Drinking Water Quality Management Plan (DWQMP) report

2017-2018

Banana Shire Council

Service Provider ID: 504

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Contents

Glossary of terms

ADWG 2011	Australian Drinking Water Guidelines 6 (2011). Published by the National Health and Medical Research Council of Australia (Version 3.5 Updated August 2018)
E. coli	*Escherichia coli*, a bacterium which is considered to indicate the presence of faecal contamination and therefore potential health risk
CCP	Critical Control Point, A critical control point (CCP) 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.
HACCP	Hazard Analysis and Critical Control Points certification for protecting drinking water quality
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units, used to measure clarity of water
MPN/100mL	Most probable number per 100 millilitres
CFU/100mL	Colony forming units per 100 millilitres
<	Less than
>	Greater than
DWQMP	Drinking Water Quality Management Plan – the documents summarising how water service providers manage quality risks for consumers.
WTP	Water Treatment Plant - processes raw water (sourced from a dam or bore) to make drinking water.
The Act	Water Supply (Safety and Reliability) Act 2008.

1. Introduction

This report documents the performance of Banana Shire Council's drinking water service with respect to water quality and performance in implementing the actions detailed in the Drinking Water Quality Management Plan (DWQMP) as required under the *Water Supply (Safety and Reliability) Act 2008* (the Act).

The report assists the Regulator to determine whether the approved DWQMP and any approval conditions have been complied with and provides a mechanism for providers to report publicly on their performance in managing drinking water quality.

2. Overview of Operations

Banana Shire Council is a registered service provider with identification (SPID) 504.
Council operates a total of nine (9) drinking water supply schemes throughout the Shire consisting of:-

Scheme;	*Water Source*	*Treatment processes*	*Treatment capacity (ML/d)*	*Towns supplied*
Banana	Dawson River (Moura Weir)	Pumped from Moura, re-chlorinated	NA	Banana
Baralaba	Dawson River (Neville Hewitt Weir)	Clarifiers, ultrafiltration, chlorination	1.1	Baralaba
Biloela	Callide Dam, Callide Valley Aquifer Bores	Clarifiers, filters, fluoridation, chlorination	8.64	Biloela, Callide Dam, Thangool
Callide Dam	Callide Dam	Clarifiers, filters, chlorination	NA	Callide Dam
Goovigen	Callide Valley Aquifer Bores	Chlorination	0.2	Goovigen
Moura	Dawson River (Moura Weir)	Clarifiers, filters, fluoridation, chlorination	7.2	Moura, Banana
Taroom	Great Artesian Basin Bore	Aeration, Chlorination	4.3	Taroom
Thangool	Callide Dam, Callide Valley Aquifer Bores	Pumped from Biloela, re-chlorinated	NA	Thangool
Theodore	Dawson River	Clarifiers, filters, chlorination	1.75	Theodore

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

Council manages drinking water quality through its approved Drinking Water Quality Management Plan (DWQMP) which protects public health by ensuring the provision of a safe water supply.

Council operates treatment plants at 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 infrastructure in these schemes including intakes, pumping stations, treatment facilities, reservoir storages and reticulation mains.

3. DWQMP implementation.

Progress in implementing the risk management improvement program

Key items of progress are highlighted in Appendix B

In summary the following items progressed during the reporting period.

- Reviewed CCP operational targets, alert limits, and critical limits
- Baralaba WTP upgrade completed.
- Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria[1] in verification monitoring.

Additional E. coli sampling and analysis is performed using Banana Shire Council's own laboratories and has yet to be formally incorporated into the DWQMP during the amendment process.

