Drinking Water Service Annual Report

2022 – 2023

Banana Shire Council
Service Provider ID: 504

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Contents

Glossary of Terms

ADWG 2011	Australian Drinking Water Guideline 6 2011
BSC	Banana Shire Council
CCP	Critical Control Point. A critical control point is defined as a step which control can be applied and is essential to prevent or eliminate a water safety hazard or reduce it to an acceptable level.
CFU/100ml	Colony Forming Units per 100 millilitres
DRDMW	Department of Regional Development, Manufacturing and Water
DWQMP	Drinking Water Quality Management Plan- The documents summarising how water service providers manage quality risks for consumers.
HACCP	Hazard Analysis Critical Control Points certification for protecting drinking water quality
Mg/L	Milligrams per litre
ML/d	Megalitres per day
MPN/100ml	Most probable number per 100 millilitres
NTU	Nephelometric Turbidity Units, used to measure clarity of water
PFAS/PFOS	Per and Poly-fluoroalkyl substances, a group of man-made chemicals widely used in industrial, firefighting and household applications and are persistent in the environment
QLD Health	Public Health Regulator
Regulator	Department of Regional Development, Manufacturing and Water
RMIP	Risk Management Improvement Program
SOPs	Standard Operating Procedures
THM	Trihalomethanes
UF	Ultrafiltration
The Act	The Water Supply and Reliability Act (2008)
WTP	Water Treatment Plant- processes raw water (sourced from a dam, river or bore) to make drinking water

1 Introduction

This report documents the performance of the Banana Shire Council's drinking water service, focusing on water quality and the execution of actions outlined in the Drinking Water Quality Management Plan (DWQMP). The report has been prepared in accordance with the requirements of the *Water Supply (Safety and Reliability) Act 2008* and covers the period of the 2022-23 reporting year (01/07/2022 – 30/06/2023).

This report aids the Regulator, the Department of Regional Development, Manufacturing and Water (DRDMW) in evaluating compliance with the approved DWQMP and any conditions of approval.

2 Overview of Operations

Banana Shire Council is a registered service provider with identification (SPID) 504.

Council manages drinking water quality through its approved DWQMP which protects public health by ensuring the provision of a safe water supply.

Council operates a total of nine (9) drinking water supply schemes throughout the Shire consisting of: - Biloela (supplying Biloela, Thangool and Callide Dam communities), Moura (supplying Moura and Banana), Baralaba, Taroom and Theodore. Goovigen is a chlorinated bore supply. Council operates and maintains all water supply infrastructures in these schemes including intakes, pumping stations, treatment facilities, reservoir storages and reticulation mains.

Table 1 - Banana Shire Council Scheme Summaries

Scheme	Water Source	Treatment processes	Towns supplied
Banana	Dawson River (Moura Weir)	Treated at the Moura WTP. Pumped from Moura, re-chlorinated.	Banana
Baralaba	Dawson River (Neville Hewitt Weir)	Coagulation, flocculation, clarification, ultrafiltration, chlorination.	Baralaba
Biloela	Callide Dam, Callide Valley Aquifer Bores	Coagulation, flocculation, clarification, filtration, fluoridation, chlorination, Aquifer Bores – Chlorination only.	Biloela, Callide Dam, Thangool
Callide Dam	Callide Dam	Treated at Biloela WTP. Coagulation, flocculation, clarification, filtration, chlorination.	Callide Dam
Goovigen	Callide Valley Aquifer Bores	Chlorination	Goovigen
Moura	Dawson River (Moura Weir)	Coagulation, flocculation, clarification, filtration, fluoridation, chlorination.	Moura, Banana
Taroom	Great Artesian Basin Bore	Aeration, chlorination	Taroom
Thangool	Callide Dam, Callide Valley Aquifer Bores	Treated at Biloela WTP. Pumped from Biloela, re-chlorinated.	Thangool
Theodore	Dawson River	Coagulation, flocculation, clarifications, filtration, chlorination.	Theodore

Council also operates non-potable water supply schemes at Wowan and Cracow. The non-potable schemes are not covered by this report.

3 Compliance with water quality criteria for drinking water

The criteria for water quality are derived from the guideline values outlined in the Australian Drinking Water Guidelines, BSC CCPs, and the standards specified in the Public Health Regulation 2018. In the current reporting period, various water quality analyses have been conducted, detailed results are

presented in the appendices. Key findings regarding water quality monitoring and performance are outlined below.

3.1 *E. coli* Monitoring

There have been no detections of *E. coli* in treated or reticulated water for any scheme within the reporting period.

3.2 Exceedances

Water across the schemes was generally of good quality and typically fell within the ADWG and CCP guidelines for most parameters. However, several non-compliance samples have been noted below, beyond those associated with incidents and events reported to the Regulator (see Section 5).

Biloela, Callide Dam Village and Thangool

Treated and reticulated water quality was generally good, though several aesthetic manganese exceedances were recorded for Biloela WTP treated water during the reporting period. It is worth noting that Callide Dam, which supplies the Biloela WTP, has persistent issues with seasonally high levels of manganese. Managing this aspect of raw water quality has been a significant area of focus for Council.

Callide Dam Village reticulated water, which is fed directly from Biloela WTP, also has instances of aesthetic manganese exceedances. A single sample exceeded the ADWG health limit of 0.5 mg/L.

Manganese exceedances were occasionally noted in the Biloela combined treated water (blended with bore water), and in the reticulated water in Biloela and Thangool. There have also been three instances of Biloela reticulated manganese readings above the ADWG health limit of 0.5 mg/L, though only two readings exceed the health limit when considered to a single significant figure. These readings were isolated and occurred across two sampling sites.

Combined treated water hardness was also consistently above the ADWG aesthetic limit, owing to the elevated hardness in the Biloela bores.

Finally, sporadically low chlorine levels have been noted through the treated and reticulated water across all three schemes. These low chlorine levels were less common for the combined treated water as well as Biloela and Thangool reticulated water, which is after re-chlorination at the Biloela ground reservoir. Improving chlorine residuals throughout these schemes has been added as a task to the RMIP to reflect this finding.

Moura and Banana

Treated and reticulated water quality at Moura and Banana was good, with only a single instance of low reticulated chlorine noted in Moura within the reporting period. There were also two incidents reported to the Regulator regarding treated water chlorine and turbidity, which is outlined in Section 5.

Goovigen

Treated and reticulated water quality at Goovigen was good with only a small number of aesthetic exceedances for pH, manganese, turbidity and iron within the reporting period. There was a single manganese reading above the ADWG health limit of 0.5 mg/L, but it did not exceed the limit when considered to a single significant figure.

Baralaba

Treated and reticulated water quality was generally good, though several aesthetic and health exceedances have been noted for the Baralaba scheme. Manganese levels in the Dawson River fluctuate seasonally and this was reflected in occasional aesthetic manganese exceedances in the treated and reticulated water. There were also three recorded instances of treated water manganese

exceeding the ADWG threshold of 0.5 mg/L in the reporting period, all occurring over a short span of three days in February.

There were also occasional aesthetic exceedances for pH, iron, and colour in the treated and reticulated water.

Finally, occasionally low chlorine levels have been noted through the treated and reticulated water. These low chlorine levels were more common in the reticulated water, though often were above 0.2 mg/L but below the Baralaba CCP limit of 0.3 mg/L. Council will continue to monitor chlorine levels with a goal of improving consistency throughout the scheme. There was an additional incident reported to the Regulator regarding treated water chlorine, which is outlined in Section 5.

Theodore

Treated and reticulated water quality at Theodore was good with only a single aesthetic colour exceedance in the reporting period.

Taroom

Treated and reticulated water quality at Taroom was good with only a small number of aesthetic exceedances noted for pH, manganese and iron in the reporting period.

3.3 Compliance with Monitoring Plan

Deviations from the approved monitoring plan were noted for several operational and verification parameters.

Improving compliance with the approved monitoring plan has been added as a task to the RMIP and will be a focus point for Council moving forward.

Operational

The operational monitoring undertaken throughout the reporting period is typically close to but under what is prescribed in the current monitoring plan. Most operational monitoring parameters were tested slightly less than required, often with 5-20 less tests across the year compared to the monitoring plan frequency. There is no clear pattern to when tests were not undertaken.

Iron operational testing was less frequently undertaken across Biloela, Moura and Goovigen compared to other parameters, whereas manganese testing was less frequently undertaken for Theodore and Taroom schemes.

Operational *E. coli* and total coliforms testing were also typically tested less frequently than described in the monitoring plan.

Other notable discrepancies compared to the monitoring plan include:

- No fluoride testing was undertaken in Moura treated water as fluoride was not dosed in the reporting period.
- Testing for soluble manganese in Baralaba treated water was sporadic, with a focus on total manganese analysis. This was due to challenges in the supply chain and the limited availability of necessary reagents. Total manganese testing was prioritised to allow for assessment against guideline values.
- Alkalinity testing was not undertaken for Theodore reticulated water.
- Total coliforms were rarely tested in Theodore treated water and not tested in Taroom reticulated water. It is worth noting that operational *E. coli* testing was performed at a higher frequency which utilises the same test method, so the lack of total coliforms readings is suspected to be partially due to simply not recording results from tests that were performed.

Verification

Verification testing generally aligned with or exceeded the monitoring plan frequency for most schemes. A small number of discrepancies were noted:

- *E. coli* and total coliform testing were below the prescribed levels for Biloela, Moura, Goovigen and Baralaba.
- Moura's treated water was subjected to three pesticide tests, falling short of the required four tests.
- Taroom's treated water was subjected to three pesticide tests, falling short of the required four tests.
- THMs were not tested for Theodore and Taroom treated water.
- THMs, standard water analysis, metals and pesticides verification testing was not undertaken for Goovigen treated water (GOOV04, reservoir sampling point). Testing for these parameters were undertaken for the reticulated sample point (GOOV03).

3.4 PFAS Monitoring

As part of the Queensland-wide testing for PFAS/PFOA in town water systems conducted in 2018, a detection was made for Perfluorohexanesulfonic acid (PFHxS) in the Biloela town water supply (sourced from groundwater bores). The detection was close to the limit of what the laboratory could detect and was well below the recently established health guidelines. No adverse health effects are anticipated. A program of ongoing periodic testing commenced to monitor any changes.

In early 2021, PFAS was detected and reported publicly by CS Energy in the Callide Valley Aquifer upstream of Council's bores. Detections are widespread in several private bores and detections above the ADWG were noted in several non-Council bores within a 12.5km radius of the Callide Dam. There was no PFAS detected in the dam itself.

Council increased the periodic testing of PFAS to quarterly, and subsequently to monthly. Council has engaged a third-party environmental consultant to undertake this PFAS monitoring within the Council's water supply. While PFAS has been detected in Council bores, all sources have been well below the ADWG values for drinking water. Given the consistent trend, the frequency of testing has now been reverted to an annual schedule.

4 DWQMP Implementation

The full RMIP is presented in Appendix B, including actions that have been completed during the reporting period.

In summary the following items progressed during the reporting period:

- Council has engaged a contractor to modify the roof of the Baralaba clear water tank to provide rooftop access. This will facilitate inspection without completely draining the tank and requiring entry solely through a side hatch in the wall of the reservoir. This will enable outlet to be plugged and isolation valve to be cut-in without draining tank.
- Council has continued PFAS monitoring for the Biloela scheme which has demonstrated low levels of PFAS in the raw water. PFAS monitoring is to be reduced to annually unless elevated results indicate a higher frequency is needed in the future.
- Council has engaged a contractor to undertake the laboratory bench refurbishment in the Biloela WTP.
- Council has engaged a consultant to develop the specification for additional online analysers for the Biloela and Moura WTPs.
- Council has replaced one of the Goovigen bore pumps with a submersible pump.
- Vegetation clearing in the Moura WTP wastewater ponds has begun but has been delayed due to the poor weather.

- Replacement of the Moura Clarifier 2 has been progressing but is currently delayed due to damage to new equipment that occurred during transit.
- Clarifier 3 at the Moura WTP can now be split and each side operated independently.
- Replacement of equipment at the Moura WTP including Filters 3 & 4, air lines and chlorine dosing lines.
- A new raw water pump station/refurbishment for Theodore is planned with construction envisaged in 2023-24.
- Improvements to Theodore including installation of a recirculation line in the clear water tank.
- Administrative amendments to SOPs and procedures for water treatment processes are ongoing.
- The Cyber Security Committee at BSC is continuously working to develop and put into action BSC's Cyber Security Framework, with the assistance of consultants.
- Council has appointed a Water Sampling Officer to assist with implementation of the approved verification monitoring plan. This position now undertakes verification sampling for all schemes. This should greatly improve consistency.

5 Notifications to the Regulator under sections 102 and 102A of the Act

This financial year there were three (3) instances where the Regulator was notified under sections 102 or 102A of the Act.

5.1 Incident 1 (14/09/2022)

The coagulant pump at the Moura WTP failed, resulting in water with elevated turbidity and inadequate coagulation being sent to Reservoirs 1 and 2. While the plant was shut down to reinstate the coagulant dosing system, Council attempted to continue feeding the network via the Dawson View Reservoir. Due to the lag time between the incident occurring and the plant being brought back online, there was a period of approximately 20 minutes where the town had no water.

During the plant restart, turbidity was elevated in the water leaving the plant due to inadequate coagulant dosing and stirred up sediment. A reading of 11 NTU on water leaving the plant was taken, though chlorine levels remained above 1.2 mg/L all day.

Immediate Corrective Action

- The plant was taken offline to restart the coagulant dosing system.
- Reservoirs 1 and 2 were isolated and used to backwash and clean the filters and clarifiers prior to recommencing production.
- Repeated turbidity sampling was undertaken to verify the situation was improving.
- A public notice was issued via social media for residents to be aware of potential dirty water and to report any issues to Council. There were no issues reported.
- A jar test was completed to verify the coagulant dose rate was appropriate.
- Residual water from Reservoirs 1 and 2 was discharged before refilling.
- Ready cult *E. coli* testing was conducted on the treated water and the most distance reticulated water sampling point (with no *E. coli* detected).
- Verification chlorine and *E. coli* testing was performed for treated water and all reticulated water sampling sites on the 15/09/2022.
- Operational turbidity, chlorine and pH sampling was undertaken for all reticulated water sample sites on the 15/09/2022.

Investigation and Long-Term Corrective Action

- It was found that a high turbidity alarm had been tripped but was not acknowledged until the next day. The alarm signal has been modified to ensure the operator will respond.

- Train 3 at the WTP has the capacity to automatically trip the plant at elevated NTU levels, while Train 2 can only be manually operated. BSC is in the process of upgrading Train 2 to allow automatic operation and provide an additional barrier to prevent high turbidity water being produced.
- The dosing pump was investigated and found to have been sending a run signal to SCADA despite a mechanical failure. The pump has been sent to the manufacturer for repair.

5.2 Incident 2 (27/10/2022)

At 9:30am on the 27/10/2022 operators detected a low chlorine level in the Baralaba reticulation (near the Council Depot). SCADA data indicated that chlorine levels had been below 0.2 mg/L for 53 hours, and no alarm was sent. The issue was not identified on-site earlier as the Baralaba plant is only staffed three times per week when accessible.

It was found that a mechanical malfunction had occurred on the chlorine gas system that doses filtered water prior to the clear water tank.

Immediate Corrective Action

- Operators from Biloela, Moura and the BSC Treatment Engineer Operations attended the Baralaba WTP to rectify the issue.
- Liquid sodium hypochlorite was dosed into the town reservoir to rapidly increase the chlorine residual.
- At 11:30am, the faulty chlorine gas bottle and regulator were replaced and tested in manual and auto to confirm they were functioning correctly, and the plant was restarted.
- Liquid sodium hypochlorite was dosed into the clear water tank to rapidly increase the chlorine residual.
- Ready cult *E. coli* samples were taken at the reticulated water sampling sites and no *E. coli* was detected.
- The rising main was flushed before water was sent back to town.
- Chlorine residuals were tested at 2:00pm on the day of the incident for reticulated water and were found to be 2.2 mg/L (BAR03) and 0.6 mg/L (BAR12).
- Additional mains were flushed throughout town to pull through the chlorinated water.

Investigation and Long-Term Corrective Action

- It was found that the chlorine alarm had been disabled due to the chlorine analyser malfunctioning and sending false alarms. This was due to the sample line to the analyser being too close to the chlorine injection point, resulting in erroneous high and low readings.
- The sampling line had been moved and the chlorine analyser calibrated to produce accurate readings.
- The chlorine alarm reinstated.

5.3 Incident 3 (10/11/2022)

A low chlorine level of 0.13 mg/L was found at the Moura WTP upon the start of the operator's shift on the 10/11/2022. It was found that the operator had incorrectly turned train 3 off, including all chlorine dosing, and the plant continued to run overnight on train 2 without chlorine dosing.

A SCADA alarm was generated for a low chlorine level of 0.27 mg/L late on the 9/11/2022, though the alert was not sent to the on-call mobile phone. Accordingly, the operator was not aware of the chlorine dosing issue until the start of their next shift.

Filtered water turbidity was within the correct CCP range throughout the incident.

Immediate Corrective Action

- Operational samples of Ready cult *E. coli* and free chlorine were taken at 8:30am on the 10/11/2022 and found most sites below the 0.2 mg/L chlorine CCP limit.

- Reservoir 3 was isolated from the other two reservoirs to allow a chlorine residual to be built as quickly as possible. Liquid sodium hypochlorite was dosed directly into the reservoir and the WTP chlorine setpoint was set to the maximum value until the treated water chlorine was found to be in range again at 10:30am. The chlorine gas set point was subsequently adjusted back to the typical range.
- Operational samples of free chlorine were again tested at 2:00pm on the day of the incident and were all found to be above 0.8 mg/L.
- Verification for all reticulated water sample sites were taken on the 14/10/2022. No *E. coli* was detected, and chlorine residuals were found to be normal.

Investigation and Long-Term Corrective Action

- Chlorine alarm had been disabled due to the chlorine analyser malfunctioning and sending false alarms.
- Alarm was not reinstated after the chlorine analyser was repaired.
- Operator provided with additional on the job training.
- Logic added into SCADA to automatically re-enable alarms after a set period of being disabled.
- The SCADA officer to complete a monthly audit of the system to ensure all alarms are enabled as appropriate.

6 Customer complaints related to water quality

Council has an obligation to provide reports detailing the number of complaints, their general nature, and the actions taken in response. Over the course of the year, several complaints were received regarding water quality.

