period was relied upon. Although the water quality complies with the Australian Drinking Water Standards, some customers raised concerns regarding the taste and residue left in their showers/sinks, etc. A workshop with the Councillors took place in March to discuss the future of the Daintree Intake with various options being tabled - a final decision is pending. In the meantime, an information letter was issued to affected customers to provide more details regarding the continued bore usage for the foreseeable future until the intake issues are resolved.

Routine general maintenance was carried out during the reporting period. 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.

The graph below indicates the daily turbidity trends at the intake and treated water as recorded at the Daintree WTP for the current period.

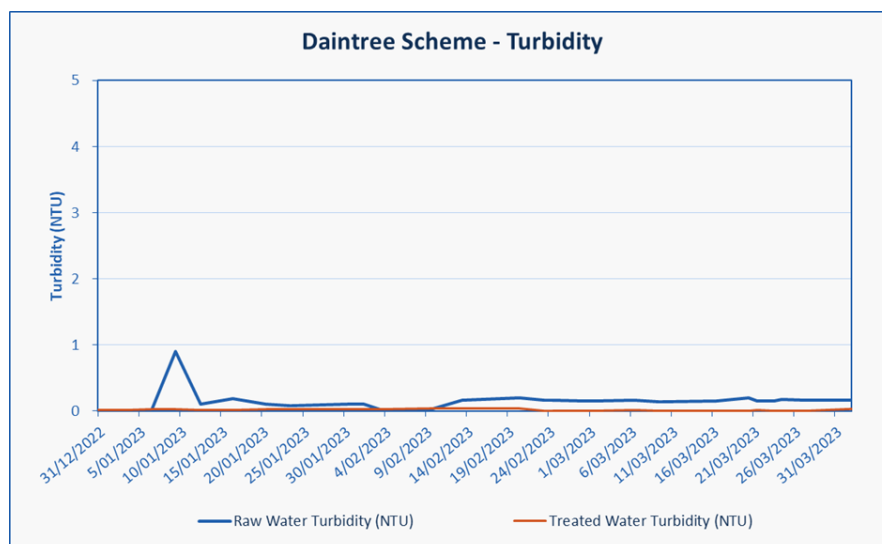


Image: Daintree Scheme – Turbidity

Water Reticulation

The table below details the significant activities carried out on the water reticulation network across all schemes.

Regular general reservoir, pump station checks, and maintenance were performed across all three water supply schemes.

Table: Water reticulation team maintenance activities

Activity	Number in period
Settlement meter reads	82
New water service connections	5
Service repairs	133
Water main repairs	26
Water quality notifications (customer complaints)	7
Dial-Before-You-Dig enquiries	204
Flushing events: Mossman/ Port Douglas scheme (including Cooya Beach and Newell Beach)	43
Flushing events: Whyanbeel scheme (including Wonga)	22
Flushing events: Daintree scheme	Every 2 days
Water meter leg inspections for smart water meter program	*Pending
Water meter leg replacements for smart water meter program	*Pending
Smart water meter queries and investigations	7
Total CRMs attended	260

*Smart water meter inspection and replacement statistics pending submission from the contractors.

All water quality customer complaints were investigated and resolved. Four complaints were positively resolved with flushing the lines, including one of the properties that required improvement works to reduce future flushing needs (the property is at the end of the water mains supply). Three complaints involved two properties in Daintree Township, and after initial investigations took place, further testing was undertaken to ensure there were no water quality issues. All tests confirmed all water being supplied was within the Australian Drinking Water Guidelines parameters for potable water.

Regulatory Compliance

Drinking water sampling occurs at intakes, reservoirs and in the reticulation network to ensure compliance with Council's approved Drinking Water Quality Management Plan (DWQMP) and the Australian Drinking Water Guidelines (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 76 treated water *E. coli* compliance samples were taken across the drinking water schemes. A total of 34 *E. coli* samples were tested in the Douglas water laboratory and 42 in a NATA accredited laboratory. Other parameters monitored allow the Water and Wastewater Department to observe trends in water quality across the schemes.

All parameters in drinking water samples tested at the NATA laboratory up until 31/03/2023 were compliant with ADWG health guideline values and standards required by the Water Supply Regulator and Queensland Health. All in-house results were compliant with ADWG health values and standards.

Non-potable water supplied to Dagmar residents was also monitored monthly for metals and *E. coli* and quarterly for pesticides throughout the period.

In addition, water quality was monitored at all of the intakes, with 9 raw water *E. coli* samples analysed by Council during the reporting period. Raw water sampling assists Council to understand the treatment needs and the health-based targets.

Mossman/ Port Douglas Scheme

Average monthly values for key compliance parameters are detailed in the following tables for treated water in the Port Douglas reservoirs and Mossman/ Port Douglas reticulation network respectively.

Table: Average monthly values for key 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	<i>E. coli</i> MPN
Standard	6.5 - 8.5	10 - 30	0 - 200	0.2 - 5.0	0.2 - 5.0	<1
Jan-23	6.9	27.2	4.7	1.15	1.16	<1
Feb-23	7.1	28.1	5.4	1.1	1.1	<1
Mar-23	6.6	26.6	4.0	1.2	1.20	<1

Table: Average monthly values for key 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	<i>E. coli</i> MPN
Standard	6.5 - 8.5	10 - 30	0.2 - 5.0	0.2 - 5.0	<15	<1	<0.3	<0.1	<1
Jan-23	6.9	28.4	1.0	1.02	<1	0.025	0.015	0.0002	<1
Feb-23	7.1	28	1.0	1.0	<1	0.01	<0.016	<0.0002	<1
Mar-23	6.7	28.4	1.2	1.3	<1	0.010	<0.019	<0.0003	<1

Whyanbeel Scheme

Average monthly values for key operational and compliance parameters are detailed in the following tables for treated water at Rocky Point reservoir and Whyanbeel reticulation network respectively.