Amendments made to the DWQMP

The DWQMP Plan was updated in February 2017 (completed in October 2017) the changes were;

Page no/Appendix	Changes
Cover	Title page review date changed
Page 1 of 90	Document issue record updated version 5
Page 14 of 90	Added stakeholder telephone details
Page 32 of 90	Replaced lime with sodium hydroxide
Page 32 of 90	Replaced chlorine gas with potassium permanganate
Page 32 of 90	Updated fluoridation status
Page 32 of 90	Removed reference to pre-treatment oxidation using chlorine
Page 35 of 90	Amended Figure 2-11 to show process changes with revised chemicals
Page 35 of 90	Updated coagulant dose rate
Page 35 of 90	Added potassium permanganate dosing information
Page 35 of 90	Updated raw water mixing tank details
Page 37 of 90	Amended PAC dosing information
Pages 37 and 38 of 90	Changed pH adjustment chemical from lime to sodium hydroxide and updated dose information
Page 40 of 90	Amended figure 2-13 to show chemical dosing points
Page 40 of 90	Added comment on lime not being used as a pH adjustment chemical

[1] Refer to *Water Quality and Reporting Guideline for a Drinking Water Service* for the water quality criteria for drinking water.

Page no/Appendix	Changes
Page 43 of 90	Updated online chlorine probe information
Page 45 of 90	Amended chemicals dosed, replacing pre-coagulation chlorine dosing with potassium permanganate and pH adjustment with lime to sodium hydroxide
Page 46 of 90	Amended Figure 2-14 to include town bores 7 and 7D
Page 47 of 90	Amended Figure 2-15 to include new treatment chemicals and dosing points
Page 48 of 90	Updated fluoridation information
Pages 49-52 of 90	Updated dosing chemical information
Page 53 of 90	Included Bores 7 and 7D
Page 55 of 90	Updated Figure 2-16 to reflect new reservoir installation
Page 56 of 90	Updated reservoir description
Page 56 of 90	Updated Table 2-5
Page 57 of 90	Updated reservoir information
Page 81 of 90	Added sodium hydroxide
Appendix Q	Updated 2016 column and comments
CCP Procedure – Drinking Water Disinfection	Added DEWS definition. Updated Table 1
Appendix N	Amended frequency of surface water radiological testing to every 5 years according to Table 9.5 ADWG
Appendix N	Amended frequency of groundwater radiological testing to every 2 years according to Table 9.5 ADWG
Appendix N	Changed frequency of Manganese monitoring for Moura treated water to weekly in line with reticulation testing
Appendix N	Changed frequency of Manganese monitoring for Taroom raw water and treated water to weekly
Appendix N	Added method for in-house analysis of E. coli and coliforms for reticulation samples in Biloela, Moura, Callide Dam Village, Goovigen, Thangool, and Baralaba.
Appendix N	Updated method for Salinity
Appendix N	Updated Fluoride method and frequency to include Fluoridation requirements for NATA comparative testing against ISE probe
Appendix I	Added new treatment chemical dosing into Appendix

Table 1 List of Changes to DWQMP.

4. Compliance with water quality criteria for drinking water

The water quality criteria mean health guideline values in the most current Australian Drinking Water Guidelines, as well as the standards in the Public Health Regulation 2005.

- The results of the verification monitoring have been summarised in Appendix A
- All schemes complied with the drinking water health guidelines throughout the financial year apart for the incidents notified to the regulator as per section 5 below.
- As part of Queensland-wide testing for PFAS/PFOA in town water systems, a detection was made for Perfluorohexanesulfonic acid (PFHxS) in the Biloela town water supply. The detection was close 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 has commenced to monitor any changes.

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

This financial year there were seven (7) instances where the Regulator was notified under sections 102 or 102A of the Act.

Two incidents related to ongoing detections of trace amounts of the herbicide Tebuthiuron in the water supply schemes of Moura and Baralaba. This parameter currently has no ADWG health guideline. After consultation with Queensland Health, it was determined that the amounts detected posed no threat to human health. Management procedures were updated to monitor, report and consult with Heath authorities by comparing to interim guidelines determined by Queensland Health.

Two of the incidents related to turbidity exceeding guidelines in the town water schemes of Biloela and Baralaba. Whilst there are no health guidelines for turbidity, it is an important indicator of problems that can lead to ineffective disinfection of water.