Table 2 – number of complaints about water quality (including complaints per 1000 connections)

Scheme	Connections	Pressure	Suspected Illness	Discoloured Water	Taste and Odour
Banana	90	0	0	0	0
Baralaba	205	0	0	1 (4.88)	2 (9.76)
Biloela	2,615	15 (1.91)	0	35 (13.4)	5 (1.91)
Goovigen	56	1 (17.86)	0	1 (0.02)	0
Moura	1,009	2 (1.98)	0	0	0
Taroom	533	0	0	0	0
Thangool	152	0	0	1 (6.58)	2 (13.16)
Theodore	286	0	0	0	0
TOTAL		**18**	**0**	**38**	**9**

Note: Callide Dam complaints have been captured under Biloela in this table.

Figure 6.1 and Figure 6.2 show customer complaints broken down by scheme and month respectively. As expected, the schemes that cater to larger communities have a higher incidence of complaints. Additionally, there was a clear spike in complaints in March, largely associated with discoloured water complaints primarily within Biloela. This correlates with a period of elevated manganese in the Callide Dam.

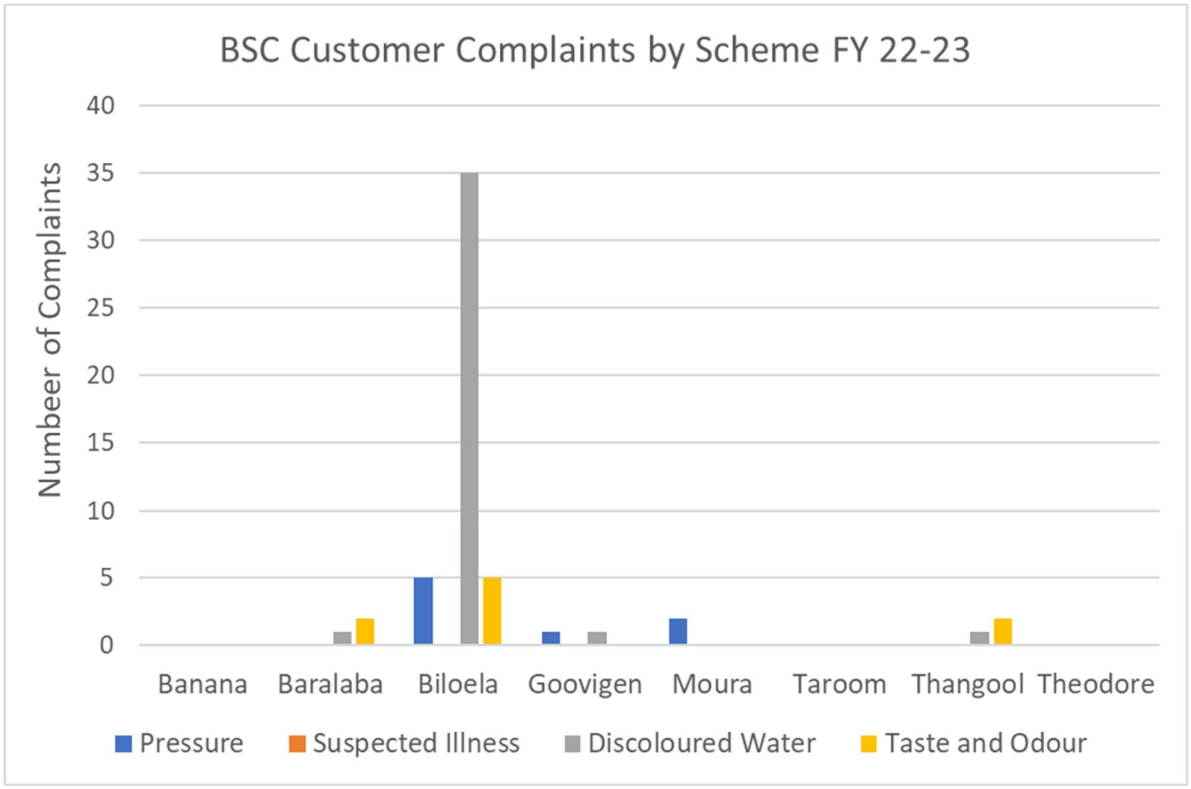

Figure 6.1 - Customer Complaints by Scheme

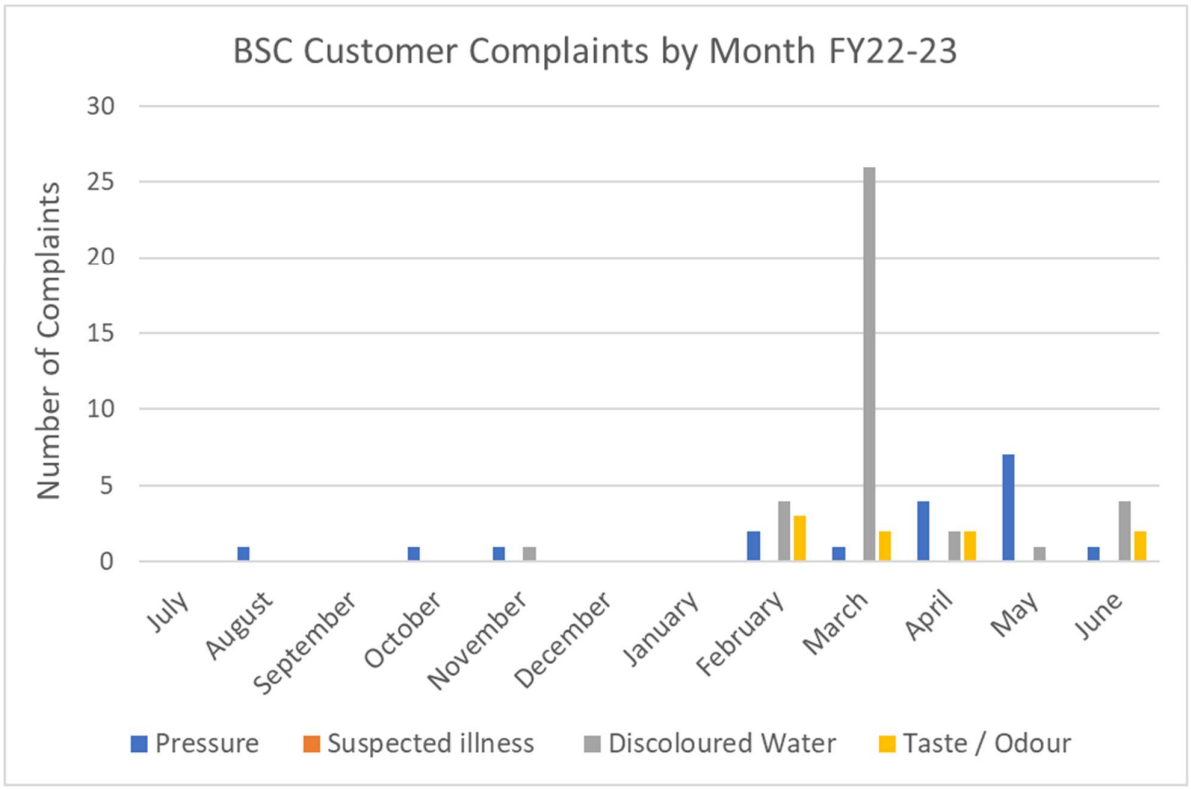

Figure 6.2 - Customer Complaints by Month

6.1 Suspected Illness

Complaints are occasionally received from customers who suspect that water quality may be associated with an illness they are experiencing. Banana Shire Council investigates each complaint relating to alleged illness from our water quality, typically by inspecting and testing the customers tap.

During the 2022/2023 reporting period there were no complaints of suspected illness arising from the water supply system.

6.2 Discoloured water

A total of thirty-eight (38) complaints about discoloured water were received from the below schemes during the reporting period.

One (1) complaint occurred in Goovigen.

One (1) complaint occurred in Thangool.

One (1) complaint occurred in Baralaba.

Thirty-five (35) complaints occurred in Biloela. Two (2) complaints were from the same customer and after investigating it is believed the issue is due to internal copper pipelines. Twenty-six (26) complaints occurred throughout March, including twenty (20) complaints over a 4-day period. This coincided with seasonally elevated manganese in the Callide Dam. Four (4) complaints occurred over two days in late June and appear to be related to flushing that was undertaken in the area, possibly scouring the mains and suspending particulates.

For discoloured water complaints, Council's typical approach includes flushing mains adjacent to the property until the water is clear and taking a sample for testing at the WTP if necessary.

6.3 Taste and odour

A total of nine (9) taste and odour complaints were received during the reporting period.

Two (2) complaints occurred in Baralaba.

Two (2) complaints occurred in Thangool.

Five (5) complaints occurred in Biloela, inclusive of one complaint that occurred in the Callide Dam Village. Two of these complaints occurred during the period of elevated manganese discussed in the discoloured water complaints section above.

All incidents received follow up, usually resulting in sampling and flushing. Where possible, samples were taken inside of the customer's residence. Mains flushing was used to make an immediate correction to quality problems.

6.4 Pressure

There has been a total of eighteen (18) complaints about low water pressure that were received this reporting period.

One (1) complaint occurred in Goovigen. After investigation and pressure testing it was found that the problem likely originated within the customer's pipework.

Two (2) complaints occurred in Moura. In one instance it was found that the mains stopcock was slightly closed, and the pressure issue was rectified.

Fifteen (15) complaints occurred in Biloela. Four (4) complaints related to a valve that was left off after completed reticulation network works and were rectified after opening the valve. Four (4) complaints were related to a single issue that was rectified and a pressure logger placed to monitor. One (1) complaint required that a new water meter be replaced. One (1) complaint was investigated and found to be related to internal restrictions due to water saving devices on the customer's pipework.

7 Findings and recommendations of the external DWQMP audit

Banana Shire Council completed the latest DWQMP audit in February 2021. This external audit covered the period from 2015 to 2020, with the latest DWQMP being updated in 2017. The purpose of the audit is to verify:

- the accuracy of the monitoring and performance data provided to the Regulator.
- assess compliance with the BSC DWQMP.
- assess the relevance of the BSC DWQMP in relation to the service provided.

No audit was required or conducted during the relevant reporting year 01/07/2022 – 30/06/2023. The next external audit must be conducted by the 25th of February 2025.

8 Outcome of the review of the DWQMP and how issues raised have been addressed

The Banana Shire Council Drinking Water Quality Management Plan was last approved by the DRDMW on 24th December 2021.

A review was conducted on the DWQMP from the latter part of the 2022/23 fiscal year to the early part of the 2023/24 fiscal year. It was presented to the regulator on September 28, 2023, and is anticipated to be finalised shortly.

The review and approval of the revised DWQMP by DRDMW will take place beyond the reporting timeframe of this annual report. Therefore, modifications to the DWQMP won't be finalised until the annual report for the 2023/24 reporting year.

Actions identified throughout the latest DWQMP review are presented in Appendix C.

Appendix A – Summary of compliance with water quality criteria

Pages 16 to 24 summarise the test results for microbiological sampling, specifically looking for *Escherichia coli*, a bacterium which is considered to indicate the presence of faecal contamination and therefore potential health risk.

The reported statistics do not include results derived from repeat samples, or from emergency or investigative samples undertaken in response to an elevated result.

The results reported are NATA approved verification testing and Ready cult internal approved testing, as per the DWQMP.

Banana E. coli Results

Drinking water scheme: Banana (BAN01, BAN02, BAN04)

Year	*2022 to 2023*											
Month	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	8	11	6	5	11	7	8	8	9	7	13	12
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	41	51	56	58	68	74	81	86	94	100	102	105
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Baralaba E. coli Results

Drinking water scheme: Baralaba (BAR02, BAR03 & BAR12)

Year	*2022 to 2023*											
Month	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	12	17	14	17	13	9	2	8	11	7	11	14
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	84	99	104	119	130	137	132	134	139	133	130	135
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Biloela E. coli Results

Drinking water scheme: Biloela (BIL03, BIL04, BIL14, BIL17, BIL20 & BIL36)

Year	*2022 to 2023*											
Month	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***
No. of samples collected	30	39	34	40	30	24	29	33	27	27	26	34
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	578	563	538	526	507	486	465	455	443	420	385	373
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Callide Dam Village E. coli Results

Drinking water scheme: Callide Dam (CAL01 & CAL02)

Year	*2022 to 2023*											
Month	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***
No. of samples collected	9	10	9	11	9	6	7	11	9	8	9	12
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	106	107	105	109	111	108	106	108	108	107	107	110
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Goovigen E. coli Results

Drinking water scheme: Goovigen (GOO03 & GOO04)

Year	*2022 to 2023*											
Month	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***
No. of samples collected	9	11	7	9	9	7	6	9	12	5	8	14
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	99	97	98	98	98	96	93	100	107	103	101	106
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Moura E. coli Results

Drinking water scheme: Moura (MOU03, MOU09, MOU11, MOU25 & MOU26)

Year	*2022 to 2023*											
Month	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***
No. of samples collected	26	34	34	29	31	24	32	32	36	28	40	31
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	242	261	286	308	324	339	357	361	375	375	380	377
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Taroom E. coli Results

Drinking water scheme: Taroom (TAR03, TAR06, TAR15 & TAR16)

Year	*2022 to 2023*											
Month	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***
No. of samples collected	16	19	17	17	23	16	11	16	16	16	19	13
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	77	88	98	107	123	132	137	148	160	173	189	199
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Thangool E. coli Results

Drinking water scheme: Thangool (THA01, THA02 & THA05)

Year	*2022 to 2023*											
Month	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***
No. of samples collected	13	15	13	16	11	9	9	15	13	10	12	16
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	160	158	156	161	161	157	153	155	155	152	150	152
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Theodore E. coli Results

Drinking water scheme: Theodore (THE03, THE05, THE06 & THE09)

Year	*2022 to 2023*											
Month	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***
No. of samples collected	4	16	6	16	16	11	4	4	16	16	23	4
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	85	93	91	99	106	110	107	102	115	115	135	136
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Table 3 - Key items of progress against the risk management improvement program in the approved DWQMP

Task	Scheme	Plant	Process Step	Description	Action	Status 22-23 FY	Status 23-24 FY	Status 24-25 FY	Comments
1	Baralaba (BAR)	Baralaba WTP	Treated Water	Treatment chemical storage needs to meet A/S.	Upgrade chemical storage and bunding.			Planned Capital Project	
2	Baralaba (BAR)	Baralaba WTP	Treated Water	There is no current isolation on the CWT. Operators are unable to isolate the tank in an emergency, resulting in a loss of stored water.	Installation of clear water tank isolation valve.	In progress	Ongoing		Modifications are needed to the tank roof to allow access for the valve to be installed. Council has engaged contractor to modify tank roof.
3	Biloela (BIL)	Biloela Bores	Monitoring	Investigation into PFAS concentrations in the surrounding groundwater to ensure ADWG are met.	Routine monitoring and evaluation of the results to ensure the water is safe.	In progress	Ongoing		PFAS monitoring moving back to annually based on recent results.
4	Biloela (BIL)	Biloela WTP	Monitoring	Lack of ventilation in the laboratory poses a safety hazard during monitoring and the use of chemicals.	Install Fume hoods in the laboratory.	In progress	Ongoing		Contractor engaged for laboratory bench refurbishment.
5	Biloela (BIL)	Biloela WTP	Clarified water	Monitor the water turbidity prior to entering the filters.	Install online turbidity meter at the clarified water outlet (before the filters)	In progress	Ongoing		
6	Biloela (BIL)	Biloela WTP	Monitoring	Lack of process monitoring reducing treatment oversight and effectiveness.	Investigate adding additional online monitors (e.g. NTU, UV) throughout process.		Budget approved 23/24 FY		Consultant engaged to develop specification for new instrumentation.
7	Biloela (BIL)	Biloela WTP	Storage	Elevated turbidity in final water leaving the clear water tanks.	Investigate final water turbidity trends and root cause of turbidity in CWTs.		In progress		CWT cleaning budgeted for 23/24 FY. Identified as part of the 2023 DWQMP Review.
8	Biloela (BIL)	Biloela WTP	Disinfection	Low chlorine residual levels.	Investigate and improve operation of chlorine disinfection systems at the WTP to improve treated and reticulated chlorine residual consistency.		Planned		Identified during 2023 DWQMP Review.

Task	Scheme	Plant	Process Step	Description	Action	Status 22-23 FY	Status 23-24 FY	Status 24-25 FY	Comments
9	Moura (MOU)	Moura WTP	Clarified water	Clarifier 2 refurbishment-completion.	The existing clarifier 2 will be replaced with a new clarifier. The WTP capacity will increase to 110L/s which will meet the peak day demands.	In progress	Ongoing		Project progressing but delayed due to damage to equipment during transit.
10	Moura (MOU)	Moura WTP	Treated	Refurbish wastewater ponds.	Clean and clear vegetation.	In progress	Ongoing		Partially complete – weather delayed project temporarily.
11	Moura (MOU)	Moura WTP	Monitoring	Lack of process monitoring reducing treatment oversight and effectiveness.	Investigate adding additional online monitors (e.g. NTU, UV) throughout process.		Budget approved for current FY		Consultant engaged to develop specification for new instrumentation.
12	Taroom (TAR)	Bore Intake	Raw water intake	Contamination of water.	Improve onsite monitoring capability.	Planning commenced	Ongoing		
13	Taroom (TAR)	Taroom WTP	Clear Water Tank	Poor water quality leaving clear water tank.	Investigate implementing turbidity monitoring.	In progress			Turbidity analyser purchased, awaiting installation.
14	Taroom (TAR)	Taroom WTP	Treatment	High temperatures in bore water leaving GAB.	Investigate options for cooling bore water and associated benefits.	In progress			Investigation complete – outcomes and Council strategy to be further considered in a future FY.
15	Taroom (TAR)	Taroom WTP	Treatment	Lack of pH adjustment at Taroom WTP.	Investigate options for pH adjustment system at Taroom WTP.	In progress			Investigation complete – outcomes and Council strategy to be further considered in a future FY.
16	Taroom (TAR)	Taroom WTP	Treatment	Reservoir air vent open is open, risking contamination.	Place screen over vent to ensure vermin cannot enter tank.		Planned		
17	Taroom (TAR)	Taroom WTP	Monitoring	Lack of colour monitoring for reticulated water.	Add colour tests to routine reticulated water sampling.		Planned		Identified during 2023 DWQMP Review.
18	Theodore (THE)	Theodore WTP	Raw water intake	Intake of contaminated water during wet weather even and moderate flood.	Consider installation of automatic level sensors connected to telemetry and automated plant shut down	In progress	Ongoing		Turbidity monitoring upgrades are part of the FY 23-24 budget.