Table: Average monthly values for key compliance parameters in the Rocky Point reservoir.

Month	pH	Temp °C	Total Alkalinity mg CaCO ₃ /L	Free Cl mg/L	Total Cl mg/L	<i>E. coli</i> MPN
Standard	6.5 - 8.5	10 - 30	0 - 200	0.2 - 5.0	0.2 - 5.0	<1
Jan-23	7.85	28.1	10	1.2	1.2	<1
Feb-23	7.64	28.4	10	1.0	1.04	<1
Mar-23	7.67	27.5	9.1	1.62	1.65	<1

Table: Average monthly values for key compliance parameters in the Whyanbeel scheme.

Month	pH	Temp °C	Free Cl mg/L	Total Cl mg/L	Colour PCU	Cu mg/L	Fe mg/L	Mn mg/L	<i>E .coli</i> MPN
Standard	6.5 - 8.5	10 - 30	0.2 - 5.0	0.2 - 5.0	<15	<1	<0.3	<0.1	<1
Jan-23	7.61	27.6	0.79	0.81	<1	0.007	0.018	0.0001	<1
Feb-23	7.15	27.8	0.33	0.35	<1	0.008	<0.016	0.0004	<1
Mar-23	7.35	26.6	1.46	1.45	<1	0.007	<0.015	0.0004	<1

Daintree Scheme

Average monthly values for key compliance parameters are detailed in the table below for treated water in the Daintree reticulation network.

Table: Average monthly values for key compliance parameters in the Daintree scheme.

Month	pH	Temp °C	Free Cl mg/L	Total Cl mg/L	Colour PCU	Cu mg/L	Fe mg/L	Mn mg/L	<i>E .coli</i> MPN
Standard	6.5 - 8.5	10 - 30	0.2 - 5.0	0.2 - 5.0	<15	<1	<0.3	<0.1	<1
Jan-23	7.4	27.2	0.87	0.86	<1	0.004	<0.015	<0.002	<1
Feb-23	7.4	28.2	1.17	1.17	<1	0.005	<0.015	<0.0008	<1
Mar-23	7.3	27.1	1.38	1.38	1	0.006	<0.015	0.0019	<1

Wastewater

Capital Works

Key capital works programs on the sewerage network during the reporting period for the wastewater team included:

- Eight house connection branches were repaired during the reporting period, the breaks occur in the wet season when the water table is high, sink holes form, the repairs were conducted by contractors.
- Sewer pumps were replaced as part of the capital program at SPS SC1 Port Douglas

Operations

General maintenance programs continued on the reticulation networks and 32 pump stations in the Mossman and Port Douglas catchments. Both wastewater treatment plants (WWTP) operated within licence requirements throughout the period.

The table below shows the number of activities and complaints across the two wastewater schemes.

Table: Sewerage activities for the current period

Issue	Port Douglas WWTP Catchment	Mossman WWTP Catchment
Pump Blockages	2	4
Sewer Chokes	0	0
Sewer Main Breaks	1	0
HCB Repairs	3	5
Odour Complaints	0	0
Public Complaints	1	0
Reportable Incidents	0	0

Port Douglas Wastewater Treatment Plant

Rainfall

Total rainfall on site during the reporting period was measured as 1,420 mm. The highest daily rainfall of the period at Port Douglas WWTP was 121 mm.

Flows

A total of 329,812 kL of influent entered the Port Douglas WWTP during the reporting period. The average daily flow was 3,665 kL/day. Contractors delivered 431 kL of septage to the plant and 4,657 kL of Leachate from the Killaloe Landfill and Transfer Station. Influent was treated to a standard that produced compliant effluent during the reporting period.

Daily inflows, outflows and recycled water supplied for the reporting period are presented below:

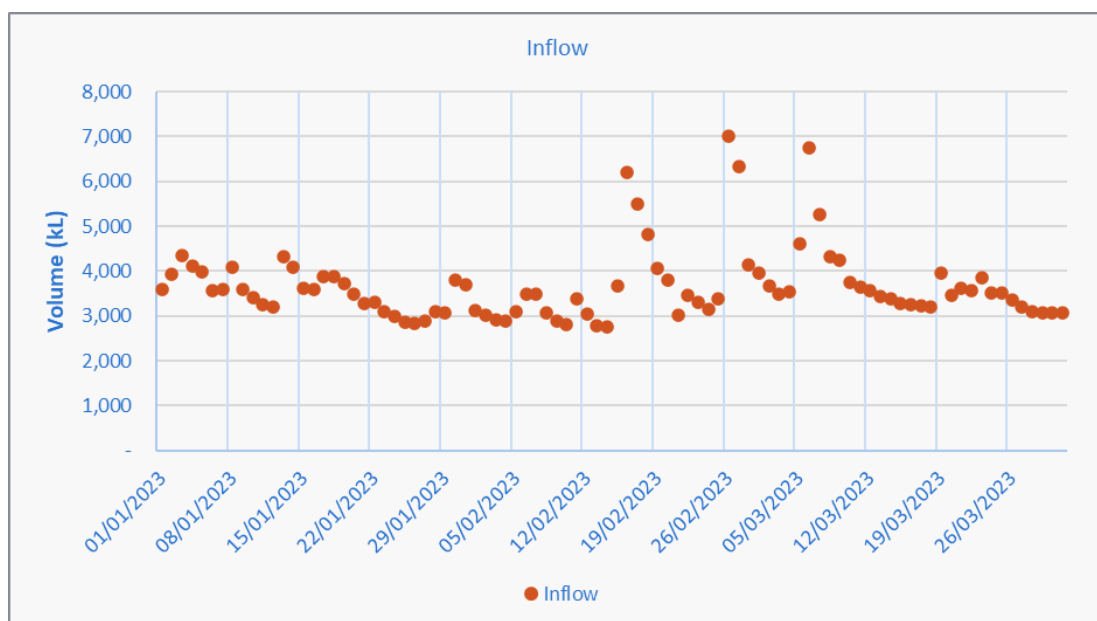


Image: Port Douglas WWTP daily inflow

Recycled Water

Treated effluent (7.62% of the total volume) was pumped to two resort golf courses for irrigation purposes and the remainder discharged into the Dickson Inlet.