- In the case of Biloela, the water treatment plant was impacted by a power failure during a storm.
- In the Baralaba incident, it was necessary to bypass a blocked ultrafiltration module to maintain water supply to the town and issue a boil water alert as a precaution to ensure public safety.

In both cases, no detections of e.coli occurred.

In one incident, a detection of phytoplankton (Blue Green Algae) in Callide Dam raw water feeding the Biloela town water scheme was detected at levels that trigger notification under Councils Drinking Water Management Plan. At all times the treatment plant was able to remove the potential contamination and Council worked with regulatory authorities and Sunwater to reduce risks.

In one incident, detection of chlorine below targets occurred following a changeover to take a reservoir off-line for a maintenance inspection. Subsequent tests for e.coli and chlorine met safety requirements.

Non-compliances with the water quality criteria and corrective and preventive actions undertaken

Incident description, a positive detection of e.coli was found in the Goovigen Town water supply during routine sampling. As a public safety precaution, a boil water alert was issued. Despite repeated sampling, there were no failures in disinfection or subsequent detections of microorganisms. Occasionally false positives test results can occur due to the sensitivity of the testing techniques, and the challenge of preserving aseptic conditions during field sampling.

Corrective and Preventive Actions: additional disinfection was applied, and repairs to storm-damaged electrical equipment were carried out.

6. Customer complaints related to water quality

Banana Shire Council is required to report on the number of complaints, general details of complaints, and the responses undertaken, and throughout the year the following complaints about water quality were received;

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

Scheme	Pressure - drinking water	Suspected illness	Discoloured Water	Taste and Odour
Banana	0 (0.00)	0 (0.00)	1 (5.81)	0 (0.00)
Baralaba	0 (0.00)	0 (0.00)	3 (6.52)	1 (2.17)
Biloela	1 (0.17)	0 (0.00)	8 (1.36)	5 (0.85)
Goovigen	2 (18.35)	0 (0.00)	1 (9.17)	0 (0.00)
Moura	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Taroom	0 (0.00)	1 (3.37)	0 (0.00)	2 (6.73)
Thangool	1 (2.08)	0 (0.00)	1 (2.08)	3 (6.24)
Theodore	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
TOTAL	**4 (0.47)**	**1 (0.12)**	**14 (1.63)**	**11 (1.28)**

(Three complaints were counted twice under multiple categories / columns where a taste and odour and discoloured water complaint were included in the same call).

Suspected Illness

Complaints are occasionally received from customers who suspect their water 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 testing the customers tap.

During 2017-2018, there was one complaint of suspected illness arising from the water supply system;

- Taroom; Suspected problem water, follow up samples indicated water was safe and free from odour, with microbiological tests that week indicating no contamination.

Discoloured water

The majority of water complaints were about discoloured water, with a total of fourteen (14) complaints , mainly in Biloela (8) and its connected system Thangool (1), but also Baralaba (3) and Banana and Goovigen. There were no clusters of complaints.

In appropriate cases, the mains were flushed and residents advised to flush their internal plumbing resulting in relief from quality problems.

Public communication was carried out advising residents to flush their taps on occasions where mains outages were carried out to reduce the impact. Additional control methods were installed to limit trunk mains velocity during changeovers.

Taste and odour

A total of eleven (11) taste and odour complaints were received during the period, five (5) in the Biloela scheme, a further three (3) in the connected Thangool scheme, two (2) in Taroom and one (1) in Baralaba.

At least 1 complaint was related to mains flushing activities.
All incidents received follow up, usually resulting in sampling and flushing.
Where possible, samples were taken inside of the customer's residence. Whilst nearly all samples were within the ADWG aesthetic limits, 1 test detected water exceeding aesthetic guidelines for turbidity.
In nearly all cases, mains flushing was used to make an immediate correction to quality problems.

Pressure.

A total of five (5) complaints about ;low pressure were received two (2) at Goovigen , and One (1) each at Biloela, Thangool, and Wowan.
Banana Shire Council takes complaints about pressure seriously, and investigated issues at the customers residence, usually providing advice about plumbing / pumping problems internal to the customers property.
In the situation of one complaint at Goovigen, problems in the reticulation or pumping network were the cause of low pressure and were promptly corrected.