Task	Scheme	Plant	Process Step	Description	Action	Status 22-23 FY	Status 23-24 FY	Status 24-25 FY	Comments
					on increased raw water turbidity and river level.				
19	Theodore (THE)	Theodore WTP	Raw water intake	Preliminary design and tender document for the construction of a new raw water intake	Design of a new RWPS.	In progress	Ongoing		Design phase complete – tender and construction to be completed in FY 23-24.
20	Theodore (THE)	Theodore WTP	Coagulation / Flocculation	Underdose of coagulant.	Install duty/standby coagulant dosing pump (Spare pump stored at the WTP).			Future Upgrade	Currently, one pump working, one spare - to Include in Future Tender Specs.
21	Theodore (THE)	Theodore WTP	Activated carbon adsorption	Underdose PAC, Inefficient algal toxin removal.	Consider installing automatic PAC dosing system.			Future Upgrade	To include in Future Tender Specs.
22	Theodore (THE)	Theodore WTP	Activated carbon adsorption	Overdose PAC.	Consider installing automatic PAC dosing system.			Future Upgrade	To include in Future Tender Specs.
23	Theodore (THE)	Theodore WTP	Filtration	Breakthrough and mud balls.	Consider installing automatic backwash system.			Future Upgrade	WTP automation
24	Theodore (THE)	Theodore WTP	Reticulation	Risk of contamination by vermin.	Improve vermin proofing of reservoirs.		Planned		
25	General	General	General	Failure of equipment.	Develop and implement maintenance management system including maintenance procedures, register of spares and requirements.	Implemented (assetic)	Ongoing		Currently under way. O & M manuals used to develop maintenance procedures.
26	General	General	General	Inadequate calibration leading to incorrect readings/operations.	Review calibration methodologies, frequencies, recording practices.	Ongoing			Procedures for verification of calibration to be included in BSC Laboratory manual procedures.
27	General	General	General	DW Audit Report	Implement corrective and preventative action for all findings from the DW Audit.	Ongoing			Focus on calibration
28	General	General	Reticulation	*Naegleria fowleri* risk due to high regional water temperatures.	Add temperature testing to monitoring plan to further assess *Naegleria fowleri* risk.		Planned		Adding to monitoring plan in FY 23-24. Will require time to implement as equipment is purchased.

Task	Scheme	Plant	Process Step	Description	Action	Status 22-23 FY	Status 23-24 FY	Status 24-25 FY	Comments
29	General	General	Monitoring	Inadequate long-term water quality trending.	Implement quarterly management meetings to review drinking water quality and compliance.		Ongoing		
30	General	General	Monitoring	Inadequate operational and verification monitoring of WQ parameters.	Improve compliance with operational and verification monitoring across all WTPs.		Planned		Identified during preparation of the FY22-23 annual report.
31	General	General	Monitoring	Inadequate escalation of exceedances.	Improve compliance with BSC's exceedance and CCP breach procedures.		Planned		Identified during preparation of the FY22-23 annual report.
Completed Tasks									
	Goovigen (GOO)	Bores	Raw Water	The submersible pump is required to maintain the Goovigen water supply.	Replace the existing above ground motor with a submersible pump.	Complete			
	Moura (MOU)	Moura WTP	Filtration	Installation of valves to run half of train 3 during cleaning or breakdowns.	The ability to split train 3 clarifier will allow for water to be produced during cleaning and breakdowns, increasing efficiency.	Complete			
	Moura (MOU)	Moura WTP	Disinfection	Reducing the risk of chlorine injection failing due to pipe breaks.	Replace the underground poly section of Cl2 at train 2 that breaks.	Complete			
	Moura (MOU)	Moura WTP	Filtration	6mm underground airlines have failed. It is impossible to track down multiple leaks. This has caused our compressors to be overworked.	Renewal of airlines for actuated valves both underground and inside the old lab pit.	Complete			
	Moura (MOU)	Moura WTP	Filtration	Existing filters will be refurbished to meet the new clarifier capacity.	Refurbish Filter 3 and 4 to include sandblast, patch, add new media and new nozzles.	Complete			Filters replaced not refurbished.

Task	Scheme	Plant	Process Step	Description	Action	Status 22-23 FY	Status 23-24 FY	Status 24-25 FY	Comments
	Theodore (THE)	Theodore WTP	Treated water	WHS	Extend the safety railing at the clear water tank to access the hatch and the water level.	Complete			
	Theodore (THE)	Theodore WTP	Treated water	Eliminate dead zones within the clear water tank where no chlorine is present.	Clear water tank/Chlorine contact installation of baffle/ring main or mixer to prevent short circuiting of Cl2 dosed water.	Complete			
	Theodore (THE)	Theodore WTP	Treated water	Assess the structural integrity of the roof support for clear water tank.	Roof support condition investigation and design proposal.	Complete			
	General	General	General	Failure of equipment.	Develop register of spares and requirements.	Complete			

Appendix C – Summary of DWQMP review actions identified

Table 4 – DWQMP Review Action status

Action	Detail	Complete	Comment
Updated population, connections and water usage values in DWQMP Introduction	Updated based on latest DRDME information papers and BSC planning reports.	Y	
Amended stakeholders relevant to the management of drinking water Quality	Added chemical suppliers, Theodore Water, and updated contact details.	Y	
Amended the authorities in Section 1.4	Changed the titles of new roles that have commenced.	Y	
Added preliminary catchment categorisation for each water source in Section 2.1.3	Added wording to assign a preliminary catchment categorisation for each water source in alignment with the new DWQMP Guideline requirements.	Y	
Amended system descriptions and diagrams through Section 2.1.4	Updated system descriptions, specification tables and diagrams to reflect upgrades/ changes to BSC plants and schemes.	Y	
Amended water quality analysis and discussion in Section 2.2	Updated water quality analysis with last 5 years data and statistical parameters (min, max, median, percentiles).	Y	
Added customer complaint data	Added details of the last 5 years of complaints to the water quality data analysis in Appendix C-H.	Y	
Updated community communication methods in Section 8.2	Added social media as a community communication tool.	Y	
Amended wording regarding validation of processes in Section 9.2	Updated description of how new processes / plant upgrades are validated to align with Council practice.	Y	
Updated water monitoring program	Added operational temperature monitoring for all schemes. Added verification chlorine monitoring for all schemes (was already performed). Added verification chlorate monitoring for Thangool. Added operational true colour monitoring for Taroom reticulated water. Clarified Taroom Bore 2 sampling regime. Removed some verification monitoring from Goovigen reticulated water (to align with other schemes). Added details of all online analysers.	Y	
Updated the Risk Management Improvement Program	Included all the current and future projects occurring at all the sites.	Y	
Added reticulation sampling maps as Appendix S	Added sampling maps in alignment with feedback from DRDMW during the 2021 DWQMP review.	Y	

Appendix D – Water Testing Summary Results

The results from the operational and verification monitoring program have been compared against the levels of the water quality criteria specified by the Regulator in the Water Quality and Reporting Guideline for a Drinking Water Service.

This report is best read in conjunction with the Australian Drinking Water Guidelines, the relevance of each parameter is explained in detail.

This analysis focuses on operational and verification testing for treated and reticulated water. Operational and verification testing for raw water and water at intermediate process stages (e.g., dosed, settled, filtered etc.) have not been included as they are not indicative of the final water quality that reaches customers.

BSC's treated and reticulated water verification testing in undertaken by Queensland Health's (QH) laboratory services. Testing is undertaken primarily via set water quality testing suites. The test suites used are shown below. For simplicity, verification monitoring compliance is shown per test suite unless there were any exceedances, in which case the specific parameter that was exceeded is individually shown. Due to the large number of pesticides, only pesticides with a defined ADWG limit that has been exceeded are shown.

Free chlorine is assessed against limits of ≥0.2 mg/L and ≤5 mg/L as a health-based threshold unless the scheme disinfection CCP is a narrower range (i.e., Baralaba). This is based on the target of a 0.2 mg/L free chlorine residual at the customers tap to ensure adequate disinfection and a 5 mg/L health limit in the ADWG for total chlorine. It is noted that the 5 mg/L limit is only applicable for total chlorine. However, this threshold has been applied to free chlorine measurements as BSC does not test total chlorine and if free chlorine exceeds 5 mg/L, total chlorine will also have exceeded the 5 mg/L threshold.

Table 5 - Queensland Health Test Suites and ADWG Limits

Queensland Health Test Suite	Parameters	Water quality criteria (i.e. ADWG guideline value)
Standard Water Analysis	pH	≥6.5 & ≤8.5 (A)
	Turbidity (NTU)	≤5 (A)
	True Colour (HU)	≤15 (A)
	Iron (mg/L)	≤0.3 (A)
	Manganese (mg/L)	≤0.1 (A) ≤0.5 (H)
	Aluminium (mg/L)	≤0.2 (A)
	Alkalinity (Total) (mg/L CaCO3)	
	Residual Alkalinity (meq/L)	
	Total Hardness (mg/L CaCO3)	≤200 (A)
	Temporary Hardness (mg/L CaCO3)	
	Total Dissolved Ions (mg/L)	
	Total Dissolved Solids (mg/L)	≤600 (A)
	Conductivity (µS/cm)	
	Bicarbonate (mg/L CaCO3)	
	Carbonate (mg/L CaCO3)	
	Hydroxide (mg/L CaCO3)	
	Hydrogen (mg/L)	
	Boron (mg/L)	≤4 (H)
	Calcium (mg/L)	
	Chloride (mg/L)	≤250 (A)
	Copper (mg/L)	≤1 (A)
	Fluoride (mg/L)	≤1.5 (H)
	Magnesium (mg/L)	
	Nitrate (mg/L)	≤50 (H)
	Potassium (mg/L)	
	Silica (mg/L)	≤80 (A)
	Sodium (mg/L)	≤180 (A)
	Sulphate (mg/L)	≤250 (A)
	Zinc (mg/L)	≤3 (A)
Metals	Iron (mg/L)	≤0.3 (A)
	Manganese (dissolved) (mg/L)	
	Aluminium (mg/L)	≤0.2 (A)
	Arsenic (mg/L)	≤0.01 (H)
	Cadmium (mg/L)	≤0.002 (H)
	Chromium (mg/L)	≤0.05 (H)
	Copper (mg/L)	≤1 (A)
	Lead (mg/L)	≤0.01 (H)
	Nickel (mg/L)	≤0.02 (H)
THMs	Chloroform (µg/L)	
	Bromodichloromethane (µg/L)	
	Dibromochloromethane (µg/L)	
	Bromoform (µg/L)	
	Total Trihalomethanes (µg/L)	≤250 (H)
Pesticides	247 Pesticide/ Herbicide species	Varies
Radiological	Total Alpha activity (Bq/L)	≤0.5 (H)
	K40-Corrected Beta Activity (Bq/L)	≤0.5 (H)

Biloela WTP Treated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Biloela WTP Treated Water (BIL03)	Operational	pH	365	351	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	365	351	≤5 (A)		
		True Colour (HU)	365	351	≤15 (A)	2	
		Total Iron (mg/L)	365	270	≤0.3 (A)		
		Total Manganese (mg/L)	365	351	≤0.1 (A) ≤0.5 (H)	102 (A)	If considering values only to a single significant figure, there have been only 59 aesthetic exceedances.
		Alkalinity (mg/L of CaCO3)	365	349			
		Fluoride (mg/L)	365	349	≤1.5 (H)		
		Free Chlorine (mg/L)	365	349	≥0.2 & ≤5.0 (H)	11	Considering values only to a single significant figure, there have only been 10 exceedances.
		E. coli (mpn/100mL)	52	33	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	33			
	Verification	E. coli (mpn/100mL)	52	44	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	45			
		THMs	12	12	See Table 5.		
		Standard Water Analysis	4	6	See Table 5.		
		Metals	4	5	See Table 5.		
		Pesticides	4	5	ADWG 2011 Chapter 10 Table 10.6		

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Biloela WTP Treated Water (BIL03)	Operational	True Colour (HU)	Aesthetic	16	15/12/2022
				28	01/03/2023
		Total Manganese (mg/L)	Aesthetic	0.12	6/10/2022
				0.13	20/10/2022
				0.24	21/10/2022
				0.14	22/10/2022
				0.10	24/10/2022
				0.13	11/11/2022
				0.24	12/11/2022
				0.25	13/11/2022
				0.13	15/11/2022
				0.13	16/11/2022
				0.18	17/11/2022
				0.11	18/11/2022
				0.21	19/11/2022
				0.15	20/11/2022
				0.10	21/11/2022
				0.14	22/11/2022
				0.19	23/11/2022
				0.35	24/11/2022
				0.27	25/11/2022
				0.26	28/11/2022
				0.32	29/11/2022
				0.29	30/11/2022
				0.23	1/12/2022
				0.26	2/12/2022
				0.33	3/12/2022
				0.22	4/12/2022
				0.12	5/12/2022

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
				0.12	9/12/2022
				0.21	15/12/2022
				0.22	16/12/2022
				0.28	17/12/2022
				0.40	18/12/2022
				0.28	19/12/2022
				0.13	20/12/2022
				0.21	21/12/2022
				0.13	22/12/2022
				0.12	23/12/2022
				0.19	3/01/2023
Biloela WTP Treated Water (BIL03)	Operational	Total Manganese (mg/L)	Aesthetic	0.17	4/01/2023
				0.12	5/01/2023
				0.20	6/01/2023
				0.17	7/01/2023
				0.13	9/01/2023
				0.12	4/02/2023
				0.13	6/02/2023
				0.21	7/02/2023
				0.23	9/02/2023
				0.16	10/02/2023
				0.19	11/02/2023
				0.17	12/02/2023
				0.15	13/02/2023
				0.19	14/02/2023
				0.11	15/02/2023
				0.11	19/02/2023
				0.11	20/02/2023
				0.19	23/02/2023

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
				0.12	24/02/2023
				0.14	25/02/2023
				0.14	26/02/2023
				0.17	27/02/2023
				0.13	28/02/2023
				0.11	1/03/2023
				0.21	2/03/2023
				0.19	3/03/2023
				0.17	4/03/2023
				0.18	5/03/2023
				0.16	7/03/2023
				0.12	8/03/2023
				0.11	9/03/2023
				0.14	10/03/2023
				0.53	11/03/2023
				0.34	12/03/2023
				0.36	13/03/2023
				0.27	14/03/2023
				0.14	15/03/2023
				0.16	16/03/2023
				0.26	17/03/2023
				0.11	21/03/2023
Biloela WTP Treated Water (BIL03)	Operational	Total Manganese (mg/L)	Aesthetic	0.31	22/03/2023
				0.16	23/03/2023
				0.17	24/03/2023
				0.15	25/03/2023
				0.13	26/03/2023
				0.26	28/03/2023
				0.42	30/03/2023

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
				0.32	31/03/2023
				0.33	1/04/2023
				0.32	2/04/2023
				0.31	3/04/2023
				0.17	4/04/2023
				0.21	5/04/2023
				0.13	6/04/2023
				0.18	7/04/2023
				0.14	8/04/2023
				0.14	9/04/2023
				0.11	10/04/2023
				0.11	11/04/2023
				0.19	18/04/2023
				0.12	20/04/2023
				0.11	22/04/2023
				0.14	23/04/2023
				0.12	10/06/2023
		Free Chlorine (mg/L)	Health	0.03	9/02/2023
				0.03	20/02/2023
				0.02	22/02/2023
				0.02	15/03/2023
				0.06	29/03/2023
				0.09	1/04/2023
				0.15	4/04/2023
				0.14	7/04/2023
				0.05	20/04/2023
				0.1	28/04/2023
				0.12	18/05/2023

Biloela Combined Treated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Biloela Combined Treated Water (BIL04)	Operational	pH	365	351	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	365	351	≤5 (A)		
		True Colour (HU)	365	351	≤15 (A)		
		Total Iron (mg/L)	365	271	≤0.3 (A)		
		Total Manganese (mg/L)	365	351	≤0.1 (A) ≤0.5 (H)	5	If considering values only to a single significant figure, there has been no exceedances.
		Alkalinity (mg/L of CaCO3)	365	351			
		Fluoride (mg/L)	365	348	≤1.5 (H)		
		Free Chlorine (mg/L)	365	348	≥0.2 & ≤5.0 (H)	6	If considering values only to a single significant figure, there have been only 4 exceedances.
		E. coli (mpn/100mL)	365*	33	≤1 (H)		
		Total Coliforms (mpn/100mL)	365*	33			
	Verification	E. coli (mpn/100mL)	52	42	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	42			
		THMs	12	12	See Table 5.		
		Standard Water Analysis	4	4	See Table 5.		
		Total Hardness	4	4	≤200 (A)	4	If considering values only to a single significant figure, there have been only 2 exceedances.
		Metals	4	4	See Table 5.		
		Pesticides	2	3	ADWG 2011 Chapter 10 Table 10.6		
		Radiological	0	0	See Table 5.		

***** The daily frequency required for *E. coli* and total coliform testing is an error in the plan and is intended to be weekly, aligning with the other treated water sampling points.