The Sheraton Grand Mirage Resort Port Douglas received 302 kL and Palmer Sea Reef Golf Course received 0 kL of treated effluent during this period.

Biosolids

At Port Douglas WWTP, 295.86 tonnes of wet bio-solids (11% solids) were produced during the reporting period, equating to 32.54 dry tonnes. Biosolids were transported by Arkwood Organics to Edmonton Farms, Tablelands Regional Farms and Springmount Waste Facility for further treatment and beneficial land application as organic fertiliser and soil conditioner.

Mossman Wastewater Treatment Plant

Rainfall

A total of 2,110 mm of rain fell on site for the reporting period with the highest daily rainfall measured at 172 mm on 3 January 2023.

Flows

The Mossman WWTP received a total influent flow of 197,183 kL during the reporting period. The average daily flow was 2,191 kL/day. Influent was treated to a standard that produced compliant effluent during the reporting period.

Outflow and Inflow data for the reporting period are presented below:

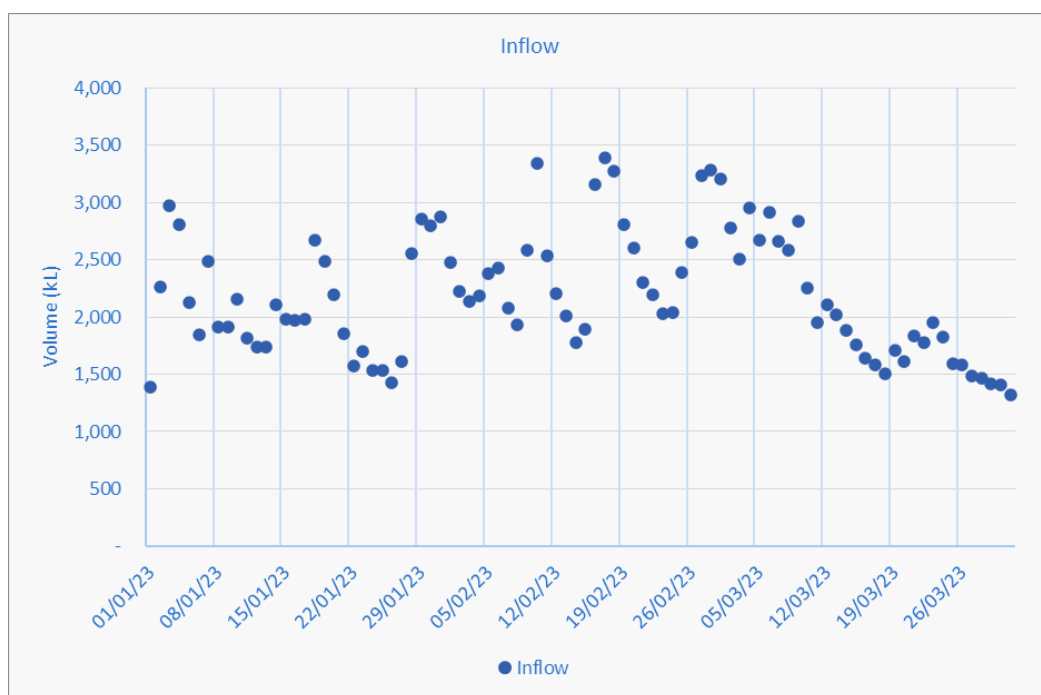


Image: Mossman WWTP daily inflow

Biosolids

At Mossman WWTP, 21.94 tonnes of wet biosolids (comprising 10% solids) were produced during the reporting period, which equates to 2.19 dry tonnes. Biosolids were transported by Arkwood Organics to farms across the region for use as organic fertiliser and soil conditioner.

Regulatory Compliance

During the reporting period, compliance sampling was performed, as per EPPR01790513 licence conditions.

Additionally, more samples were taken from the treatment processes, biosolids, receiving waters and bores. Samples were 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 WWTPs were compliant.

Treatment process and compliance monitoring was carried out each day by in-house analysis of samples at the WWTPs. Process settings, effluent quality, flow rates, pump station performance and maintenance aspects were monitored and controlled with SCADA Citect via an extensive telemetry network.

Port Douglas Wastewater Treatment Plant

The results for wastewater effluent licence compliance parameters (i.e. ammonia, total phosphorous, total suspended solids, BOD₅ and total nitrogen) are shown in in the images below:

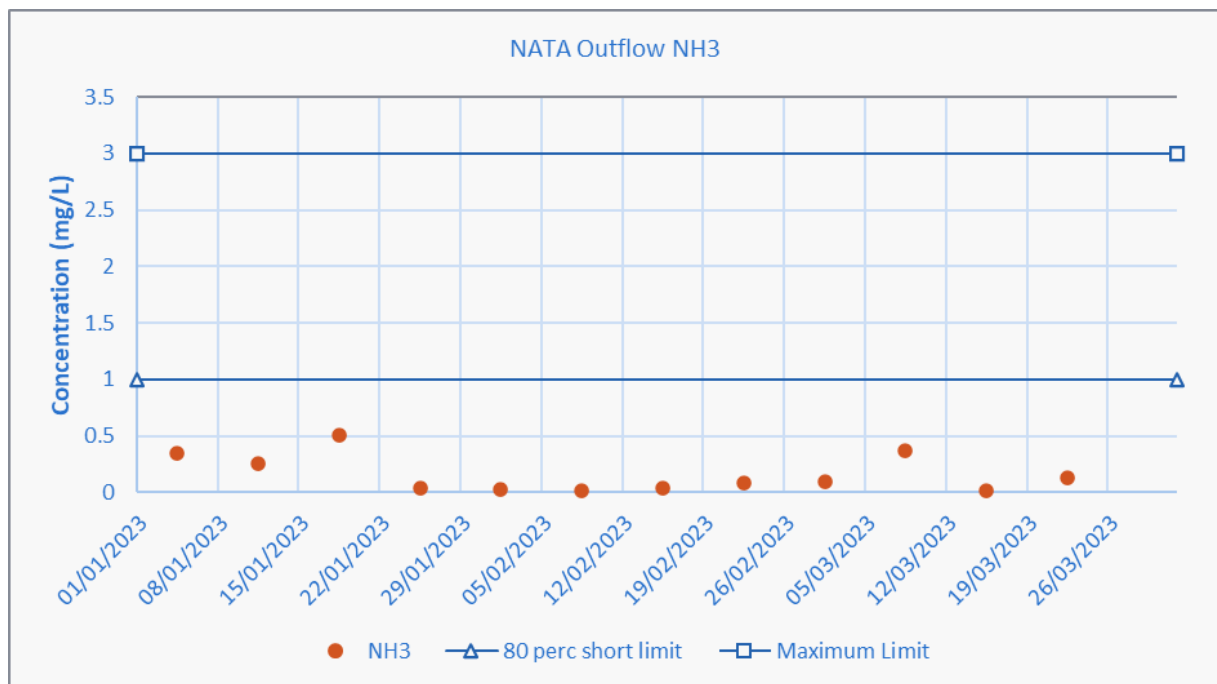


Image: Port Douglas WWTP final effluent – ammonia (NH₃)