7. Findings and recommendations of the DWQMP auditor

Banana Shire Council worked on reviewing and updating procedures and corrective actions following on from the audit performed by Bligh Tanner Pty. Ltd. in late 2016 covering the time period from 2015-2016. The purpose of the audit was to verify the accuracy of the monitoring and performance data provided to the Regulator; assess compliance with the DWQMP; and to assess the relevance of the DWQMP in relation to the service provided. A summary of, and recommendations from, the Audit report are included below:

- *Summary of auditor's findings*
    - Some schematics and associated scheme descriptions were identified as inaccurate or incomplete
    - Critical control points were not all implemented as stated
    - Operational monitoring was not all implemented as stated
    - Verification monitoring was not all implemented as stated
- *Recommendations of the auditor*
    - That the CCP Procedures be reviewed and updated to reflect operating conditions and fully implemented
    - The monitoring plan should be amended to reflect the actual sampling taken to avoid potential miscommunication when undertaking regulatory reporting.

The following improvement activities were completed;

- Identify and document all relevant regulatory and formal requirements.
- Review management plan requirements periodically to reflect any changes.
- Identify all stakeholders who could affect or be affected by decisions or activities of the drinking water supplier.
- Update the list of relevant agencies.
- Construct a flow diagram of the water supply system from catchment to consumer.

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

A review of the Drinking Water Quality Management Plan was commenced in February 2017 (with further work completed in October 2017), this included reviews of;

- Risk assessments.
- Plant schematics.

The purpose of the review was to ensure that the DWQMP remains relevant, having regard to the operation of the drinking water service, and the changes are summarised in Table 1.

The review findings and progress made are summarised in Appendix C – "Summary of review actions identified."

Appendix A – Summary of compliance with water quality criteria

Pages 11 to 18 summarise the test results for microbiological contamination, 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.

Tests conducted at Banana Shire Council's own laboratories are counted as a separate row in the tables below.

Pages 20 to 22 summarise the results of samples sent to external laboratories testing for compliance to guidelines for metals,

Due to a scheduling error, samples for several categories of analysis were missed for the Theodore and Taroom drinking water schemes during the 2017/2018 financial year.

Considering risks;

- no other water treatment plants returned non-compliant water samples from the Dawson river
- Taroom sources its water from the Great Artesian Basin and consequently has no contamination potential from surface waters.
- No instances of non-compliant samples were received in recent years from Theodore or other Dawson River samples taken downstream at Moura and Baralaba.

Further sampling was resumed in December 2018.

Appendix D summarizes Water Quality testing in more detail.