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Biloela Combined Treated Water (BIL04)	Operational	Total Manganese (mg/L)	Aesthetic	0.113	23/11/2022
				0.114	25/11/2022
				0.119	28/11/2022
				0.102	6/03/2023
				0.109	18/04/2023
		Free Chlorine (mg/L)	Health	0.16	10/08/2022
				0.17	5/10/2022
				0.11	6/10/2022
				0.02	16/02/2023
				0.04	9/03/2023
				0.03	15/03/2023
	Verification	Total Hardness (mg/L as CaCO3)	Aesthetic	226	20/09/2022
				252	16/12/2022
				223	23/05/2023
				295	12/06/2023

Biloela Reticulated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Biloela Reticulated Water (BIL14, BIL17, BIL20 & BIL36)	Operational	pH	208	199	≥6.5 & ≤8.5 (A)	1	
		Turbidity (NTU)	208	200	≤5 (A)	2	
		True Colour (HU)	208	200	≤15 (A)		
		Total Iron (mg/L)	208	152	≤0.3 (A)	1	If considering values only to a single significant figure, there have been no exceedances.
		Total Manganese (mg/L)	208	200	≤0.1 (A) ≤0.5 (H)	7 (A) 3 (H)	If considering values only to a single significant figure, there have been only 2 aesthetic exceedances and 2 health exceedances.
		Alkalinity (mg/L of CaCO3)	208	198			
		Free Chlorine (mg/L)	208	200	≥0.2 & ≤5.0 (H)	1	If considering values only to a single significant figure, there have been no exceedances.
		E. coli (mpn/100mL)	208	179	≤1 (H)		
		Total Coliforms (mpn/100mL)	208	179			
	Verification	E. coli (mpn/100mL)	52	41	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	41	≥6.5 & ≤8.5 (A)		

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Biloela Reticulated Water (BIL14, BIL17, BIL20 & BIL36)	Operational	pH	Aesthetic	6.4	12/06/2023 (BIL17)
		Turbidity (NTU)	Aesthetic	5.93	29/11/2022 (BIL20)
				8.76	13/03/2023 (BIL36)
		Total Iron (mg/L)	Aesthetic	0.31	06/03/2023 (BIL14)
		Total Manganese (mg/L)	Aesthetic	0.12	06/10/2022 (BIL20)
				0.36	29/11/2022 (BIL20)
				0.11	04/01/2023 (BIL20)
				0.17	06/03/2023 (BIL36)
				0.13	24/04/2023 (BIL14)
				0.12	06/06/2023 (BIL20)
				0.11	12/06/2023 (BIL20)
			Health	0.65	23/02/2023 (BIL36)
				0.87	13/03/2023 (BIL36)
				0.53	22/06/2023 (BIL20)
		Free Chlorine (mg/L)	Health	0.17	29/08/2022 (BIL14)

Thangool Reticulated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Thangool Reticulated Water (THA01, THA02 & THA05)	Operational	pH	156	147	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	156	147	≤5 (A)		
		True Colour (HU)	156	148	≤15 (A)		
		Total Iron (mg/L)	156	114	≤0.3 (A)		
		Total Manganese (mg/L)	156	148	≤0.1 (A) ≤0.5 (H)	7 (A)	If considering values only to a single significant figure, there have been only 3 exceedances.
		Alkalinity (mg/L of CaCO3)	156	148			
		Free Chlorine (mg/L)	156	149	≥0.2 & ≤5.0 (H)	3	
		E. coli (mpn/100mL)	156	139	≤1 (H)		
		Total Coliforms (mpn/100mL)	156	139			
	Verification	E. coli (mpn/100mL)	12	13	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	13	≥6.5 & ≤8.5 (A)		

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Thangool Reticulated Water (THA01, THA02 & THA05)	Operational	Total Manganese (mg/L)	Aesthetic	0.182	12/12/2022 (THA02)
				0.103	04/01/2023 (THA05)
				0.167	20/03/2023 (THA05)
				0.106	27/03/2023 (THA02)
				0.133	27/03/2023 (THA05)
				0.151	17/04/2023 (THA02)
				0.105	29/05/2023 (THA05)
	Operational	Free Chlorine (mg/L)	Health	0.1	06/08/2022 (THA01)
				0.07	12/12/2022 (THA05)
				0.06	22/06/2023 (THA01)

Callide Dam Village Reticulated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Callide Dam Village Reticulated Water (CAL01 & CAL02)	Operational	pH	104	100	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	104	100	≤5 (A)	1	
		True Colour (HU)	104	100	≤15 (A)	8	
		Total Iron (mg/L)	104	76	≤0.3 (A)	1	
		Total Manganese (mg/L)	104	100	≤0.1 (A) ≤0.5 (H)	20 (A) 1 (H)	If considering values only to a single significant figure, there have been only 13 aesthetic exceedances.
		Alkalinity (mg/L of CaCO3)	104	100			
		Free Chlorine (mg/L)	104	100	≥0.2 & ≤5.0 (H)	13	If considering values only to a single significant figure, there have been only 8 aesthetic exceedances.
		E. coli (mpn/100mL)	104	94	≤1 (H)		
		Total Coliforms (mpn/100mL)	104	94			
	Verification	E. coli (mpn/100mL)	12	15	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	15			

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Callide Dam Village Reticulated Water (CAL01 & CAL02)	Operational	Turbidity (NTU)	Aesthetic	7.42	29/11/2022 (CAL02)
		True Colour (HU)	Aesthetic	20	19/12/2022 (CAL02)
				51	06/03/2023 (CAL01)
				17	27/03/2023 (CAL02)
				18	02/05/2023 (CAL01)
				29	02/05/2023 (CAL02)
				63	23/05/2023 (CAL02)
				80	06/06/2023 (CAL02)
				20	12/06/2023 (CAL01)
		Total Iron (mg/L)	Aesthetic	0.37	11/04/2023 (CAL02)
		Total Manganese (mg/L)	Aesthetic	0.175	24/10/2022 (CAL02)
				0.12	21/11/2022 (CAL01)
				0.105	21/11/2022 (CAL02)
				0.215	07/12/2022 (CAL01)
				0.159	03/01/2023 (CAL01)
				0.465	11/01/2023 (CAL01)
				0.173	16/01/2023 (CAL01)
				0.43	16/01/2023 (CAL02)
				0.116	01/02/2023 (CAL01)
				0.106	08/02/2023 (CAL01)
				0.19	06/03/2023 (CAL01)
				0.172	14/03/2023 (CAL01)
				0.104	27/03/2023 (CAL02)
				0.113	03/04/2023 (CAL01)
				0.253	03/04/2023 (CAL02)
				0.233	23/05/2023 (CAL02)
				0.107	29/05/2023 (CAL02)
				0.321	06/06/2023 (CAL02)
				0.154	12/06/2023 (CAL01)

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
				0.167	24/06/2023 (CAL02)
			Health	0.586	29/11/2022 (CAL02)
		Free Chlorine (mg/L)	Heath	0.06	19/12/2022 (CAL01)
				0.14	03/01/2023 (CAL02)
				0.18	16/01/2023 (CAL02)
				0.08	23/02/2023 (CAL01)
				0.15	20/03/2023 (CAL02)
				0.15	27/03/2023 (CAL01)
				0.19	27/03/2023 (CAL02)
				0.11	03/04/2023 (CAL02)
				0.12	24/04/2023 (CAL02)
				0.05	02/05/2023 (CAL01)
				0.12	02/05/2023 (CAL02)
				0.04	22/06/2023 (CAL01)
				0.15	22/06/2023 (CAL02)

Baralaba Treated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Baralaba Treated Water (BAR02)	Operational	pH	104	101	≥6.5 & ≤8.5 (A)	10	If considering values only to two significant figures, there has been only 8 aesthetic exceedances.
		Turbidity (NTU)	104	99	≤5 (A)		
		Apparent Colour (HU)	104	101			
		True Colour (HU)	104	95	≤15 (A)		
		Total Iron (mg/L)	104	100	≤0.3 (A)	5	If considering values only to a single significant figure, there has been only 4 aesthetic exceedances.
		Total Manganese (mg/L)	104	90	≤0.1 (A) ≤0.5 (H)	15 (A) 3 (H)	If considering values only to a single significant figure, there has been only 11 aesthetic exceedances.
		Soluble Manganese (mg/L)	104	21			
		Alkalinity (mg/L of CaCO3)	104	99			
		Free Chlorine (mg/L)	104	102	≥0.3 & ≤4.0 (H) *	3	
		E. coli (mpn/100mL)	52	26	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	26			
	Verification	E. coli (mpn/100mL)	12	15	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	15			
		THMs	12	12	See Table 5.		
		Standard Water Analysis	4	7	See Table 5.		
		True Colour (HU)	4	7	≤15 (A)	1	
		Metals	4	5	See Table 5.		
		Total Iron (mg/L)	4	5	≤0.3 (A)	1	
		Pesticides	4	5	ADWG 2011 Chapter 10 Table 10.6		
		Haloxyfop-methyl (µg/L)	4	5	≤1 (H)		
		Parathion-methyl (ug/L)	4	5	≤0.7 (H)		

*The disinfection CCP for the Baralaba WTP is a narrower range than the other plants and ADWG guidelines due to the requirements of the scheme.

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Baralaba Treated Water (BAR02)	Operational	pH	Aesthetic	6.41	19/09/2022
				6.26	18/01/2023
				6.39	23/01/2023
				6.49	1/02/2023
				6.43	24/03/2023
				6.35	6/04/2023
				6.49	11/04/2023
				6.42	19/06/2023
				5.86	21/06/2023
				6.23	30/06/2023
		Total Iron (mg/L)	Aesthetic	0.32	28/09/2022
				0.4	27/03/2023
				0.35	29/03/2023
				0.44	14/04/2023
				0.35	24/04/2023
		Total Manganese (mg/L)	Aesthetic	0.181	12/01/2023
				0.166	27/01/2023
				0.291	30/01/2023
				0.133	1/02/2023
				0.139	3/02/2023
				0.237	6/02/2023
				0.305	7/02/2023
				0.317	8/02/2023
				0.215	9/02/2023
				0.247	20/02/2023
				0.28	22/02/2023
				0.311	27/02/2023
				0.199	3/04/2023
				0.111	14/04/2023

				0.122	5/05/2023
			Health	0.636	13/02/2023
				0.551	14/02/2023
				0.737	15/02/2023
		Free Chlorine (mg/L)	Health	0.14	16/01/2023
				0.12	14/02/2023
				0	15/02/2023
	Verification	True Colour (HU)	Aesthetic	490	17/05/2023
		Total Iron (mg/L)	Aesthetic	1.3	17/05/2023

Baralaba Reticulated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Baralaba Reticulated Water (BAR03 & BAR12)	Operational	pH	52	99	≥6.5 & ≤8.5 (A)	1	
		Turbidity (NTU)	52	99	≤5 (A)		
		True Colour (HU)	52	99	≤15 (A)		
		Total Iron (mg/L)	52	76	≤0.3 (A)	1	If considering values only to a single significant figure, there has been no aesthetic exceedances.
		Total Manganese (mg/L)	52	99	≤0.1 (A) ≤0.5 (H)	9 (A)	If considering values only to a single significant figure, there has been only 6 aesthetic exceedances.
		Alkalinity (mg/L of CaCO3)	52	99			
		Free Chlorine (mg/L)	52	99	≥0.3 & ≤4.0 (H)*	12	If considering values only to a single significant figure, there has been only 11 exceedances.
		E. coli (mpn/100mL)	52	87	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	87			
	Verification	E. coli (mpn/100mL)	12	7**	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	8**	≥6.5 & ≤8.5 (A)		

*The disinfection CCP for the Baralaba WTP is a narrower range than the other plants and ADWG guidelines due to the requirements of the scheme.

** An additional four *E. coli* and total coliforms verification tests were undertaken for a reticulated sampling point that is not currently in the monitoring plan, which have not been included in these results. There were no detections within those samples.

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Baralaba Reticulated Water (BAR03 & BAR12)	Operational	pH	Aesthetic	6.41	20/06/2023 (BAR12)
		Total Iron (mg/L)	Aesthetic	0.33	27/03/2023 (BAR03)
		Total Manganese (mg/L)	Aesthetic	0.10	09/014/2023 (BAR03)
				0.11	23/01/2023 (BAR03)
				0.19	08/02/2024 (BAR03)
				0.25	14/02/2023 (BAR03)
				0.11	27/03/2023 (BAR03)
				0.13	03/04/2023 (BAR03)
				0.21	11/04/2023 (BAR12)
				0.11	11/04/2023 (BAR03)
				0.11	28/04/2023 (BAR03)
		Free Chlorine (mg/L)	Health	0.20	18/10/2022 (BAR12)
				0.22	20/12/2022 (BAR12)
				0.24	09/01/2023 (BAR12)
				0.08	16/01/2023 (BAR12)
				0.11	01/02/2023 (BAR12)
				0.24	14/02/2023 (BAR12)
				0.25	23/02/2023 (BAR12)
				0.22	13/03/2023 (BAR12)
				0.08	11/04/2023 (BAR03)
				0.08	28/04/2023 (BAR03)
				0	02/05/2023 (BAR03)
				0	04/05/2023 (BAR12)

Goovigen Treated Water (Reservoir)

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Goovigen Treated Water (GOO04)	Operational	pH	52	49	≥6.5 & ≤8.5 (A)	4	If considering values only to two significant figures, there has been only 1 aesthetic exceedance.
		Turbidity (NTU)	52	49	≤5 (A)		
		Apparent Colour (HU)	52	49			
		True Colour (HU)	52	49	≤15 (A)		
		Total Iron (mg/L)	52	38	≤0.3 (A)	1	
		Total Manganese (mg/L)	52	49	≤0.1 (A) ≤0.5 (H)	2 (A)	
		Alkalinity (mg/L of CaCO3)	52	49			
		Salinity (mg/L)	52	49			
		Conductivity @ 25°C (µS/cm)	52	46			
		Free Chlorine (mg/L)	52	49	≥0.2 & ≤5.0 (H)		
		E. coli (mpn/ 100mL)	52	45	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	45			
	Verification	THMs	4	0	See Table 5.		
		Standard Water Analysis	4	0	See Table 5.		
		Metals	4	0	See Table 5.		
		Pesticides	2	0	ADWG 2011 Chapter 10 Table 10.6		

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Goovigen Treated Water – Reservoir (GOO04)	Operational	pH	Aesthetic	6.49	04/01/2023
				6.45	07/12/2022
				6.43	15/11/2022
				6.47	29/08/2022
		Total Iron (mg/L)	Aesthetic	0.52	08/02/2023
		Total Manganese (mg/L)	Aesthetic	0.21	20/10/2022
				0.22	21/12/2022

Goovigen Treated Water (Park)

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Goovigen Treated Water (GOO03)	Operational	pH	52	48	≥6.5 & ≤8.5 (A)	3	If considering values only to two significant figures, there has been only 1 aesthetic exceedance.
		Turbidity (NTU)	52	48	≤5 (A)		
		Apparent Colour (HU)	52	48			
		True Colour (HU)	52	48	≤15 (A)		
		Total Iron (mg/L)	52	36	≤0.3 (A)		
		Total Manganese (mg/L)	52	48	≤0.1 (A) ≤0.5 (H)	5 (A) 1(H)	If considering values only to a single significant figure, there has been only 4 aesthetic exceedances and no health exceedances.
		Alkalinity (mg/L of CaCO3)	52	48			
		Salinity (mg/L)	52	46			
		Conductivity @ 25°C (µS/cm)	52	48			
		Free Chlorine (mg/L)	52	46	≥0.2 & ≤5.0 (H)		
		E. coli (mpn/ 100mL)	52	45	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	45			
	Verification	E. coli (mpn/100mL)	12	16	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	16			
		THMs	4	8	See Table 5.		
		Standard Water Analysis	4	6	See Table 5.		
		Turbidity (mg/L)	4	6	≤5 (A)	1	
		Metals	4	5	See Table 5.		
		Iron (mg/L)	4	5	≤0.3 (A)	1	
		Pesticides	2	3	ADWG 2011 Chapter 10 Table 10.6		

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Goovigen Treated Water – Park (GOO03)	Operational	pH	Aesthetic	6.43	15/11/2022
				6.47	07/12/2022
				6.46	04/01/2023
		Total Manganese (mg/L)	Aesthetic	0.21	20/10/2022
				0.17	15/02/2023
				0.14	08/03/2023
				0.17	13/04/2023
				0.14	17/05/2023
			Health	0.52	09/05/2023
	Verification	Turbidity (mg/L)	Aesthetic	7	14/12/2022
		Total Iron (mg/L)	Aesthetic	1.1	14/12/2022

Moura Treated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Moura Treated Water (MOU03)	Operational	pH	365	360	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	365	362	≤5 (A)		
		True Colour (HU)	365	361	≤15 (A)		
		Total Iron (mg/L)	365	330	≤0.3 (A)		
		Total Manganese (mg/L)	365	361	≤0.1 (A) ≤0.5 (H)		
		Alkalinity (mg/L of CaCO3)	365	360			
		Fluoride (mg/L)	365	0	≤1.5 (H)		
		Free Chlorine (mg/L)	365	362	≥0.2 & ≤5.0 (H)		
		E. coli (mpn/100mL)	52	52	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	52			
	Verification	E. coli (mpn/100mL)	52	45	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	45			
		THMs	12	14	See Table 5.		
		Standard Water Analysis	4	5	See Table 5.		
		Metals	4	5	See Table 5.		
		Pesticides	4	3	ADWG 2011 Chapter 10 Table 10.6		

Moura Reticulated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Moura Reticulated Water (MOU09, MOU11, MOU25 & MOU26)	Operational	pH	208	204	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	208	208	≤5 (A)		
		True Colour (HU)	208	206	≤15 (A)		
		Total Iron (mg/L)	208	184	≤0.3 (A)		
		Total Manganese (mg/L)	208	208	≤0.1 (A) ≤0.5 (H)		
		Alkalinity (mg/L of CaCO3)	208	204			
		Free Chlorine (mg/L)	208	212	≥0.2 & ≤5.0 (H)	1	Value of 0.06 mg/L recorded on 31/10/2022 at MOU25.
		E. coli (mpn/100mL)	208	188	≤1 (H)		
		Total Coliforms (mpn/100mL)	208	188			
	Verification	E. coli (mpn/100mL)	104	92	≤1 (H)		
		Total Coliforms (mpn/100mL)	104	92			

Banana Reticulated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Banana Reticulated Water (BAN01 & BAN04)	Operational	pH	104	102	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	104	102	≤5 (A)		
		True Colour (HU)	104	102	≤15 (A)		
		Total Iron (mg/L)	104	96	≤0.3 (A)		
		Total Manganese (mg/L)	104	81	≤0.1 (A) ≤0.5 (H)		
		Alkalinity (mg/L of CaCO3)	104	84			
		Free Chlorine (mg/L)	104	102	≥0.2 & ≤5.0 (H)		
		E. coli (mpn/100mL)	104	93	≤1 (H)		
		Total Coliforms (mpn/100mL)	104	90			
	Verification	E. coli (mpn/100mL)	12	12	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	12			

Theodore Treated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Theodore Treated Water (THE03)	Operational	pH	365	364	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	365	365	≤5 (A)		
		True Colour (HU)	365	365	≤15 (A)	1	Reading of 17 (26/4/23)
		Total Iron (mg/L)	365	335	≤0.3 (A)		
		Total Manganese (mg/L)	365	225	≤0.1 (A) ≤0.5 (H)		
		Alkalinity (mg/L of CaCO3)	365	365			
		Free Chlorine (mg/L)	365	365	≥0.2 (H) & ≤5.0 (H)		
		E. coli (mpn/100mL)	52	6	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	4			
	Verification	E. coli (mpn/100mL)	12	12	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	13			
		THMs	12	0	See Table 5.		
		Standard Water Analysis	4	4	See Table 5.		Only 3 results recorded for conductivity. All other parameters recorded for all 4 tests.
		Metals	4	4	See Table 5.		
		Pesticides	4	14	ADWG 2011 Chapter 10 Table 10.6		

Theodore Reticulated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Theodore Reticulated Water (THE05, THE06, THE09)	Operational	pH	156	93	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	156	93	≤5 (A)		
		True Colour (HU)	156	93	≤15 (A)		
		Total Iron (mg/L)	156	93	≤0.3 (A)		
		Total Manganese (mg/L)	156	90	≤0.1 (A) ≤0.5 (H)		
		Alkalinity (mg/L of CaCO3)	156	0			
		Free Chlorine (mg/L)	156	93	≥0.2 (H) & ≤5.0 (H)		
		E. coli (mpn/100mL)	156	79	≤1 (H)		
		Total Coliforms (mpn/100mL)	156	30			
	Verification	E. coli (mpn/100mL)	12	36	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	38			

Taroom Treated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Taroom Treated Water (TAR03)	Operational	pH	365	365	≥6.5 & ≤8.5 (A)	2	
		Turbidity (NTU)	365	365	≤5 (A)		
		True Colour (HU)	365	365	≤15 (A)		
		Total Iron (mg/L)	365	365	≤0.3 (A)		
		Total Manganese (mg/L)	365	337	≤0.1 (A) ≤0.5 (H)	1 (A)	
		Alkalinity (mg/L of CaCO3)	365	365			
		Free Chlorine (mg/L)	365	365	≥0.2 (H) & ≤5.0 (H)		
	Verification	E. coli (mpn/100mL)	12	13	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	12			
		THMs	12	0	See Table 5.		
		Standard Water Analysis	4	4	See Table 5.		
		Total Iron (mg/L)	4	4	≤0.3 (A)	1	
		Metals	4	3	See Table 5.		
		Total Iron (mg/L)	4	3	≤0.3 (A)	3	
		Pesticides	Every other year	11	ADWG 2011 Chapter 10 Table 10.6		

Exceedances are summarised in the table below.