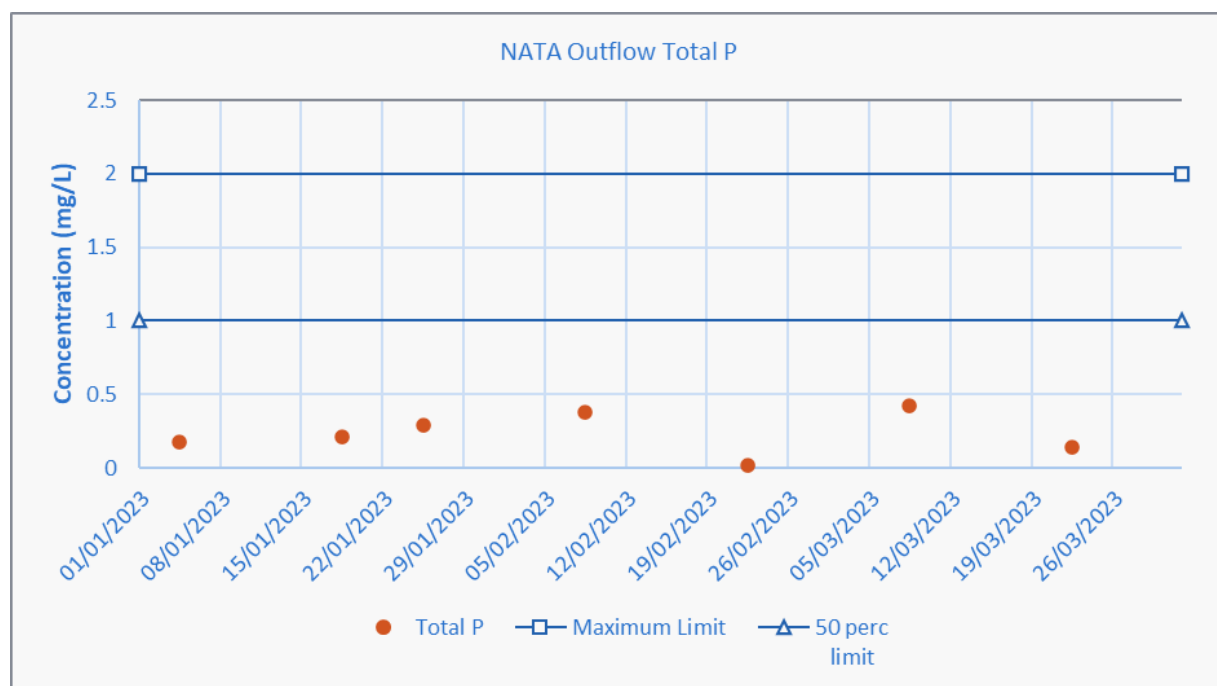


Image: Port Douglas WWTP final effluent - total phosphorous

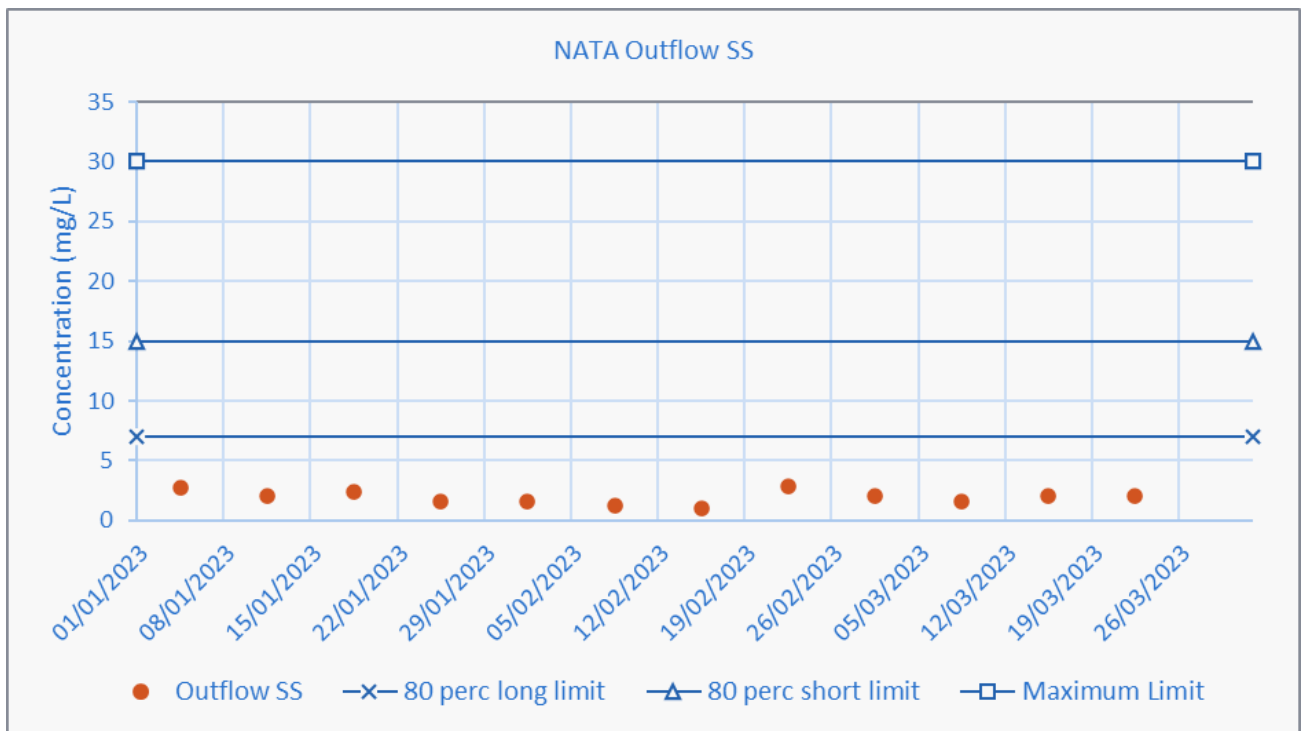


Image: Port Douglas WWTP final effluent - total suspended solids

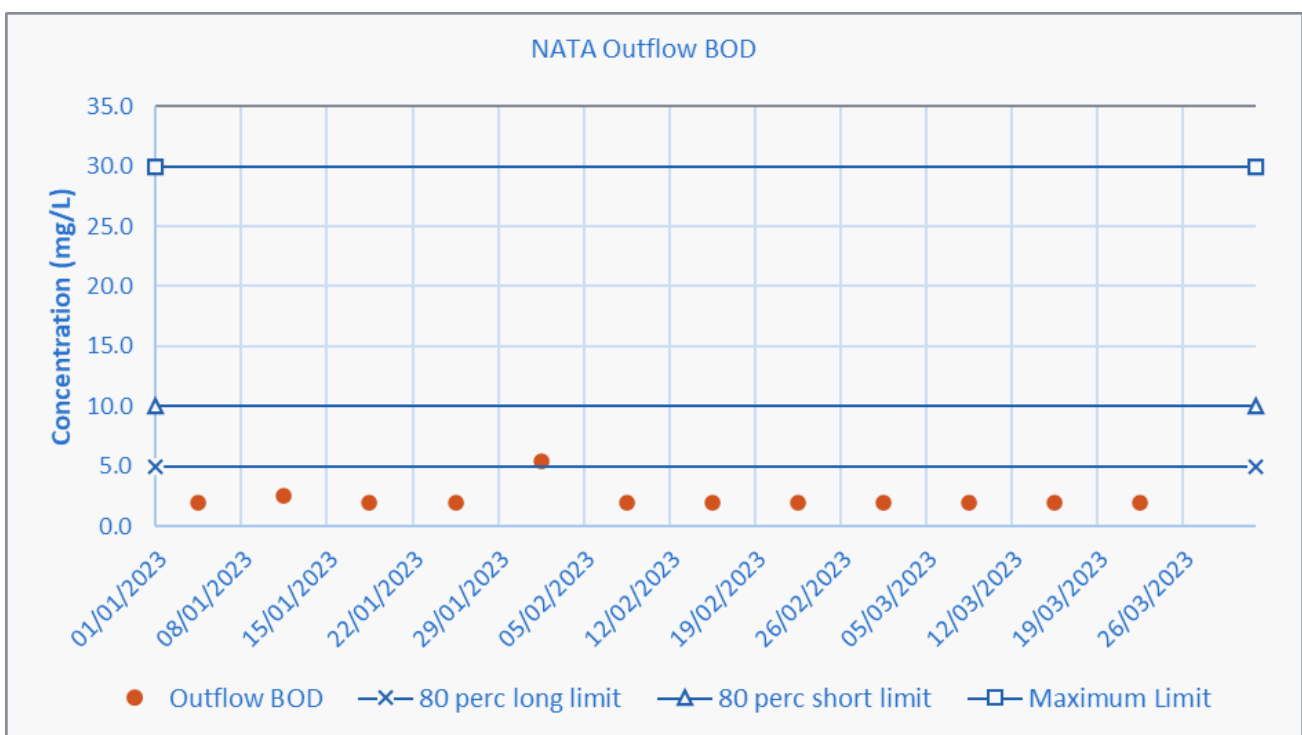


Image: Port Douglas WWTP final effluent - BOD₅ (biochemical oxygen demand)