Drinking water scheme:	**Banana**											
Year												***2018***
Month	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**
No. of samples collected	5	6	9	8	5	5	6	2	6	10	5	1
No. of samples collected - External Laboratory	1	1	1	1	1	1	2	2	2	2	0	1
No. of samples collected - Council Laboratory	4	5	8	7	4	4	4	0	4	8	5	0
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	19	24	32	39	43	46	51	52	57	65	68	68
No. of failures for previous 12 month period	5	6	9	8	5	5	6	2	6	10	5	1
% 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%
Complies with 98% annual value?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Drinking water scheme:	**Baralaba**											
Year	***2018***											
Month	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**
No. of samples collected	6	6	4	19	9	19	8	7	5	4	10	2
No. of samples collected - External Laboratory	2	6	4	4	5	2	4	4	4	4	6	2
No. of samples collected - Council Laboratory	4	0	0	15	4	17	4	3	1	0	4	0
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	30	34	36	53	56	73	79	86	89	91	99	99
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%
Complies with 98% annual value?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Drinking water scheme:	**Biloela**											
Year												***2018***
Month	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**
No. of samples collected	49	42	42	64	46	33	18	47	50	40	47	32
No. of samples collected - External Laboratory	12	15	12	24	13	9	18	15	22	12	19	12
No. of samples collected - Council Laboratory	37	27	30	40	33	24	0	32	28	28	28	20
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	351	370	392	434	451	464	461	494	506	507	512	510
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%
Complies with 98% annual value?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Drinking water scheme:	**Callide Dam**											
Year												***2018***
Month	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**
No. of samples collected	7	8	8	11	9	5	2	10	10	10	10	7
No. of samples collected - External Laboratory	1	1	0	1	1	1	2	2	2	2	2	1
No. of samples collected - Council Laboratory	6	7	8	10	8	4	0	8	8	8	8	6
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	43	51	58	68	74	78	79	88	93	96	97	97
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%
Complies with 98% annual value?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Drinking water scheme:	**Goovigen**											
Year												***2018***
Month	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**
No. of samples collected	7	11	10	10	11	5	2	10	10	9	12	7
No. of samples collected - External Laboratory	1	3	2	2	3	1	2	2	2	2	4	1
No. of samples collected - Council Laboratory	6	8	8	8	8	4	0	8	8	7	8	6
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	**1**	0
No. of samples collected in previous 12 month period	43	52	61	70	78	82	83	93	88	96	102	104
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	1	1
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.0%	99.0%
Complies with 98% annual value?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Drinking water scheme:	**Moura**											
Year												***2018***
Month	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**
No. of samples collected	46	52	30	54	30	33	45	32	25	30	28	12
No. of samples collected - External Laboratory	12	15	12	24	12	9	21	14	24	12	15	12
No. of samples collected - Council Laboratory	34	37	18	30	18	24	24	18	1	18	13	0
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	186	225	245	290	299	320	350	376	386	404	417	417
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%
Complies with 98% annual value?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Drinking water scheme:	**Taroom**											
Year												***2018***
Month	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**
No. of samples collected	6	12	6	10	10	9	14	15	12	16	6	9
No. of samples collected - External Laboratory	6	6	6	6	6	6	12	12	12	12	6	6
No. of samples collected - Council Laboratory	0	6	0	4	4	3	2	3	0	4	0	3
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	79	85	84	88	92	95	103	106	112	122	122	125
No. of failures for previous 12 month period	1	1	0	0	0	0	0	0	0	0	0	0
% of samples that comply	98.7%	98.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Complies with 98% annual value?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Drinking water scheme:	**Thangool**											
Year												***2018***
Month	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**
No. of samples collected	15	18	16	19	14	8	4	15	16	16	6	10
No. of samples collected - External Laboratory	2	6	4	4	2	2	4	4	4	4	2	2
No. of samples collected - Council Laboratory	13	12	12	15	12	6	0	11	12	12	4	8
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	82	98	112	129	137	143	145	156	161	166	158	157
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%
Complies with 98% annual value?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Drinking water scheme:	**Theodore**											
Year												***2018***
Month	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**
No. of samples collected	6	6	6	6	6	6	12	12	12	12	6	6
No. of samples collected - External Laboratory	6	6	6	6	6	6	12	12	12	12	6	6
No. of samples collected - Council Laboratory	0	0	0	0	0	0	0	0	0	0	0	0
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	78	78	78	78	78	78	84	84	90	96	96	96
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%
Complies with 98% annual value?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Table 3 B – Verification monitoring – Metals

SCHEME NAME	CHEMICAL PARAMETER #	UNITS OF MEASUREMENT	TOTAL COUNT OF TESTS	NO OF TEST PASSED	% COMPLIANCE	LABORATORY NAME	PLANNED COUNT
Baralaba	Metals	mg/L	6	6	100	QH	4
Biloela	Metals	mg/L	17	24	100	QH	2
Goovigen	Metals	mg/L	5	5	100	QH	4
Moura	Metals	mg/L	5	5	100	QH	4
Taroom	Metals	mg/L	Not tested				4
Theodore	Metals	mg/L	Not tested				4

Comments: Chemical parameters* - (Heavy Metal Analysis) - which includes - Aluminium, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Nickel, Zinc. Biloela also covers Thangool & Callide. Moura also cover Banana.