Scheme name	Verification/ Operational	Parameter	Exceedance Type	Exceedance Value	Exceedance Date
Taroom Treated Water (TAR03)	Operational	pH	Aesthetic	8.66	15/01/2023
				8.86	20/01/2023
		Total Manganese (mg/L)	Aesthetic	0.157	04/11/2023
	Verification	Total Iron (mg/L)	Aesthetic	0.41	14/09/2022
				0.60	20/09/2022
				0.39	19/12/2023
				0.47	14/06/2023

Taroom Reticulated Water

Scheme name	Sampling Type	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY22/23	Water quality criteria (i.e. ADWG health guideline value)	No. of non-compliant samples	Comments
Taroom Reticulated Water (TAR06, TAR15TAR16)	Operational	pH	156	146	≥6.5 & ≤8.5 (A)	1	Value of 6.08 on the 09/01/2023 at TAR15.
		Turbidity (NTU)	156	144	≤5 (A)		
		Total Iron (mg/L)	156	144	≤0.3 (A)		
		Total Manganese (mg/L)	156	131	≤0.1 (A) ≤0.5 (H)		
		Alkalinity (mg/L of CaCO3)	156	144			
		Free Chlorine (mg/L)	156	144	≥0.2 (H) & ≤5.0 (H)		
		E. coli (mpn/100mL)	156	144	≤1 (H)		
		Total Coliforms (mpn/100mL)	156	0			
	Verification	E. coli (mpn/100mL)	12	33	≤1 (H)		
		Total Coliforms (mpn/100mL)	12	33			

Appendix E – Water Quality Statistical Summary

Water quality results for treated and reticulated water for each scheme is presented below. The following points should be noted.

- Statistical analysis is presented for parameters outlined in the approved Banana Shire Council Monitoring Program, though additional testing is undertaken for some parameters that are not specifically within the Monitoring Program. Additionally, free chlorine verification testing results have been included though it is not required in the current monitoring plan. Free chlorine verification testing has been added to the monitoring plan in the latest DWQMP revision which is awaiting DRDMW review.
- BSC tests for approximately 250 pesticide species as part of its pesticide verification testing. For simplicity, only pesticides with a defined ADWG value have been analysed and only those with detections (i.e., readings above the limit of detection) have been shown at a species level within this analysis.
- As part of the data analysis process, clear clerical errors in the operational data were corrected in the raw data where necessary to ensure the statistical analysis was as accurate as possible.

Biloela WTP Treated Water

Biloela WTP Treated Water Quality											
Sampling Location(s)		**BIL03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	351	6.60	6.83	7.21	7.52	7.84	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	351	0.10	0.26	0.84	2.66	4.53	≤5 (A)		
		True Colour (HU)	351	0.0	0.0	0.0	2.0	28.0	≤15 (A)	2	Elevated values correlated to high manganese instances.
		Total Iron (mg/L)	270	0.00	0.00	0.00	0.04	0.08	≤0.3 (A)		
		Total Manganese (mg/L)	351	0.00	0.01	0.05	0.26	0.53	≤0.1 (A)	102	Seasonal issues associated with high dam water manganese.
		Alkalinity (mg/L of CaCO3)	349	0.0	103.0	120.0	140.0	170.0			
		Fluoride (mg/L)	349	0.01	0.07	0.14	0.27	0.99	≤1.5 (H)		
		Free Chlorine (mg/L)	349	0.02	0.26	1.29	2.53	3.86	≥0.2 (H)	11	Occasional low values without a clear trend.
		E. coli (mpn/100mL)	33	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	33	0	0	0	0	0			

Biloela WTP Treated Water Quality											
Sampling Location(s)		**BIL03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Verification Microbial	QLD Health	Free Chlorine (mg/L)	41	0.20	0.55	1.32	2.60	4.95	≥0.2 (H)		
		E. coli (mpn/100mL)	44	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	44	0	0	0	0	0			
Verification THMs	QLD Health	Chloroform (µg/L)	12	30.0	31.1	47.0	76.2	80.0			
		Bromodichloromethane (µg/L)	12	30.0	30.0	38.0	50.5	51.0			
		Dibromochloromethane (µg/L)	12	15.0	16.1	20.5	25.5	26.0			
		Bromoform (µg/L)	12	2.0	2.6	3.0	3.0	3.0			
		Total Trihalomethanes (µg/L)	12	4.0	46.4	109.5	154.5	160.0	≤250 (H)		
Verification Standard Water Analysis	QLD Health	pH	6	7.14	7.16	7.49	7.76	7.79	≤8.5 (A)		
		Turbidity (NTU)	6	<1	<1	<1	<1	<1	≥6.5 & ≤5 (A)		
		True Colour (HU)	6	<8	<8	<8	<8	<8	≤15 (A)		
		Iron (mg/L)	6	<0.01	<0.01	<0.01	<0.01	<0.01	≤0.3 (A)		
		Manganese (mg/L)	6	0.00	0.00	0.03	0.06	0.06	≤0.1 (A)		
		Aluminium (mg/L)	6	<0.03	<0.03	<0.03	<0.03	<0.03	≤0.2 (A)		
		Alkalinity (Total) (mg/L CaCO3)	6	110.0	110.0	120.0	127.5	130.0			
		Residual Alkalinity (meq/L)	6	0.0	0.0	0.0	0.0	0.0			
		Total Hardness (mg/L CaCO3)	6	119.0	119.8	123.0	131.8	133.0	≤200 (A)		
		Temporary Hardness (mg/L CaCO3)	6	114.0	114.0	116.0	125.3	126.0			
		Total Dissolved Ions (mg/L)	6	273.0	275.3	286.0	303.5	305.0			
		Total Dissolved Solids (mg/L)	6	210.0	212.5	225.0	237.5	240.0	≤600 (A)		
		Conductivity (µS/cm)	6	400.0	405.0	435.0	447.5	450.0			
		Bicarbonate (mg/L CaCO3)	6	138.0	138.3	140.5	152.3	153.0			
		Carbonate (mg/L CaCO3)	6	0.10	0.10	0.30	0.50	0.50			
		Hydroxide (mg/L CaCO3)	6	0.00	0.00	0.00	0.00	0.00			
		Hydrogen (mg/L)	6	0.00	0.00	0.00	0.00	0.00			
		Boron (mg/L)	6	0.05	0.05	0.06	0.06	0.06	≤4 (H)		

Biloela WTP Treated Water Quality											
Sampling Location(s)		**BIL03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Calcium (mg/L)	6	26.00	26.00	27.00	27.75	28.00			
		Chloride (mg/L)	6	50.00	51.50	60.50	63.25	64.00	≤250 (A)		
		Copper (mg/L)	6	0.00	0.00	0.02	0.07	0.08	≤1 (A)		
		Fluoride (mg/L)	7	0.15	0.15	0.16	0.17	0.17	≤1.5 (H)		
		Magnesium (mg/L)	6	13.00	13.25	14.00	15.00	15.00			
		Nitrate (mg/L)	6	0.09	0.10	0.25	0.45	0.45	≤50 (H)		
		Potassium (mg/L)	6	3.60	3.70	4.40	7.50	7.50			
		Silica (mg/L)	6	8.70	8.85	10.00	12.00	12.00	≤80 (A)		
		Sodium (mg/L)	6	32.00	32.25	33.50	37.00	37.00	≤180 (A)		
		Sulphate (mg/L)	6	4.10	4.13	5.10	6.85	7.20	≤250 (A)		
		Zinc (mg/L)	6	0.04	0.04	0.04	0.04	0.04	≤3 (A)		
Verification Heavy Metals	QLD Health	Iron (mg/L)	5	<0.005	<0.005	<0.005	0.01	0.01	≤0.3 (A)		
		Manganese (dissolved) (mg/L)	5	0.00	0.01	0.04	0.12	0.12			
		Aluminium (mg/L)	5	0.012	0.013	0.020	0.154	0.160	≤0.2 (A)		
		Arsenic (mg/L)	5	0.00	0.0011	0.0015	0.0021	0.00	≤0.01 (H)		
		Cadmium (mg/L)	5	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.002 (H)		
		Chromium (mg/L)	5	<0.0001	<0.0001	0.0001	0.0002	0.0002	≤0.05 (H)		
		Copper (mg/L)	5	0.010	0.012	0.038	0.109	0.120	≤1 (A)		
		Lead (mg/L)	5	<0.0001	<0.0001	0.0003	0.0004	0.0004	≤0.01 (H)		
		Nickel (mg/L)	5	0.0002	0.0002	0.0003	0.0025	0.0030	≤0.02 (H)		
		Zinc (mg/L)	5	0.00	0.00	0.006	0.031	0.036	≤3 (A)		
Verification Pesticides	QLD Health	Dalapon (2,2-DPA) (µg/L)	5	0.14	0.25	0.90	1.73	1.80	≤500 (H)		
		Other Pesticides	5	Below LOD	Below LOD	Below LOD	Below LOD	Below LOD			

Biloela Combined Treated Water

Combined WTP and Bore Treated Water Quality											
Sampling Location(s)		**BIL04**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	351	6.63	6.80	7.05	7.26	8.28	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	351	0.06	0.11	0.32	1.09	2.34	≤5 (A)		
		True Colour (HU)	351	0.0	0.0	0.0	2.0	15.0	≤15 (A)		
		Total Iron (mg/L)	271	0.00	0.00	0.01	0.05	0.21	≤0.3 (A)		
		Total Manganese (mg/L)	351	0.00	0.00	0.02	0.07	0.12	≤0.1 (A)	5	Seasonal issues associated with high dam water manganese.
		Alkalinity (mg/L of CaCO3)	351	0.0	133.5	152.0	175.0	220.0			
		Fluoride (mg/L)	348	0.00	0.07	0.12	0.25	0.76	≤1.5 (H)		
		Free Chlorine (mg/L)	348	0.02	0.71	1.41	2.21	3.29	≥0.2 (H)	6	Occasional low values without a clear trend.
		E. coli (mpn/100mL)	33	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	33	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	40	0.82	1.11	1.61	2.14	2.30	≥0.2 (H)		
		E. coli (mpn/100mL)	42	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	42	0.00	0.00	0.00	0.00	0.00			
Verification THMs	QLD Health	Chloroform (µg/L)	12	FALSE	0.71	14.50	28.05	33.00			
		Bromodichloromethane (µg/L)	12	2.00	2.00	17.00	31.15	35.00			
		Dibromochloromethane (µg/L)	12	3.00	3.55	19.50	30.00	30.00			
		Bromoform (µg/L)	12	4.00	4.00	10.50	15.90	17.00			
		Total Trihalomethanes (µg/L)	12	9.00	9.55	65.00	102.30	110.00	≤250 (H)		
Verification Standard Water Analysis	QLD Health	pH	4	7.33	7.34	7.51	7.66	7.66	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	4	<1	<1	<1	<1	<1	≤5 (A)		
		True Colour (HU)	4	<8	<8	<8	<8	<8	≤15 (A)		
		Iron (mg/L)	4	<0.01	<0.01	<0.01	<0.01	0.01	≤0.3 (A)		

Combined WTP and Bore Treated Water Quality											
Sampling Location(s)		**BIL04**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Manganese (mg/L)	4	0.00	0.00	0.00	0.00	0.00	≤0.1 (A)		
		Aluminium (mg/L)	4	<0.03	<0.03	<0.03	<0.03	<0.03	≤0.2 (A)		
		Alkalinity (Total) (mg/L CaCO3)	4	150.0	151.5	165.0	170.0	170.0			
		Residual Alkalinity (meq/L)	4	0.0	0.0	0.0	0.0	0.0			
		Total Hardness (mg/L CaCO3)	4	223.0	223.5	239.0	288.6	295.0	≤200 (A)	4	Associated with elevated bore water hardness.
		Temporary Hardness (mg/L CaCO3)	4	150.0	150.8	162.5	170.9	171.0			
		Total Dissolved Ions (mg/L)	4	480.0	480.8	516.0	603.1	613.0			
		Total Dissolved Solids (mg/L)	4	410.0	411.5	450.0	531.0	540.0	≤600 (A)		
		Conductivity (µS/cm)	4	760.0	761.5	820.0	980.5	1000.0			
		Bicarbonate (mg/L CaCO3)	4	183.0	183.9	197.5	206.9	207.0			
		Carbonate (mg/L CaCO3)	4	0.20	0.22	0.40	0.50	0.50			
		Hydroxide (mg/L CaCO3)	4	0.00	0.00	0.00	0.00	0.00			
		Hydrogen (mg/L)	4	0.00	0.00	0.00	0.00	0.00			
		Boron (mg/L)	4	0.05	0.05	0.05	0.05	0.05	≤4 (H)		
		Calcium (mg/L)	4	49.00	49.15	53.00	64.50	66.00			
		Chloride (mg/L)	4	130.00	131.50	145.00	184.00	190.00	≤250 (A)		
		Copper (mg/L)	4	0.00	0.00	0.01	0.01	0.01	≤1 (A)		
		Fluoride (mg/L)	5	0.10	0.10	0.12	0.14	0.14	≤1.5 (H)		
		Magnesium (mg/L)	4	24.00	24.15	26.00	31.25	32.00			
		Nitrate (mg/L)	4	3.60	3.92	5.75	9.03	9.60	≤50 (H)		
		Potassium (mg/L)	4	1.20	1.23	1.70	2.43	2.50			
		Silica (mg/L)	4	25.00	25.15	30.00	34.00	34.00	≤80 (A)		
		Sodium (mg/L)	4	63.00	63.45	70.50	80.95	82.00	≤180 (A)		
		Sulphate (mg/L)	4	17.00	17.45	22.00	25.70	26.00	≤250 (A)		
		Zinc (mg/L)	4	0.04	0.04	0.04	0.04	0.04	≤3 (A)		

Combined WTP and Bore Treated Water Quality											
Sampling Location(s)		**BIL04**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Verification Heavy Metals	QLD Health	Iron (mg/L)	4	0.01	0.01	0.01	0.04	0.05	≤0.3 (A)		
		Manganese (dissolved) (mg/L)	4	0.00	0.00	0.00	0.02	0.02			
		Aluminium (mg/L)	4	<0.003	<0.003	0.005	0.015	0.016	≤0.2 (A)		
		Arsenic (mg/L)	4	0.00	0.0006	0.0008	0.0010	0.00	≤0.01 (H)		
		Cadmium (mg/L)	4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.002 (H)		
		Chromium (mg/L)	4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.05 (H)		
		Copper (mg/L)	4	0.003	0.003	0.006	0.010	0.010	≤1 (A)		
		Lead (mg/L)	4	<0.0001	<0.0001	0.0001	0.0004	0.0004	≤0.01 (H)		
		Nickel (mg/L)	4	0.0002	0.0002	0.0003	0.0005	0.0005	≤0.02 (H)		
		Zinc (mg/L)	4	0.00	0.00	0.008	0.011	0.011	≤3 (A)		
Verification Radiological	QLD Health	Total Alpha activity (Bq/L)	0	-	-	-	-	-	≤0.5 (H)		
		Total Beta activity (Bq/L)	0	-	-	-	-	-	≤0.5 (H)		
		K40-Corrected Beta Activity (Bq/L)	0	-	-	-	-	-	≤0.5 (H)		
Verification Pesticides	QLD Health	Dalapon (2,2-DPA) (µg/L)	3	0.14	0.19	0.60	0.87	0.90	≤500 (H)		
		Other Pesticides	3	Below LOD	Below LOD	Below LOD	Below LOD	Below LOD			

Biloela Reticulated Water

Biloela Reticulated Water Quality											
Sampling Location(s)		**BIL14**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	49	6.95	7.03	7.19	7.58	7.65	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	50	0.10	0.12	0.35	0.89	1.49	≤5 (A)		
		True Colour (HU)	50	0.0	0.0	0.0	1.6	4.0	≤15 (A)		
		Total Iron (mg/L)	38	0.00	0.00	0.02	0.05	0.31	≤0.3 (A)	1	
		Total Manganese (mg/L)	50	0.00	0.01	0.02	0.05	0.13	≤0.1 (A)	1	
		Alkalinity (mg/L of CaCO3)	50	120.0	127.0	152.0	177.8	285.0			
		Fluoride (mg/L)	0	-	-	-	-	-	≤1.5 (H)		Testing not performed.
		Free Chlorine (mg/L)	50	0.17	0.29	0.68	1.15	1.28	≥0.2 (H)	1	
		E. coli (mpn/100mL)	45	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	0			

Biloela Reticulated Water Quality											
Sampling Location(s)		**BIL17**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	50	6.40	6.80	7.09	7.37	7.62	≥6.5 & ≤8.5 (A)	1	
		Turbidity (NTU)	50	0.06	0.07	0.30	0.86	2.25	≤5 (A)		
		True Colour (HU)	50	0.0	0.0	0.0	2.0	3.0	≤15 (A)		
		Total Iron (mg/L)	38	0.00	0.00	0.01	0.04	0.10	≤0.3 (A)		
		Total Manganese (mg/L)	50	0.00	0.01	0.02	0.06	0.09	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	50	124.0	130.0	150.0	169.1	190.0			
		Fluoride (mg/L)	0	-	-	-	-	-	≤1.5 (H)		Testing not performed.
		Free Chlorine (mg/L)	50	0.52	0.92	1.39	2.07	2.20	≥0.2 (H)		Occasional low values. Overall chlorine residual increasing recently.
		E. coli (mpn/100mL)	45	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	0			