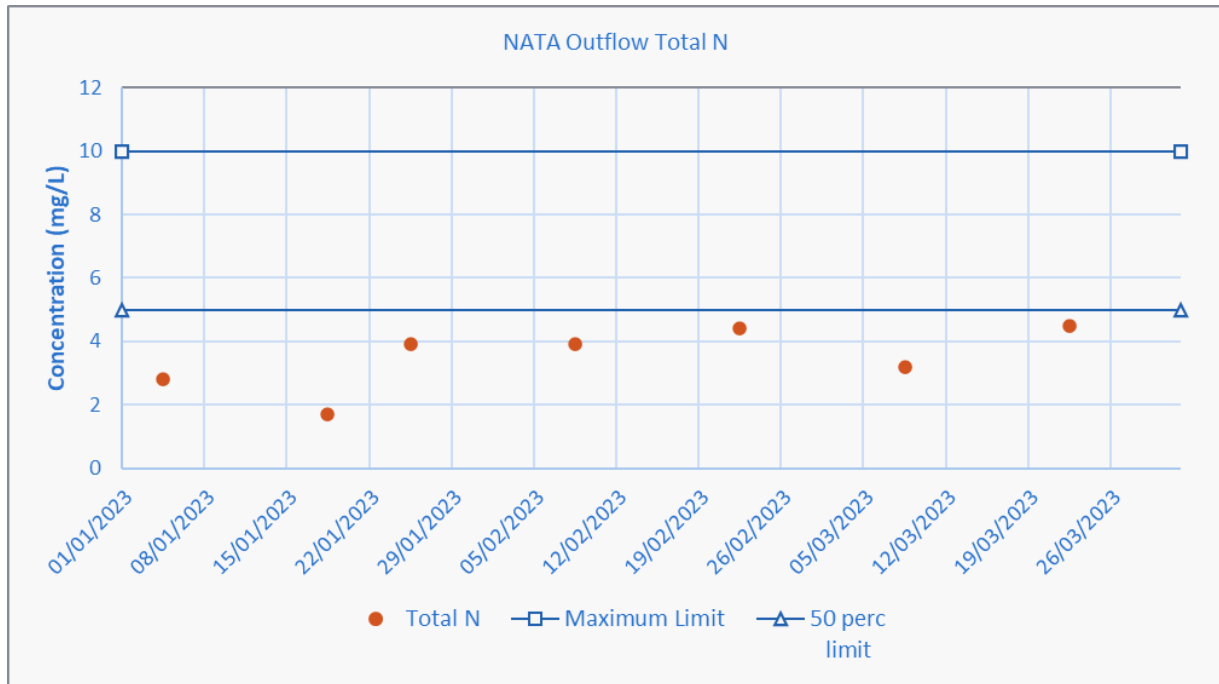


Image: Port Douglas WWTP final effluent - total nitrogen

Mossman Wastewater Treatment Plant

The results for final effluent key licence compliance parameters (ammonia, total phosphorous, total suspended solids, BOD5 and total nitrogen) are shown in the following graphs:

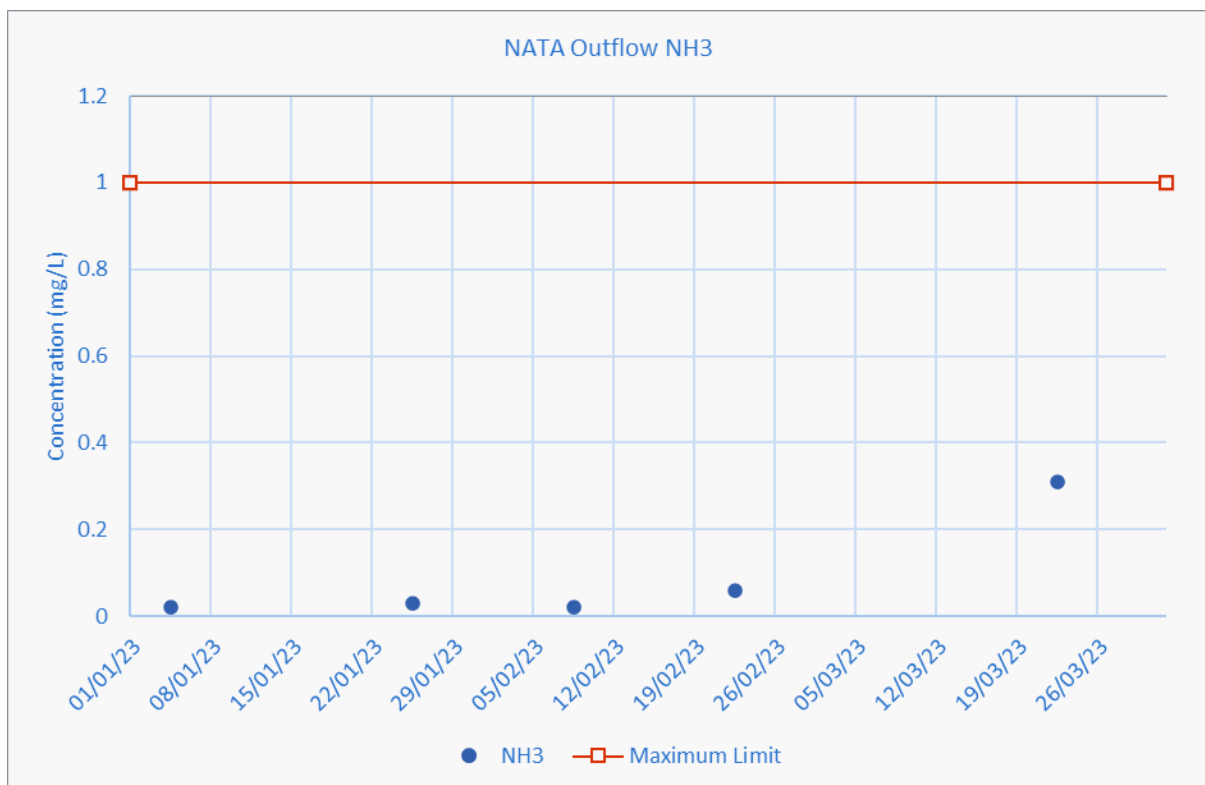


Image: Mossman WWTP final effluent – ammonia (NH₃)