Table 3 C – Verification monitoring – Physical Parameters

SCHEME NAME	PHYSICAL PARAMETER	TOTAL COUNT OF TESTS	NO OF TEST PASSED	% COMPLIANCE	LABORATORY NAME	PLANNED COUNT
Baralaba	Physical	6	6	100	QH	4
Biloela	Physical	6	6	100	QH	4
Goovigen	Physical	4	4	100	QH	4
Moura	Physical	5	5	100	QH	4
Taroom	Physical	Not tested				4
Theodore	Physical	Not tested				4

Comments: Physical Parameters: includes - Conductivity, pH, Total Hardness*, Alkalinity, Residual Alkalinity, Total Dissolved Solids, Total Dissolved Ions, True Colour, Turbidity. *Total Hardness is an aesthetic property and has no health guideline value, any aesthetic considerations are not included in this table. Biloela also covers Thangool & Callide. Moura also cover Banana.

Table 3 D – Verification monitoring – Herbicides / Pesticides

SCHEME NAME	PESTICIDES	TOTAL COUNT OF TESTS	NO OF TEST PASSED*	% COMPLIANCE	LABORATORY NAME	PLANNED COUNT
Baralaba	Herbicides / Pesticides	4	4	100	QH	4
Biloela	Herbicides / Pesticides	5	5	100	QH	2
Goovigen	Herbicides / Pesticides	2	2	100	QH	2
Moura	Herbicides / Pesticides	3	3	100	QH	4
Taroom	Herbicides / Pesticides	Not tested				1
Theodore	Herbicides / Pesticides	Not tested				4

*Includes non-recordable detections of analytes. Biloela also covers Thangool & Callide. Moura also cover Banana.

Table 3 E – Verification monitoring – Radiological

SCHEME NAME	RADIOLOGICAL PARAMETER	TOTAL COUNT OF TESTS	NO OF TEST PASSED	% COMPLIANCE	LABORATORY NAME	PLANNED FREQUENCY
Baralaba	Corrected Activity	1	1	100	QH	5 YEAR
Biloela	Corrected Activity	11	11	100	QH	5 YEAR
Goovigen	Corrected Activity	Not tested				2 YEAR
Moura	Corrected Activity	1	1	100	QH	5 YEAR
Taroom	Corrected Activity	Not tested				2 YEAR
Theodore	Corrected Activity	Not tested				5 YEAR

Biloela also covers Thangool & Callide. Moura also cover Banana.

Table 3 F – Verification monitoring – Disinfection By-Products

SCHEME NAME	PARMETER	UNITS OF MEASUREMENT	TOTAL COUNT OF TESTS	NO OF TEST PASSED	PLANNED COUNT
Baralaba	THM'S	µg/L	13	13	12
Biloela	THM'S	µg/L	13	13	12
Goovigen	THM'S	µg/L	5	5	4
Moura	THM'S	µg/L	11	11	12
Taroom	THM'S	µg/L	12	12	12
Theodore	THM'S	µg/L	12	12	12

Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Table 4 – Key items of progress against the risk management improvement program in the approved DWQMP

Item No.	Scheme Component / Sub-component	Action(s)	Target date/s	Status	(If implementing these actions will take longer than anticipated, please provide detail, as it may affect the approved DWQMP)
All schemes (excluding Taroom)	Cyanobacteria	Cyanobacteria response and action plan	End 2012	In effect	
All schemes	Spill into raw water response	Contact internal emergency liaison	End 2012	Draft prepared	
Theodore WTP	Dosing of PAC, KMNO4	Implement dosing to control iron, manganese, algal toxins and reduce THM formation	-	Plant upgrade not budgeted yet.	2020
Theodore WTP	Filter breakthrough	Automate backwash	-	Plant upgrade not budgeted yet.	2020
Baralaba WTP	Dosing of PAC, KMNO4	Implement dosing to control iron, manganese, algal toxins and reduce THM formation	2014/2015	Complete	
Banana Shire Bores	Integrity investigation	Check bores for potential for contamination and rectify	-	Ongoing	
Additional work commenced and completed in FY 2017-2018					
All Schemes	Pesticides Management	review the procedure for monitoring and reporting pesticide detections not covered by the ADWG.		In effect	