Biloela Reticulated Water Quality											
Sampling Location(s)		**BIL20**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	50	6.56	6.74	7.08	7.36	7.67	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	50	0.03	0.09	0.53	2.75	5.93	≤5 (A)	1	
		True Colour (HU)	50	0.0	0.0	0.0	1.6	3.0	≤15 (A)		
		Total Iron (mg/L)	38	0.00	0.00	0.02	0.09	0.10	≤0.3 (A)		
		Total Manganese (mg/L)	50	0.00	0.01	0.03	0.12	0.53	≤0.1 (A)	6	
		Alkalinity (mg/L of CaCO3)	48	1.5	123.8	150.0	177.6	180.0			
		Fluoride (mg/L)	0	-	-	-	-	-	≤1.5 (H)		Testing not performed.
		Free Chlorine (mg/L)	50	0.34	0.58	1.32	1.84	2.20	≥0.2 (H)		
		E. coli (mpn/100mL)	43	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	43	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	41	0.08	0.28	1.21	1.95	2.09	≥0.2 (H)	1	
		E. coli (mpn/100mL)	41	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	41	0	0	0	0	0			

Biloela Reticulated Water Quality											
Sampling Location(s)		**BIL36**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	50	6.61	6.73	6.96	7.25	7.61	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	50	0.08	0.09	0.36	1.40	8.76	≤5 (A)	1	
		True Colour (HU)	50	0.0	0.0	0.0	0.5	4.0	≤15 (A)		
		Total Iron (mg/L)	38	0.00	0.00	0.01	0.06	0.18	≤0.3 (A)		
		Total Manganese (mg/L)	50	0.00	0.01	0.03	0.13	0.87	≤0.1 (A)	3	
		Alkalinity (mg/L of CaCO3)	50	1.5	127.5	154.5	177.8	185.0			
		Fluoride (mg/L)	0	-	-	-	-	-	≤1.5 (H)		Testing not performed.
		Free Chlorine (mg/L)	50	0.32	0.71	1.20	2.12	2.20	≥0.2 (H)		
		E. coli (mpn/100mL)	46	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	46	0	0	0	0	0			

Thangool Reticulated Water

Thangool Reticulated Water Quality											
Sampling Location(s)		**THA01**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	49	6.71	6.81	7.22	7.50	7.72	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	49	0.00	0.07	0.31	0.93	1.07	≤5 (A)		
		True Colour (HU)	49	0.0	0.0	0.0	0.0	5.0	≤15 (A)		
		Total Iron (mg/L)	38	0.00	0.00	0.01	0.06	0.18	≤0.3 (A)		
		Total Manganese (mg/L)	49	0.00	0.00	0.02	0.05	0.10	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	49	0.0	120.0	149.0	170.6	185.0			
		Free Chlorine (mg/L)	50	0.06	0.50	1.11	1.84	2.01	≥0.2 (H)	2	
		E. coli (mpn/100mL)	47	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	47	0	0	0	0	0			

Thangool Reticulated Water Quality											
Sampling Location(s)		**THA02**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	49	6.89	6.95	7.25	7.41	7.58	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	50	0.08	0.10	0.40	1.69	3.83	≤5 (A)		
		True Colour (HU)	50	0.0	0.0	0.0	0.5	3.0	≤15 (A)		
		Total Iron (mg/L)	38	0.00	0.00	0.01	0.08	0.27	≤0.3 (A)		
		Total Manganese (mg/L)	50	0.00	0.00	0.02	0.09	0.18	≤0.1 (A)	3	
		Alkalinity (mg/L of CaCO3)	50	1.5	125.5	148.0	184.6	190.0			
		Free Chlorine (mg/L)	50	0.40	0.55	1.31	1.94	1.98	≥0.2 (H)		
		E. coli (mpn/100mL)	47	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	47	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	12	0.29	0.39	1.07	1.44	1.45	≥0.2 (H)		
		E. coli (mpn/100mL)	13	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	13	0	0	0	0	0			

Thangool Reticulated Water Quality											
Sampling Location(s)		**THA05**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	49	6.84	6.99	7.28	7.63	7.80	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	48	0.09	0.19	0.69	2.46	3.14	≤5 (A)		
		True Colour (HU)	49	0.0	0.0	0.0	4.0	7.0	≤15 (A)		
		Total Iron (mg/L)	38	0.00	0.00	0.03	0.13	0.20	≤0.3 (A)		
		Total Manganese (mg/L)	49	0.00	0.01	0.03	0.10	0.17	≤0.1 (A)	4	
		Alkalinity (mg/L of CaCO3)	49	1.6	120.8	150.0	180.0	185.0			
		Free Chlorine (mg/L)	49	0.07	0.24	1.19	1.84	2.13	≥0.2 (H)	1	
		E. coli (mpn/100mL)	45	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	0			

Callide Dam Village Reticulated Water

Callide Dam Village Reticulated Water Quality											
Sampling Location(s)		**CAL01**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	50	6.58	6.92	7.31	7.58	8.39	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	50	0.08	0.23	1.00	2.57	3.24	≤5 (A)		
		True Colour (HU)	50	0.0	0.0	0.0	16.7	51.0	≤15 (A)	3	Associated with elevated manganese.
		Total Iron (mg/L)	38	0.00	0.00	0.02	0.05	0.09	≤0.3 (A)		
		Total Manganese (mg/L)	50	0.01	0.01	0.05	0.18	0.47	≤0.1 (A)	11	Associated with seasonally elevated dam water manganese.
		Alkalinity (mg/L of CaCO3)	50	1.5	95.1	122.0	153.9	225.0			
		Free Chlorine (mg/L)	50	0.04	0.07	0.69	1.69	2.08		5	Occasional low values. Higher frequency of low values recently.
		E. coli (mpn/100mL)	47	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	47	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	14	0.00	0.13	0.72	1.62	1.87	≥0.2 (H)	1	
		E. coli (mpn/100mL)	15	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	15	0	0	0	0	0			

Callide Dam Village Reticulated Water Quality											
Sampling Location(s)		**CAL02**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	50	6.70	6.88	7.23	7.51	7.81	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	50	0.09	0.19	0.84	4.05	7.42	≤5 (A)	1	
		True Colour (HU)	50	0.0	0.0	0.0	25.0	80.0	≤15 (A)	5	Associated with elevated manganese.
		Total Iron (mg/L)	38	0.00	0.00	0.01	0.19	0.37	≤0.3 (A)	1	
		Total Manganese (mg/L)	50	0.00	0.01	0.04	0.29	0.59	≤0.1 (A)	10	Associated with seasonally elevated dam water manganese.
		Alkalinity (mg/L of CaCO3)	50	1.5	95.5	118.0	157.8	166.0			
		Free Chlorine (mg/L)	50	0.11	0.13	1.04	2.02	2.20		8	Occasional low values. Higher frequency of low values recently.
		E. coli (mpn/100mL)	47	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	47	0	0	0	0	0			

Baralaba Treated Water

Baralaba WTP Treated Water Quality											
Sampling Location(s)		**BAR02**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	101	5.86	6.41	6.86	7.15	7.27	≥6.5 & ≤8.5 (A)	10	Higher frequency of low values recently due to raw water pH trend.
		Turbidity (NTU)	99	0.07	0.08	0.18	1.91	3.03	≤5 (A)		
		Apparent Colour (HU)	101	0.0	0.0	0.0	27.0	47.0			
		True Colour (HU)	95	0.0	0.0	0.0	0.0	15.0	≤15 (A)		
		Total Iron (mg/L)	100	0.00	0.00	0.01	0.11	0.44	≤0.3 (A)	5	
		Total Manganese (mg/L)	90	0.00	0.00	0.02	0.31	0.74	≤0.1 (A)	18	Seasonal issues associated with high river water manganese.
		Soluble Manganese (mg/L)	21	0.00	0.00	0.12	0.54	0.69			
		Alkalinity (mg/L of CaCO3)	99	43.0	51.0	69.0	120.0	540.0			
		Free Chlorine (mg/L)	102	0.00	0.64	1.96	3.22	3.96	≥0.2 (H)	3	
		E. coli (mpn/100mL)	26	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	26	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	15	0.78	0.95	2.00	3.84	4.42	≥0.2 (H)		
		E. coli (mpn/100mL)	15	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	15	0	0	0	0	0			
Verification THMs	QLD Health	Chloroform (µg/L)	12	57.00	62.50	80.50	154.50	160.00			
		Bromodichloromethane (µg/L)	12	17.00	17.00	29.50	38.00	38.00			
		Dibromochloromethane (µg/L)	12	1.00	1.55	5.50	7.45	8.00			
		Bromoform (µg/L)	12	<1	<1	<1	<1	<1			
		Total Trihalomethanes (µg/L)	12	76.00	87.00	120.00	180.00	180.00	≤250 (H)		
Verification Standard Water Analysis	QLD Health	pH	7	6.79	6.81	6.97	7.06	7.06	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	7	<1	<1	<1	<1	1.00	≤5 (A)		
		True Colour (HU)	7	<8	<8	<8	344.7	490.0*	≤15 (A)	1	*Lab error. Operational monitoring within expected range.

Baralaba WTP Treated Water Quality											
Sampling Location(s)		**BAR02**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Iron (mg/L)	7	<0.01	<0.01	<0.01	<0.01	<0.01	≤0.3 (A)		
		Manganese (mg/L)	7	0.00	0.00	0.00	0.01	0.01	≤0.1 (A)		
		Aluminium (mg/L)	7	<0.03	<0.03	<0.03	<0.03	<0.03	≤0.2 (A)		
		Alkalinity (Total) (mg/L CaCO3)	7	53.0	53.9	57.0	75.8	80.0			
		Residual Alkalinity (meq/L)	7	0.0	0.0	0.1	0.2	0.2			
		Total Hardness (mg/L CaCO3)	7	49.0	49.3	55.0	65.9	68.0	≤200 (A)		
		Temporary Hardness (mg/L CaCO3)	7	49.0	49.3	55.0	65.9	68.0			
		Total Dissolved Ions (mg/L)	7	149.0	152.9	164.0	194.4	201.0			
		Total Dissolved Solids (mg/L)	7	130.0	133.0	140.0	164.0	170.0	≤600 (A)		
		Conductivity (µS/cm)	6	240.0	242.5	250.0	292.5	300.0			
		Bicarbonate (mg/L CaCO3)	7	64.0	65.5	70.0	92.2	97.0			
		Carbonate (mg/L CaCO3)	7	0.0	0.0	0.0	0.1	0.1			
		Hydroxide (mg/L CaCO3)	7	0.0	0.0	0.0	0.0	0.0			
		Hydrogen (mg/L)	7	0.0	0.0	0.0	0.0	0.0			
		Boron (mg/L)	7	0.04	0.04	0.05	0.05	0.05	≤4 (H)		
		Calcium (mg/L)	7	13.00	13.00	13.00	15.40	16.00			
		Chloride (mg/L)	7	33.00	33.30	36.00	40.00	40.00	≤250 (A)		
		Copper (mg/L)	7	0.01	0.01	0.01	0.01	0.01	≤1 (A)		
		Fluoride (mg/L)	7	0.120	0.120	0.130	0.399	0.510	≤1.5 (H)		
		Magnesium (mg/L)	7	4.20	4.29	5.80	6.68	6.80			
		Nitrate (mg/L)	7	0.07	0.07	1.40	3.31	3.70	≤50 (H)		
		Potassium (mg/L)	7	6.00	6.06	6.30	9.10	10.00			
		Silica (mg/L)	7	14.00	14.30	16.00	20.70	21.00	≤80 (A)		
		Sodium (mg/L)	7	21.00	21.60	26.00	27.00	27.00	≤180 (A)		
		Sulphate (mg/L)	7	<0.2	1.33	4.90	6.64	6.70	≤250 (A)		
		Zinc (mg/L)	7	0.04	0.04	0.04	0.04	0.04	≤3 (A)		
		Iron (mg/L)	7	<0.005	<0.005	0.01	0.92	1.30	≤0.3 (A)	1	

Baralaba WTP Treated Water Quality											
Sampling Location(s)		**BAR02**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Verification Heavy Metals	QLD Health	Manganese (dissolved) (mg/L)	7	0.00	0.00	0.01	0.26	0.33			
		Aluminium (mg/L)	7	<0.003	<0.003	<0.003	0.005	0.005	≤0.2 (A)		
		Arsenic (mg/L)	7	0.00	0.0007	0.0010	0.0019	0.00	≤0.01 (H)		
		Cadmium (mg/L)	7	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.002 (H)		
		Chromium (mg/L)	7	0.0005	0.0005	0.0007	0.0011	0.0012	≤0.05 (H)		
		Copper (mg/L)	7	0.001	0.003	0.008	0.017	0.019	≤1 (A)		
		Lead (mg/L)	7	<0.0001	<0.0001	0.0001	0.0003	0.0003	≤0.01 (H)		
		Nickel (mg/L)	7	0.0016	0.0017	0.0023	0.0029	0.0030	≤0.02 (H)		
		Zinc (mg/L)	6	0.00	0.00	0.006	0.007	0.007	≤3 (A)		
Verification Pesticides	QLD Health	Chlordane-1-hydroxy-2,3-epoxide (µg/L)	5	0.03	0.04	0.35	0.35	0.35	≤2 (H)		
		Ametryn (µg/L)	5	0.01	0.01	0.01	0.02	0.02	≤70 (H)		
		Bromacil (µg/L)	5	0.02	0.02	0.02	0.04	0.05	≤400 (H)		
		Hexazinone (µg/L)	5	0.01	0.02	0.02	0.16	0.16	≤400 (H)		
		Haloxyfop-methyl (µg/L)	5	0.05	0.05	0.05	0.09	0.10	≤1 (H)		
		Ethoprophos (µg/L)	5	0.00	0.00	0.01	0.06	0.07	≤1 (H)		
		Fenamiphos (ug/L)	5	0.01	0.03	0.13	0.14	0.14	≤0.5 (H)		
		Fenthion-ethyl (ug/L)	5	0.02	0.02	0.02	0.08	0.10	≤7 (H)		
		2,4-D (µg/L)	4	0.01	0.02	0.04	0.04	0.04	≤30 (H)		
		Atrazine, 2-hydroxy (µg/L)	4	0.01	0.02	0.04	0.06	0.06	≤20 (H)		
		Dalapon (2,2-DPA) (µg/L)	4	1.70	1.72	2.10	3.34	3.50	≤500 (H)		
		Haloxyfop (acid) (µg/L)	4	0.01	0.01	0.01	0.04	0.05	≤1 (H)		
		Simazine (µg/L)	5	0.01	0.01	0.01	0.07	0.07	≤20 (H)		
		Metribuzin (µg/L)	5	0.01	0.01	0.01	0.03	0.03	≤70 (H)		
		Malathion (Maldison) (ug/L)	5	0.01	0.02	0.07	0.07	0.07	≤70 (H)		
		Parathion-methyl (ug/L)	5	0.02	0.02	0.02	0.08	0.10	≤0.7 (H)		
		Terbufos (ug/L)	5	0.01	0.01	0.01	0.08	0.1	≤0.9 (H)		
		Tetrachlorvinphos (ug/L)	5	0.04	0.04	0.04	0.07	0.07	≤100 (H)		
		MCPA (µg/L)	4	0.01	0.01	0.01	0.02	0.02	≤40 (H)		
		Triclopyr (µg/L)	5	0.07	0.07	0.10	0.83	1.00	≤20 (H)		

Baralaba WTP Treated Water Quality											
Sampling Location(s)		BAR02				Timeframe		July 2022 – June 2023			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Other Pesticides*	5	Below LOD	Below LOD	Below LOD	Below LOD	Below LOD			

Baralaba Reticulated Water

Baralaba Reticulated Water Quality											
Sampling Location(s)		BAR03				Timeframe		July 2022 – June 2023			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	51	6.52	6.72	7.16	7.54	7.64	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	51	0.13	0.15	0.32	0.79	1.57	≤5 (A)		
		True Colour (HU)	51	0.0	0.0	0.0	0.5	4.0	≤15 (A)		
		Total Iron (mg/L)	40	0.00	0.00	0.01	0.04	0.33	≤0.3 (A)	1	
		Total Manganese (mg/L)	51	0.01	0.01	0.02	0.12	0.25	≤0.1 (A)	8	
		Alkalinity (mg/L of CaCO3)	51	43.0	45.0	60.0	137.5	145.0			
		Free Chlorine (mg/L)	53	0.00	0.27	1.25	1.81	2.04	≥0.2 (H)	3	
		E. coli (mpn/100mL)	44	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	44	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	5	0.82	0.86	1.97	2.20	2.20	≥0.2 (H)		
		E. coli (mpn/100mL)	4	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	5	0	0	0	0	0			

Baralaba Reticulated Water Quality											
Sampling Location(s)		BAR12				Timeframe		July 2022 – June 2023			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	48	6.41	6.57	7.09	7.44	7.83	≥6.5 & ≤8.5 (A)	1	
		Turbidity (NTU)	48	0.08	0.12	0.24	0.70	1.62	≤5 (A)		

		True Colour (HU)	48	0.0	0.0	0.0	0.6	13.0	≤15 (A)		
		Total Iron (mg/L)	36	0.00	0.00	0.02	0.05	0.07	≤0.3 (A)		
		Total Manganese (mg/L)	48	0.00	0.00	0.02	0.07	0.21	≤0.1 (A)	1	
		Alkalinity (mg/L of CaCO3)	48	44.0	45.0	60.0	114.3	140.0			
		Free Chlorine (mg/L)	46	0.00	0.13	0.80	1.51	2.20	≥0.2 (H)	3	
		E. coli (mpn/100mL)	43	0	0	0	0	0	<1 (H))		
		Total Coliforms (mpn/100mL)	43	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	3	0.39	0.45	1.00	1.58	1.64	≥0.2 (H)		
		E. coli (mpn/100mL)	3	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	3	0	0	0	0	0		1	

Goovigen Treated Water (Reservoir)

Goovigen Treated Water Quality											
Sampling Location(s)		**GOO04**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	49	6.43	6.48	6.77	7.26	7.58	≥6.5 & ≤8.5 (A)	4	Small number of instances below 6.5 recently due to bore pH.
		Turbidity (NTU)	49	0.11	0.21	0.37	0.74	1.21	≤5 (A)		
		Apparent Colour (HU)	49	0.0	0.0	1.0	12.2	14.0			
		True Colour (HU)	49	0.0	0.0	0.0	1.0	4.0	≤15 (A)		
		Total Iron (mg/L)	38	0.00	0.00	0.04	0.09	0.52	≤0.3 (A)	1	
		Total Manganese (mg/L)	49	0.01	0.01	0.05	0.09	0.22	≤0.1 (A)	2	
		Alkalinity (mg/L of CaCO3)	49	115	124.00	145.00	161.00	170.00			
		Salinity (mg/L)	49	0.300	0.30	0.30	0.40	0.40			
		Conductivity @ 25°C (µS/cm)	46	8.6	437.3	578.5	673.8	695.0			
		Free Chlorine (mg/L)	49	0.50	0.77	1.04	1.55	1.69	≥0.2 (H)		
		E. coli (mpn/ 100mL)	45	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	0		4	
Verification	Qld Health	THMS	0	-	-	-	-	-			Testing not undertaken
Verification	Qld Health	SWA	0	-	-	-	-	-			Testing not undertaken
Verification	Qld Health	Metals	0	-	-	-	-	-			Testing not undertaken
Verification Pesticides	QLD Health	Pesticides	0	-	-	-	-	-	-		Testing not undertaken