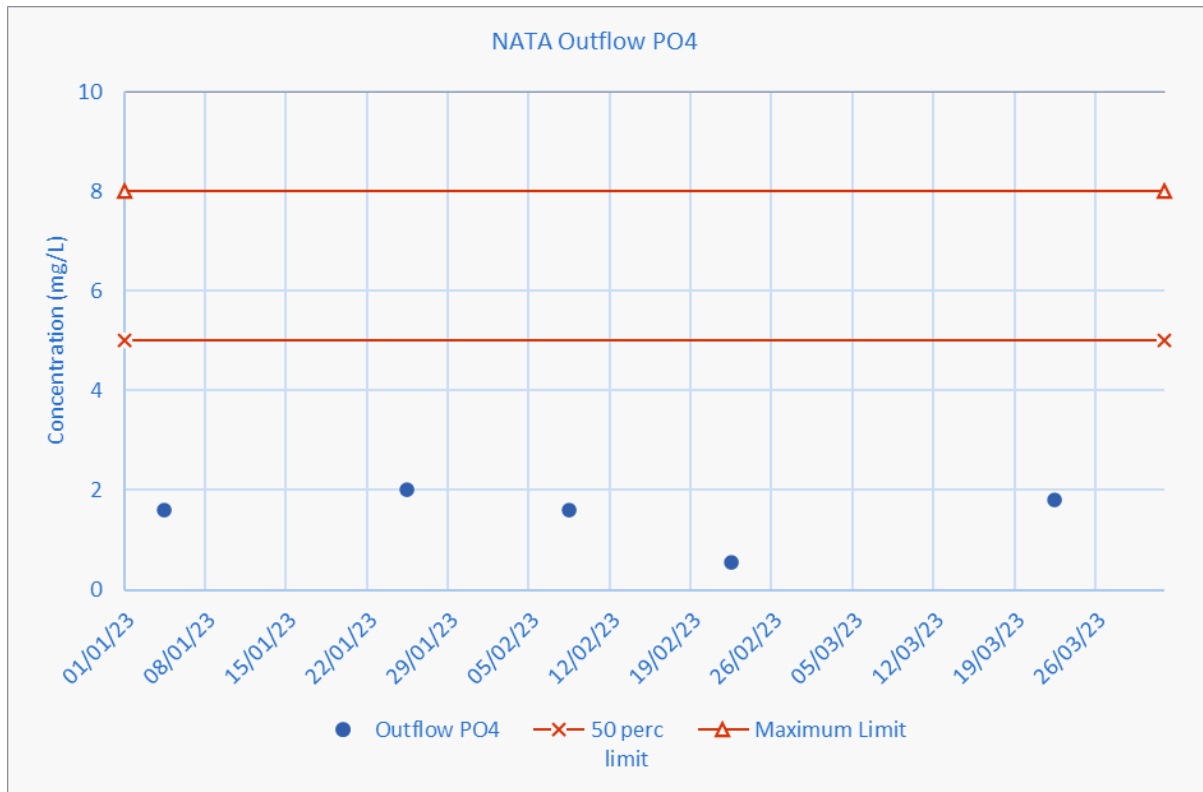


Image: Mossman WWTP final effluent - total phosphorous

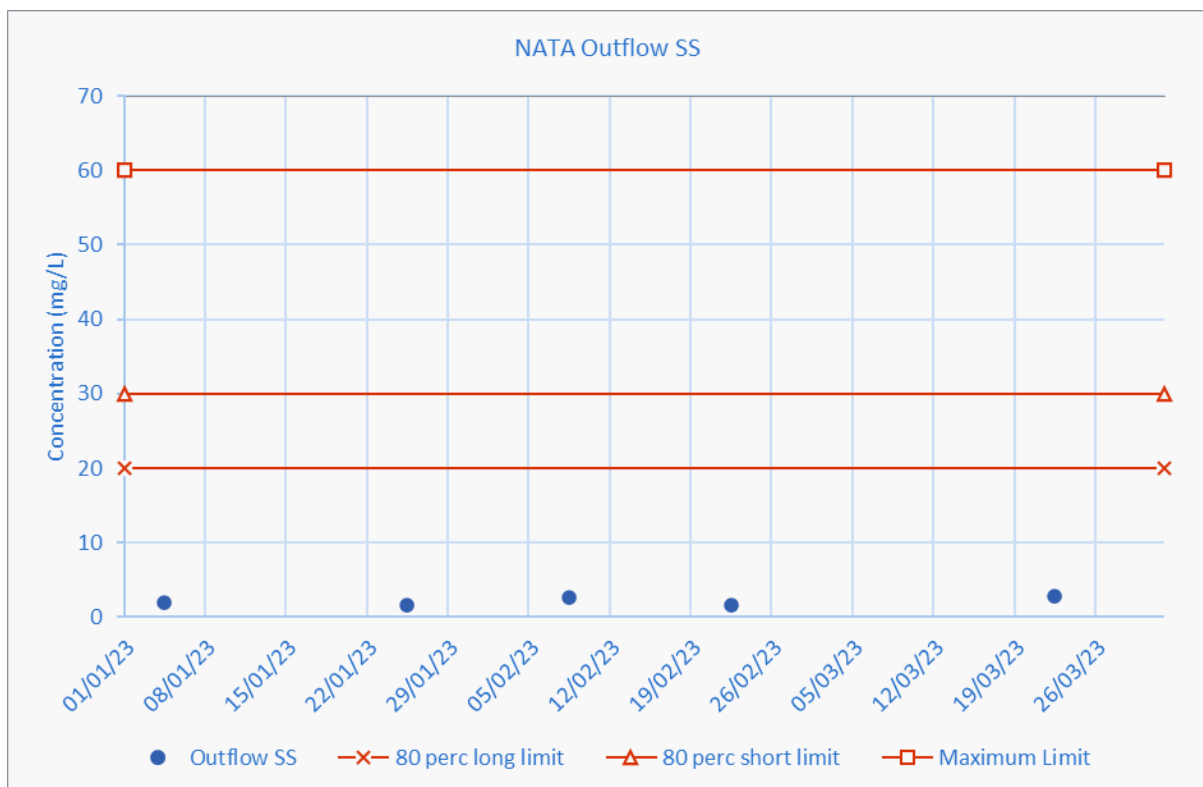


Image: Mossman WWTP final effluent - total suspended solids

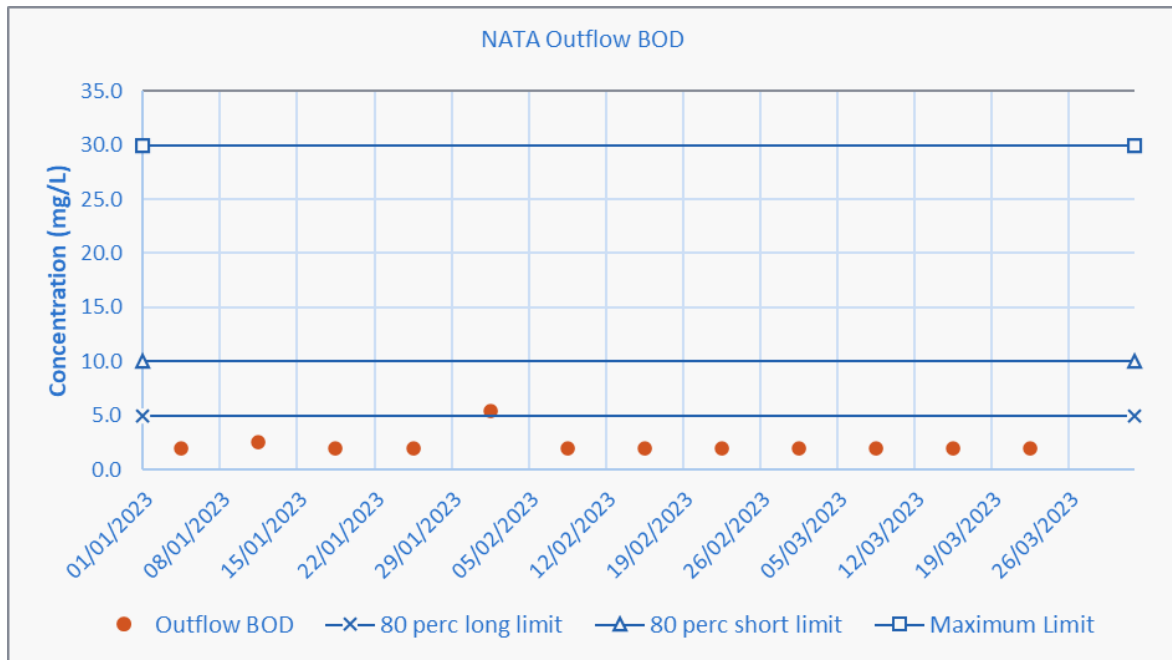


Image: Mossman WWTP final effluent - BOD₅ (biochemical oxygen demand)

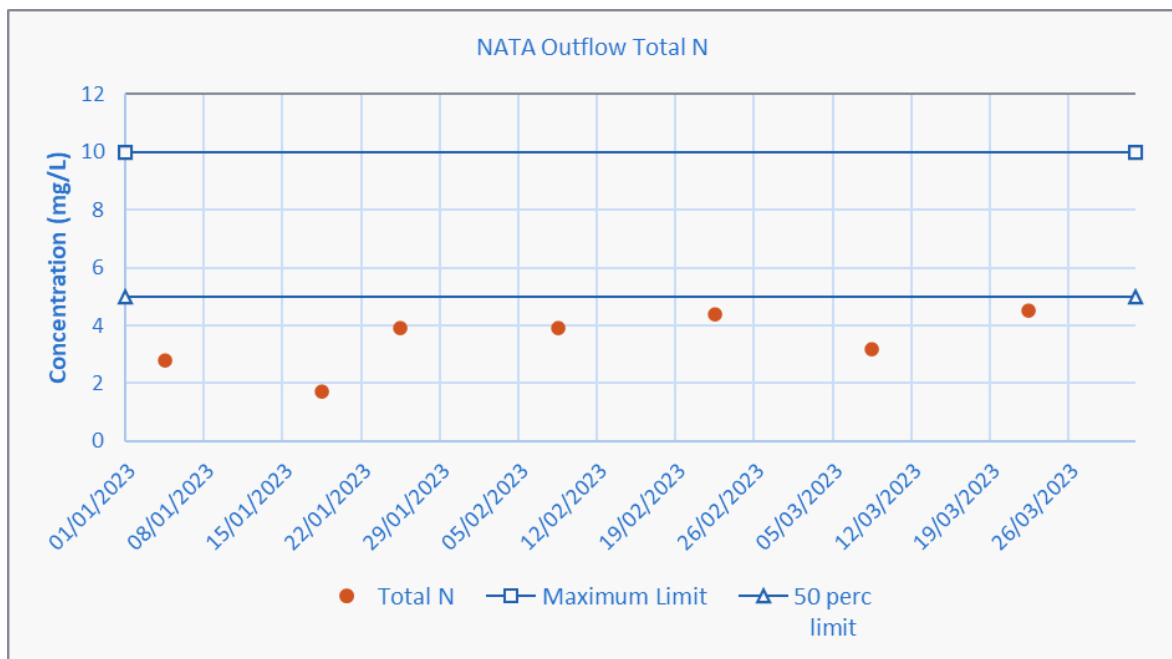


Image: Mossman WWTP final effluent - total nitrogen

Trade Waste

Trade waste inspections continued throughout the reporting period and included 15 businesses requiring further direction for rectifying issues.

Work also continued on the in-house framework to support the delivery of the trade waste portfolio, including the Trade Waste Management Plan and Policy.