Goovigen Treated Water (Park)

Goovigen Treated Water Quality											
Sampling Location(s)		**GOO03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	48	6.43	6.49	6.75	7.01	7.12	≥6.5 & ≤8.5 (A)	3	Small number of instances below 6.5 recently due to bore pH.
		Turbidity (NTU)	48	0.16	0.22	0.41	1.06	3.37	≤5 (A)		
		Apparent Colour (HU)	48	0.0	0.0	0.0	20.9	81.0			
		True Colour (HU)	48	0.0	0.0	0.0	4.3	8.0	≤15 (A)		
		Total Iron (mg/L)	36	0.00	0.01	0.04	0.15	0.20	≤0.3 (A)		
		Total Manganese (mg/L)	48	0.01	0.02	0.04	0.17	0.52	≤0.1 (A)	6	
		Alkalinity (mg/L of CaCO3)	48	118.0	128.7	144.5	163.3	254.0			
		Conductivity @ 25°C (µS/cm)	46	0.1	455.8	572.5	660.5	759.0			
		Salinity (mg/L)	48	0.20	0.30	0.30	0.40	0.40			
		Free Chlorine (mg/L)	46	0.31	0.66	0.98	1.49	1.67	≥0.2 (H)		
		E. coli (mpn/100mL)	45	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	16	0.49	0.52	1.02	1.62	1.66	≥0.2 (H)		
		E. coli (mpn/100mL)	16	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	16	0	0	0	0	0			
Verification THMs	QLD Health	Chloroform (µg/L)	8	<1	<1	<1	3.0	4.0			
		Bromodichloromethane (µg/L)	8	2.0	2.4	4.0	8.0	9.0			
		Dibromochloromethane (µg/L)	8	8.0	8.4	11.5	15.3	16.0			
		Bromoform (µg/L)	8	7.0	8.1	10.5	16.0	17.0			
		Total Trihalomethanes (µg/L)	8	20.0	20.7	28.0	38.6	40.0	≤250 (H)		
Verification Standard Water Analysis	QLD Health	pH	6	7.02	7.05	7.22	7.39	7.39	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	6	<1	<1	<1	5.43	7.00	≤5 (A)	1	
		True Colour (HU)	6	<8	<8	<8	<8	<8	≤15 (A)		
		Iron (mg/L)	6	<0.01	<0.01	<0.01	<0.01	<0.01	≤0.3 (A)		
		Manganese (mg/L)	6	0.00	0.00	0.00	0.00	0.00	≤0.1 (A)		

Goovigen Treated Water Quality											
Sampling Location(s)		**GOO03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Aluminium (mg/L)	6	<0.03	<0.03	<0.03	<0.03	<0.03	≤0.2 (A)		
		Alkalinity (Total) (mg/L CaCO3)	6	140.0	140.0	150.0	157.5	160.0			
		Residual Alkalinity (meq/L)	6	0.0	0.0	0.0	0.1	0.1			
		Total Hardness (mg/L CaCO3)	6	145.0	146.5	161.0	183.8	188.0	≤200 (A)		
		Temporary Hardness (mg/L CaCO3)	6	143.0	143.3	145.0	154.8	156.0			
		Total Dissolved Ions (mg/L)	6	366.0	366.5	382.5	416.5	424.0			
		Total Dissolved Solids (mg/L)	6	310.0	310.0	325.0	362.5	370.0	≤600 (A)		
		Conductivity (µS/cm)	6	520.0	522.5	565.0	655.0	670.0			
		Bicarbonate (mg/L CaCO3)	6	174.0	174.5	180.0	189.0	190.0			
		Carbonate (mg/L CaCO3)	6	0.10	0.10	0.25	0.48	0.50			
		Hydroxide (mg/L CaCO3)	6	0.00	0.00	0.00	0.00	0.00			
		Hydrogen (mg/L)	6	0.00	0.00	0.00	0.00	0.00			
		Boron (mg/L)	6	0.06	0.06	0.06	0.06	0.06	≤4 (H)		
		Calcium (mg/L)	6	33.00	33.25	37.00	42.00	43.00			
		Chloride (mg/L)	6	62.00	63.25	75.50	105.75	110.00	≤250 (A)		
		Copper (mg/L)	6	0.01	0.01	0.04	0.05	0.05	≤1 (A)		
		Fluoride (mg/L)	6	0.10	0.10	0.12	0.12	0.12	≤1.5 (H)		
		Magnesium (mg/L)	6	15.00	15.25	17.00	19.50	20.00			
		Nitrate (mg/L)	6	0.14	0.15	0.18	0.53	0.65	≤50 (H)		
		Potassium (mg/L)	6	2.00	2.03	2.15	2.28	2.30			
		Silica (mg/L)	6	31.00	31.50	33.00	33.00	33.00	≤80 (A)		
		Sodium (mg/L)	6	49.00	49.25	51.50	56.25	57.00	≤180 (A)		
		Sulphate (mg/L)	6	14.00	14.25	15.50	17.50	18.00	≤250 (A)		
		Zinc (mg/L)	6	0.04	0.04	0.04	0.04	0.04	≤3 (A)		
Verification Heavy Metals	QLD Health	Iron (mg/L)	5	0.03	0.03	0.10	0.90	1.10	≤0.3 (A)	1	
		Manganese (dissolved) (mg/L)	5	0.03	0.04	0.09	0.40	0.45			
		Aluminium (mg/L)	5	<0.003	<0.003	<0.003	0.015	0.018	≤0.2 (A)		

Goovigen Treated Water Quality											
Sampling Location(s)		**GOO03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Arsenic (mg/L)	5	0.00	0.0003	0.0004	0.0011	0.00	≤0.01 (H)		
		Cadmium (mg/L)	5	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.002 (H)		
		Chromium (mg/L)	5	<0.0001	<0.0001	0.0002	0.0010	0.0012	≤0.05 (H)		
		Copper (mg/L)	5	0.043	0.043	0.053	0.140	0.150	≤1 (A)		
		Lead (mg/L)	5	0.0009	0.0010	0.0014	0.0025	0.0027	≤0.01 (H)		
		Nickel (mg/L)	5	0.0006	0.0007	0.0013	0.0050	0.0058	≤0.02 (H)		
		Zinc (mg/L)	5	0.01	0.01	0.013	0.025	0.027	≤3 (A)		
Verification Pesticides	QLD Health	Pesticides	3	Below LOD	Below LOD	Below LOD	Below LOD	Below LOD			

Moura Treated Water

Moura Treated Water Quality											
Sampling Location(s)		**MOU03**				**Timeframe**		**July 2022– June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	360	7.00	7.02	7.11	7.21	7.61	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	362	0.10	0.13	0.23	0.41	0.72	≤5 (A)		
		Apparent Colour (HU)	361	0.0	0.0	0.0	0.0	1.0			
		True Colour (HU)	361	0.0	0.0	0.0	0.0	1.0	≤15 (A)		
		Total Iron (mg/L)	330	0.00	0.00	0.01	0.04	0.20	≤0.3 (A)		
		Total Manganese (mg/L)	361	0.00	0.00	0.01	0.03	0.07	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	360	44.0	50.0	86.0	102.0	130.0			
		Fluoride (mg/L)	0	-	-	-	-	-	≤1.5 (H)		Testing not performed.
		Free Chlorine (mg/L)	362	0.67	1.02	1.51	2.16	3.27	≥0.2 (H)		
		E. coli (mpn/100mL)	52	0.0	0.0	0.0	0.0	0.0	≤1 (H)		
		Total Coliforms (mpn/100mL)	52	0.0	0.0	0.0	0.0	0.0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	43	0.54	1.19	1.56	2.19	2.91	≥0.2 (H)		
		E. coli (mpn/100mL)	45	0	0	0	0	0	≤1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	0			
Verification THMs	QLD Health	Chloroform (µg/L)	14	0.00	33.15	91.50	147.00	160.00			
		Bromodichloromethane (µg/L)	14	0.00	8.45	40.50	69.00	69.00			
		Dibromochloromethane (µg/L)	14	0.00	0.65	12.00	24.00	24.00			
		Bromoform (µg/L)	14	0.00	0.46	0.71	2.00	2.00			
		Total Trihalomethanes (µg/L)	14	0.00	49.40	135.00	237.00	250.00	≤250 (H)		
Verification Standard Water Analysis	QLD Health	pH	5	6.78	6.81	7.21	7.39	7.41	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	5	<1	<1	<1	<1	<1	≤5 (A)		
		True Colour (HU)	5	<8	<8	<8	<8	<8	≤15 (A)		
		Iron (mg/L)	5	<0.01	<0.01	<0.01	<0.01	0.01	≤0.3 (A)		
		Manganese (mg/L)	5	0.00	0.00	0.00	0.00	0.00	≤0.1 (A)		

Moura Treated Water Quality											
Sampling Location(s)		**MOU03**				**Timeframe**		**July 2022– June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Aluminium (mg/L)	5	<0.03	<0.03	<0.03	<0.03	<0.03	≤0.2 (A)		
		Alkalinity (Total) (mg/L CaCO3)	5	52.0	55.4	82.0	94.4	96.0			
		Residual Alkalinity (meq/L)	5	0.0	0.0	0.2	0.3	0.3			
		Total Hardness (mg/L CaCO3)	5	36.0	43.2	74.0	101.0	107.0	≤200 (A)		
		Temporary Hardness (mg/L CaCO3)	5	36.0	42.6	74.0	92.2	96.0			
		Total Dissolved Ions (mg/L)	5	132.0	145.2	232.0	288.0	302.0			
		Total Dissolved Solids (mg/L)	5	120.0	132.0	200.0	248.0	260.0	≤600 (A)		
		Conductivity (µS/cm)	5	190.0	214.0	340.0	454.0	480.0			
		Bicarbonate (mg/L CaCO3)	5	64.0	68.0	100.0	115.0	117.0			
		Carbonate (mg/L CaCO3)	5	0.0	0.0	0.1	0.2	0.2			
		Hydroxide (mg/L CaCO3)	5	0.0	0.0	0.0	0.0	0.0			
		Hydrogen (mg/L)	5	0.0	0.0	0.0	0.0	0.0			
		Boron (mg/L)	5	0.03	0.03	0.05	0.05	0.05	≤4 (H)		
		Calcium (mg/L)	5	10.00	11.40	18.00	23.00	24.00			
		Chloride (mg/L)	5	24.00	28.20	48.00	73.80	79.00	≤250 (A)		
		Copper (mg/L)	5	0.01	0.01	0.02	0.03	0.03	≤1 (A)		
		Fluoride (mg/L)	5	0.080	0.092	0.150	0.176	0.180	≤1.5 (H)		
		Magnesium (mg/L)	5	2.50	3.38	7.00	10.24	11.00			
		Nitrate (mg/L)	5	0.13	0.18	0.40	1.72	1.80	≤50 (H)		
		Potassium (mg/L)	5	6.30	6.32	7.10	7.44	7.50			
		Silica (mg/L)	5	15.00	15.40	18.00	21.00	21.00	≤80 (A)		
		Sodium (mg/L)	5	20.00	21.80	37.00	47.60	50.00	≤180 (A)		
		Sulphate (mg/L)	5	3.60	4.18	7.80	12.86	14.00	≤250 (A)		
		Zinc (mg/L)	5	0.04	0.04	0.04	0.04	0.04	≤3 (A)		
Verification Heavy Metals	QLD Health	Iron (mg/L)	5	<0.005	<0.005	<0.005	0.01	0.01	≤0.3 (A)		
		Manganese (dissolved) (mg/L)	5	0.00	0.00	0.00	0.00	0.00			

Moura Treated Water Quality											
Sampling Location(s)		**MOU03**				**Timeframe**		**July 2022– June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Aluminium (mg/L)	5	0.004	0.004	0.006	0.013	0.013	≤0.2 (A)		
		Arsenic (mg/L)	5	0.00	0.0006	0.0012	0.0017	0.00	≤0.01 (H)		
		Cadmium (mg/L)	5	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.002 (H)		
		Chromium (mg/L)	5	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.05 (H)		
		Copper (mg/L)	5	0.009	0.009	0.017	0.033	0.035	≤1 (A)		
		Lead (mg/L)	5	<0.0001	<0.0001	0.0001	0.0004	0.0004	≤0.01 (H)		
		Nickel (mg/L)	5	0.0006	0.0006	0.0007	0.0010	0.0010	≤0.02 (H)		
		Zinc (mg/L)	5	0.00	0.00	0.005	0.013	0.014	≤3 (A)		
Verification Pesticides	QLD Health	Hexazinone (µg/L)	3	<0.01	<0.01	0.000	0.012	0.020	≤400 (H)		
		2,4-D (µg/L)	3	<0.02	<0.02	<0.02	0.017	0.030	≤20 (H)		
		Atrazine, 2-hydroxy (µg/L)	3	<0.01	0.000	0.000	2.420	3.100	≤500 (H)		
		Dalapon (2,2-DPA) (µg/L)	3	0.000	0.000	0.000	0.017	0.030	≤1 (H)		
		Other Pesticides	3	Below LOD	Below LOD	Below LOD	Below LOD	Below LOD			

Moura Reticulated Water

Moura Reticulated Water Quality											
Sampling Location(s)		**MOU09**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	51	7.01	7.03	7.10	7.21	7.28	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	52	0.12	0.14	0.27	0.40	0.62	≤5 (A)		
		True Colour (HU)	50	0.0	0.0	0.0	0.0	2.0	≤15 (A)		
		Total Iron (mg/L)	46	0.00	0.00	0.01	0.06	0.07	≤0.3 (A)		
		Total Manganese (mg/L)	52	0.00	0.00	0.01	0.03	0.04	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	51	50.0	51.0	87.0	105.0	108.0			
		Free Chlorine (mg/L)	53	0.32	0.50	1.12	1.62	1.78			
		E. coli (mpn/100mL)	47	0	0	0	0	0	≤1 (H)		
		Total Coliforms (mpn/100mL)	47	0	0	0	0	0	≤1 ()		
Verification Microbial	QLD Health	Free Chlorine (mg/L)	43	0.34	0.61	1.22	1.90	2.36	≥0.2 (H)		
		E. coli (mpn/100mL)	45	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	0			

Moura Reticulated Water Quality											
Sampling Location(s)		**MOU11**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	51	7.01	7.04	7.12	7.25	7.30	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	52	0.13	0.16	0.28	0.46	0.97	≤5 (A)		
		True Colour (HU)	52	0.0	0.0	0.0	0.0	3.0	≤15 (A)		
		Total Iron (mg/L)	46	0.00	0.00	0.01	0.07	0.09	≤0.3 (A)		
		Total Manganese (mg/L)	52	0.00	0.00	0.01	0.02	0.05	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	51	45.0	51.0	88.0	102.5	105.0			
		Free Chlorine (mg/L)	53	0.42	0.54	1.23	1.85	2.17			
		E. coli (mpn/100mL)	47	0	0	0	0	0	≤1 (H)		
		Total Coliforms (mpn/100mL)	47	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	43	0.42	0.61	1.25	1.92	3.06	≥0.2 (H)		
		E. coli (mpn/100mL)	45	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	1			

Moura Reticulated Water Quality											
Sampling Location(s)		**MOU25**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	51	6.96	7.05	7.10	7.23	7.30	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	52	0.12	0.15	0.27	0.51	0.65	≤5 (A)		
		True Colour (HU)	52	0.0	0.0	0.0	0.4	1.0	≤15 (A)		
		Total Iron (mg/L)	46	0.00	0.00	0.01	0.09	0.09	≤0.3 (A)		
		Total Manganese (mg/L)	52	0.00	0.00	0.01	0.03	0.05	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	51	48.0	50.0	86.0	102.0	107.0			
		Free Chlorine (mg/L)	53	0.06	0.52	0.96	1.60	1.78	≥0.2 (H)	1	
		E. coli (mpn/100mL)	47	0	0	0	0	0	<1 (H)		
		Coliforms (Total)	47	0	0	0	0	0			

Moura Reticulated Water Quality											
Sampling Location(s)		**MOU26**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	51	7.00	7.02	7.12	7.30	7.84	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	52	0.12	0.15	0.25	0.46	0.63	≤5 (A)		
		True Colour (HU)	52	0.0	0.0	0.0	0.0	2.0	≤15 (A)		
		Total Iron (mg/L)	46	0.00	0.00	0.01	0.07	0.16			
		Total Manganese (mg/L)	52	0.00	0.00	0.01	0.03	0.06			
		Alkalinity (mg/L of CaCO3)	51	46.0	49.0	88.0	101.0	104.0			
		Free Chlorine (mg/L)	53	0.54	0.57	1.14	1.70	1.94	≥0.2 (H)		
		E. coli (mpn/100mL)	47	0	0	0	0	0	<1 (H)		
		Coliforms (Total)	47	0	0	0	0	0			

Banana Reticulated Water

Banana Reticulated Water Quality											
Sampling Location(s)		**BAN01**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	51	7.03	7.05	7.12	7.32	7.64	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	51	0.15	0.19	0.26	0.40	0.47	≤5 (A)		
		True Colour (HU)	51	0.0	0.0	0.0	0.0	4.0	≤15 (A)		
		Total Iron (mg/L)	48	0.00	0.00	0.01	0.09	0.15	≤0.3 (A)		
		Total Manganese (mg/L)	41	0.00	0.00	0.01	0.03	0.03	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	42	48.0	49.1	90.0	100.0	109.0			
		Free Chlorine (mg/L)	51	0.45	0.68	1.22	1.77	1.90	≥0.2 (H)		
		E. coli (mpn/100mL)	47	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	0			

Banana Reticulated Water Quality											
Sampling Location(s)		**BAN04**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	51	7.01	7.04	7.13	7.27	7.54	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	51	0.13	0.17	0.25	0.42	0.56	≤5 (A)		
		True Colour (HU)	51	0.0	0.0	0.0	0.0	2.0	≤15 (A)		
		Total Iron (mg/L)	48	0.00	0.00	0.02	0.06	0.13	≤0.3 (A)		
		Total Manganese (mg/L)	40	0.00	0.00	0.01	0.02	0.03	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	42	50.0	51.0	90.0	102.0	103.0			
		Free Chlorine (mg/L)	51	0.48	0.65	1.21	1.84	2.06	≥0.2 (H)		
		E. coli (mpn/100mL)	46	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	45	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	11	0.70	0.76	1.17	1.96	2.36	≥0.2 (H)		
		E. coli (mpn/100mL)	12	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	12	0	0	0	0	0			

Theodore Treated Water

Theodore WTP Treated Water Quality											
Sampling Location(s)		**THE03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	364	6.61	6.69	7.01	7.16	7.98	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	365	0.09	0.11	0.16	0.26	0.39	≤5 (A)		
		True Colour (HU)	365	0.0	0.0	0.0	2.0	17.0	≤15 (A)	1	
		Total Iron (mg/L)	335	0.00	0.00	0.00	0.02	0.08	≤0.3 (A)		
		Total Manganese (mg/L)	225	0.00	0.00	0.01	0.01	0.04	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	365	48.00	50.00	70.00	92.00	131.00			
		Free Chlorine (mg/L)	365	0.650	0.86	1.28	1.80	2.24	≥0.2 (H)		
		E. coli (mpn/100mL)	6	0.000	0.00	0.00	0.00	0.00	<1 (H)		
		Total Coliforms (mpn/100mL)	4	0.000	0.00	0.00	0.00	0.00			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	10	1	0.97	1.14	1.57	1.71	≥0.2 (H)		
		E. coli (mpn/100mL)	12	0.000	0.00	0.00	0.00	0.00	<1 (H)		
		Total Coliforms (mpn/100mL)	13	0.000	0.00	0.00	0.00	0.00			
Verification THMs	QLD Health	THMs	0	-	-	-	-	-			Testing not performed.
Verification Standard Water Analysis	QLD Health	pH	4	7.06	7.07	7.12	7.21	7.22	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	4	<1	<1	<1	<1	<1	≤5 (A)		
		True Colour (HU)	4	<8	<8	<8	<8	<8	≤15 (A)		
		Iron (mg/L)	4	<0.01	<0.01	<0.01	<0.01	<0.01	≤0.3 (A)		
		Manganese (mg/L)	4	0.00	0.00	0.00	0.00	0.00	≤0.1 (A)		
		Aluminium (mg/L)	4	<0.03	<0.03	<0.03	<0.03	<0.03	≤0.2 (A)		
		Alkalinity (Total) (mg/L CaCO3)	4	57.00	60.00	80.50	86.55	87.00			
		Residual Alkalinity (meq/L)	4	0.30	0.30	0.30	0.39	0.40			
		Total Hardness (mg/L CaCO3)	4	45.0	47.1	64.0	70.7	71.0	≤200 (A)		
		Temporary Hardness (mg/L CaCO3)	4	45.00	47.10	64.00	70.70	71.00			
		Total Dissolved Ions (mg/L)	4	145.00	153.55	212.00	227.10	228.00			

Theodore WTP Treated Water Quality											
Sampling Location(s)		**THE03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Total Dissolved Solids (mg/L)	4	120.00	127.50	180.00	190.00	190.00	≤600 (A)		
		Conductivity (µS/cm)	3	290.0	293.0	320.0	338.0	340.0			
		Bicarbonate (mg/L CaCO3)	4	70.0	73.6	98.0	105.4	106.0			
		Carbonate (mg/L CaCO3)	4	0.0	0.0	0.1	0.1	0.1			
		Hydroxide (mg/L CaCO3)	4	0.0	0.0	0.0	0.0	0.0			
		Hydrogen (mg/L)	4	0.0	0.0	0.0	0.0	0.0			
		Boron (mg/L)	4	0.0	0.0	0.0	0.0	0.1	≤4 (H)		
		Calcium (mg/L)	4	12.0	12.6	17.0	18.0	18.0			
		Chloride (mg/L)	4	27.0	29.0	42.5	49.3	50.0	≤250 (A)		
		Copper (mg/L)	4	0.0	0.0	0.0	0.0	0.0	≤1 (A)		
		Fluoride (mg/L)	4	0.1	0.1	0.1	0.1	0.1	≤1.5 (H)		
		Magnesium (mg/L)	4	3.6	3.8	5.3	6.1	6.1			
		Nitrate (mg/L)	4	0.20	0.27	0.83	1.08	1.10	≤50 (H)		
		Potassium (mg/L)	4	6.40	6.40	6.75	7.19	7.20			
		Silica (mg/L)	4	13.00	13.15	15.50	17.00	17.00	≤80 (A)		
		Sodium (mg/L)	4	21.00	22.80	33.50	37.40	38.00	≤180 (A)		
		Sulphate (mg/L)	4	4.100	4.130	5.350	6.825	6.900	≤250 (A)		
		Zinc (mg/L)	4	0.04	0.04	0.04	0.04	0.04	≤3 (A)		
Verification Heavy Metals	QLD Health	Iron (mg/L)	4	<0.005	<0.005	<0.005	<0.005	<0.005	≤0.3 (A)		
		Manganese (dissolved) (mg/L)	4	0.00	0.00	0.00	0.00	0.00			
		Aluminium (mg/L)	4	<0.003	<0.003	0.00	0.00	0.01	≤0.2 (A)		
		Arsenic (mg/L)	4	0.00	0.00	0.00	0.00	0.00	≤0.01 (H)		
		Cadmium (mg/L)	4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.002 (H)		
		Chromium (mg/L)	4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.05 (H)		
		Copper (mg/L)	4	0.01	0.01	0.02	0.02	0.02	≤1 (A)		
		Lead (mg/L)	4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	≤0.01 (H)		
		Nickel (mg/L)	4	0.00	0.0005	0.0007	0.0007	0.00	≤0.02 (H)		
		Zinc (mg/L)	4	0.00	0.00	0.01	0.01	0.01	≤3 (A)		

Theodore WTP Treated Water Quality											
Sampling Location(s)		**THE03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Verification Pesticides	QLD Health	Hexazinone (µg/L)	14	0.01	0.01	0.01	0.02	0.02	≤400 (H)		
		Atrazine, 2-hydroxy (µg/L)	13	0.01	0.01	0.02	0.02	0.02	≤20 (H)		
		Dalapon (2,2-DPA) (µg/L)	14	0.01	0.33	1.00	1.54	1.60	≤500 (H)		
		Haloxyfop (acid) (µg/L)	14	0.01	0.01	0.01	0.03	0.04	≤1 (H)		
		MCPA (µg/L)	14	0.01	0.01	0.01	0.03	0.04	≤40 (H)		
		Total Diuron (µg/L)	14	0.04	0.04	0.06	0.06	0.06	≤20 (H)		
		Other Pesticides*	14	Below LOD	Below LOD	Below LOD	Below LOD	Below LOD			

Theodore Reticulated Water

Theodore Reticulated Water Quality											
Sampling Location(s)		**THE05**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	31	7.05	7.08	7.27	7.46	7.51	≥6.5 & ≤8.5 (A)	-	
		Turbidity (NTU)	31	0.03	0.05	0.09	0.22	0.25	≤5 (A)		
		True Colour (HU)	31	0.0	0.0	0.0	0.0	1.0	≤15 (A)		
		Total Iron (mg/L)	31	0.00	0.00	0.00	0.01	0.01	≤0.3 (A)		
		Total Manganese (mg/L)	30	0.00	0.00	0.01	0.01	0.01	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	0	-	-	-	-	-			Testing not performed.
		Free Chlorine (mg/L)	31	0.25	0.29	0.76	1.25	1.30	≥0.2 (H)		-
		E. coli (mpn/100mL)	27	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	11	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	11	0.32	0.38	0.88	1.22	1.30	≥0.2 (H)		
		E. coli (mpn/100mL)	12	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	13	0	0	0	0	0			

Theodore Reticulated Water Quality											
Sampling Location(s)		**THE06**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	31	7.03	7.17	7.30	7.42	7.46	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	31	0.07	0.15	0.25	0.45	0.48	≤5 (A)		
		True Colour (HU)	31	0.0	0.0	0.0	1.5	4.0	≤15 (A)		
		Total Iron (mg/L)	31	0.00	0.00	0.00	0.01	0.02	≤0.3 (A)		
		Total Manganese (mg/L)	30	0.00	0.00	0.01	0.03	0.06	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	0	-	-	-	-	-			Testing not performed.
		Free Chlorine (mg/L)	31	0.20	0.21	0.29	0.67	0.83	≥0.2 (H)		
		E. coli (mpn/100mL)	26	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	9	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	10	0.23	0.23	0.38	0.71	0.79	≥0.2 (H)		-
		E. coli (mpn/100mL)	11	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	12	0	0	0	78	170			2 detections, in April and May 2023. No detections of E. coli during these instances.

Theodore Reticulated Water Quality											
Sampling Location(s)		**THEO09**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	31	7.08	7.16	7.31	7.43	7.53	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	31	0.02	0.03	0.18	0.44	0.46	≤5 (A)		
		True Colour (HU)	31	0.0	0.0	0.0	0.0	3.0	≤15 (A)		
		Total Iron (mg/L)	31	0.00	0.00	0.00	0.01	0.01	≤0.3 (A)		
		Total Manganese (mg/L)	30	0.00	0.00	0.01	0.01	0.02	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	0	-	-	-	-	-			Testing not performed.
		Free Chlorine (mg/L)	31	0.20	0.24	0.51	1.09	1.14	≥0.2 (H)	1	Single value below 0.2 mg/L in august 2021.
		E. coli (mpn/100mL)	26	0	0	0	0	0	<1 (H)		
		Coliforms (Total)	10	0	0	0	0	0			
Verification Microbial	QLD Health	Free Chlorine (mg/L)	10	0.36	0.38	0.61	1.00	1.08	≥0.2 (H)		
		E. coli (mpn/100mL)	13	0	0	0	0	0	<1 (H)		
		Coliforms (Total)	13	0	0	0	20	50			1 detection in May 2023. No detections of E. coli at this time.

Taroom Treated Water

Taroom WTP Treated Water Quality											
Sampling Location(s)		**TAR03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	365	6.95	7.19	7.46	8.04	8.86	≥6.5 & ≤8.5 (A)	2	
		Turbidity (NTU)	365	0.09	0.12	0.17	0.33	1.35	≤5 (A)		
		True Colour (HU)	365	0.0	0.0	0.0	3.0	9.0	≤15 (A)		
		Total Iron (mg/L)	365	0.00	0.00	0.01	0.03	0.08	≤0.3 (A)		
		Total Manganese (mg/L)	337	0.00	0.00	0.01	0.02	0.16	≤0.1 (A)	1	
		Alkalinity (mg/L of CaCO3)	365	50.00	50.00	60.00	65.00	75.00			
		Free Chlorine (mg/L)	365	0.450	0.77	0.98	1.28	1.57	≥0.2 (H)		
Verification Microbial	QLD Health	Free Chlorine (mg/L)	7	0.84	0.88	0.98	1.21	1.25	≥0.2 (H)		
		E. coli (mpn/100mL)	13	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	12	0	0	0	0	0			
Verification THMs	QLD Health	THMs	0	-	-	-	-	-			Testing not performed.
Verification Standard Water Analysis	QLD Health	pH	4	7.1	7.1	7.3	7.6	7.7	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	4	<1	<1	<1	<1	1.00	≤5 (A)		
		True Colour (HU)	4	<8	<8	<8	<8	<8	≤15 (A)		
		Iron (mg/L)	4	0.03	0.04	0.12	0.37	0.41	≤0.3 (A)	1	
		Manganese (mg/L)	4	0.00	0.00	0.00	0.00	0.01	≤0.1 (A)		
		Aluminium (mg/L)	4	<0.03	<0.03	<0.03	<0.03	<0.03	≤0.2 (A)		
		Alkalinity (Total) (mg/L CaCO3)	4	58.00	58.00	58.00	58.85	59.00			
		Residual Alkalinity (meq/L)	4	1.10	1.10	1.10	1.10	1.10			
		Total Hardness (mg/L CaCO3)	4	2.8	2.8	3.2	3.3	3.3	≤200 (A)		
		Temporary Hardness (mg/L CaCO3)	4	2.80	2.85	3.15	3.29	3.30			
		Total Dissolved Ions (mg/L)	4	116.00	116.00	116.50	120.40	121.00			
		Total Dissolved Solids (mg/L)	4	98.00	98.15	99.00	99.85	100.00	≤600 (A)		
		Conductivity (µS/cm)	3	140.0	140.0	140.0	149.0	150.0			

Taroom WTP Treated Water Quality											
Sampling Location(s)		**TAR03**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
		Bicarbonate (mg/L CaCO3)	4	70.0	70.0	70.0	71.7	72.0			
		Carbonate (mg/L CaCO3)	4	0.1	0.1	0.1	0.2	0.2			
		Hydroxide (mg/L CaCO3)	4	0.0	0.0	0.0	0.0	0.0			
		Hydrogen (mg/L)	4	0.0	0.0	0.0	0.0	0.0			
		Boron (mg/L)	4	<0.02	<0.02	<0.02	<0.02	<0.02	≤4 (H)		
		Calcium (mg/L)	4	0.7	0.7	0.8	0.8	0.8			
		Chloride (mg/L)	4	12.0	12.0	12.0	12.9	13.0	≤250 (A)		
		Copper (mg/L)	4	0.0	0.0	0.0	0.0	0.0	≤1 (A)		
		Fluoride (mg/L)	4	0.1	0.1	0.1	0.1	0.1	≤1.5 (H)		
		Magnesium (mg/L)	4	0.3	0.3	0.3	0.3	0.3			
		Nitrate (mg/L)	4	0.06	0.06	0.09	0.12	0.12	≤50 (H)		
		Potassium (mg/L)	4	1.90	1.90	1.90	1.99	2.00			
		Silica (mg/L)	4	18.00	18.00	18.50	19.00	19.00	≤80 (A)		
		Sodium (mg/L)	4	30.00	30.00	30.50	32.70	33.00	≤180 (A)		
		Sulphate (mg/L)	4	<0.2	<0.2	<0.2	<0.2	0.200	≤250 (A)		
		Zinc (mg/L)	4	0.04	0.04	0.04	0.04	0.04	≤3 (A)		
Verification Heavy Metals	QLD Health	Iron (mg/L)	3	0.39	0.40	0.47	0.59	0.60	≤0.3 (A)	3	
		Manganese (dissolved) (mg/L)	3	0.00	0.00	0.00	0.01	0.01			
		Aluminium (mg/L)	3	<0.003	<0.003	<0.003	0.02	0.02	≤0.2 (A)		
		Arsenic (mg/L)	3	<0.0001	<0.0001	0.00	0.00	0.00	≤0.01 (H)		
		Cadmium (mg/L)	3	<0.0001	<0.0001	<0.0001	0.00	0.00	≤0.002 (H)		
		Chromium (mg/L)	3	<0.0001	0.00	0.00	0.00	0.00	≤0.05 (H)		
		Copper (mg/L)	3	0.00	0.00	0.00	0.01	0.01	≤1 (A)		
		Lead (mg/L)	3	<0.0001	<0.0001	0.000	0.001	0.001	≤0.01 (H)		
		Nickel (mg/L)	3	<0.0001	<0.0001	0.0003	0.0007	0.00	≤0.02 (H)		
		Zinc (mg/L)	3	0.00	0.00	0.01	0.01	0.01	≤3 (A)		
Verification Pesticides	QLD Health	Pesticides	11	Below LOD	Below LOD	Below LOD	Below LOD	Below LOD			

Taroom Reticulated Water

Taroom Reticulated Water Quality											
Sampling Location(s)		**TAR06**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	49	6.86	6.98	7.23	7.41	7.47	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	48	0.13	0.16	0.30	1.19	2.01	≤5 (A)		
		Total Iron (mg/L)	48	0.00	0.00	0.01	0.03	0.05	≤0.3 (A)		
		Total Manganese (mg/L)	44	0.00	0.00	0.01	0.02	0.03	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	48	50.0	50.0	55.0	70.0	72.0			
		Free Chlorine (mg/L)	48	0.38	0.53	0.75	1.16	1.48	≥0.2 (H)		
		E. coli (mpn/100mL)	48	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	0	-	-	-	-	-			Testing not performed/ recorded.
Verification Microbial	QLD Health	Free Chlorine (mg/L)	10	0.52	0.61	0.84	1.16	1.24	≥0.2 (H)		
		E. coli (mpn/100mL)	12	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	12	0	0	0	0	0			

Taroom Reticulated Water Quality											
Sampling Location(s)		**TAR15**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	48	6.08	6.78	7.26	7.40	7.43	≥6.5 & ≤8.5 (A)	1	Single reading below 6.5 pH in January 2023.
		Turbidity (NTU)	48	0.09	0.13	0.23	0.50	2.06	≤5 (A)		
		Total Iron (mg/L)	48	0.00	0.00	0.01	0.04	0.05	≤0.3 (A)		
		Total Manganese (mg/L)	44	0.00	0.00	0.01	0.02	0.02	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	48	50.0	50.0	55.0	68.0	75.0			
		Free Chlorine (mg/L)	48	0.24	0.31	0.51	0.93	0.96	≥0.2 (H)		
		E. coli (mpn/100mL)	48	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	0	-	-	-	-	-			Testing not performed/ recorded.
Verification Microbial	QLD Health	Free Chlorine (mg/L)	8	0.36	0.37	0.55	0.73	0.74	≥0.2 (H)		
		E. coli (mpn/100mL)	10	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	10	0	0	0	1	1			Single detection in December 2022. No E. coli detected during this time.

Taroom Reticulated Water Quality											
Sampling Location(s)		**TAR16**				**Timeframe**		**July 2022 – June 2023**			
Operational / Verification	Lab	Parameter	Count	Min	5th %ile	Median	95th %ile	Max	ADWG Guideline	No. that exceed ADWG Value	Comments
Operational	WTP	pH	49	6.79	6.95	7.25	7.37	7.40	≥6.5 & ≤8.5 (A)		
		Turbidity (NTU)	48	0.02	0.18	0.26	0.95	2.01	≤5 (A)		
		Total Iron (mg/L)	48	0.00	0.00	0.01	0.04	0.05	≤0.3 (A)		
		Total Manganese (mg/L)	43	0.00	0.00	0.01	0.04	0.05	≤0.1 (A)		
		Alkalinity (mg/L of CaCO3)	48	50.0	50.0	55.0	66.3	70.0			
		Free Chlorine (mg/L)	48	0.36	0.44	0.75	1.10	1.27	≥0.2 (H)		
		E. coli (mpn/100mL)	48	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	0	-	-	-	-	-			Testing not performed/ recorded.
Verification Microbial	QLD Health	Free Chlorine (mg/L)	9	0.63	0.63	0.89	1.05	1.09	≥0.2 (H)		
		E. coli (mpn/100mL)	11	0	0	0	0	0	<1 (H)		
		Total Coliforms (mpn/100mL)	11	0	0	0	0	0			