Appendix C – Summary of review actions identified

Table 5 – Action status

Action	Detail	Complete	Comment
CCP for Turbidity targets	Review individual schemes against current guideline	Y	
CSG Water report	Download annual report and check for water quality excursions.	Y	
Moura Chlorine CCP	Increase residual target to 0.8-1.2 mg/L and include in amendment	Y	Target updated
Biloela TWPS Cl2 target	Set residual target to 0.5 - 0.7 mg/L and include in amendment	Y	Target updated
Theodore WTP CCP	Set residual target to 1.2-1.7 mg/L and include in amendment	Y	Target updated
Baralaba WTP Mn target	management plan amendment	Y	Target updated
Banana Shire Mn CCP procedure	management plan amendment	Y	Target updated
CCP for turbidity	Investigate targets for plants (0.3mg/L alert) for inclusion in amendment	Y	
Fluoride check standard	Implement QC calibration check	Y	
Theodore WTP online cl2	Review current probe system for suitability and performance	Y	
Moura Raw Water Turbidimeter	Check Stage 2 tender documentation for meter	Y	
CCA testing from Theodore landfill	Check requirement and if still open. Metals analysis of Moura Raw Water shows no Arsenic or Chromium	Y	
Tools disinfection procedure	Mondays all tools are sanitised. After any sewer work they are sanitised on return to depot.	Y	
Residences on water mains + raw	Obtain list of customers on Raw or large mains. List has been developed.	Y	
Contaminated land register	Obtain list of contaminated land from Environment Section.	Y	
Baralaba res fence	Not installed at time of inspection.	Y	Access to tower is locked.
Review bore sealing Biloela borefield	Bore infiltration inspection. Needs schedule implemented.	Partial	
Taroom WTP upgrade design report	Tender has been issued for design of upgrade.	Y	
Calibration frequency review	Check frequency of calibration requirements for instruments	Y	
Biloela Dam Manganese increase from pigging	Letter to Sunwater re Stag Creek pipeline for notification in advance	Y	
Check Biloela WTP Supernatant reuse	Reuse of supernatant limited to 10% operationally. Documented.	Y	
Taroom bore monitoring at site	Review what has been performed previously for suitability.	Y	

Appendix D – Water testing summary results.

The results from the 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.

Tests that made no detections have not been included.

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

Parameter	Average	Maximum	Minimum	#Samples	90th percentile	Units	Compliance
Biloela Bore Water Source							
True Colour (HU)	0.9	10.0	0.0	79	4.0	HU	
Soluble Iron (mg/L)	0.0	0.4	0.0	61	0.0	mg/L	100.0%
Total Iron (mg/L)	0.0	0.2	0.0	61	0.1	mg/L	100.0%
pH	7.0	7.8	6.4	88	7.4		
Turbidity - Ext (NTU)	0.63	10.90	0.06	68	1.00	NTU	100.0%
Turbidity (NTU)	0.85	10.90	0.06	88	1.00	NTU	100.0%
Conductivity (µS/cm)	1197.94	1696.00	6.85	88	1577.00	µS/cm	100.0%
Alkalinity (mg/L of CaCO3)	160	203	54	79	190	mg/L of CaCO3	100.0%
Fluoride (mg/L)	0.176	0.353	0.020	79	0.241	mg/L	100.0%
Aluminium (mg/L)	0.024	0.050	0.003	33	0.050	mg/L	100.0%
Arsenic (mg/L)	0.0006	0.0007	0.0005	23	0.0007	mg/L	100.0%
Boron - Ext (mg/L)	0.0469	0.0600	0.0400	32	0.0500	mg/L	100.0%
Chromium (mg/L)	0.0436	1.0000	0.0001	23	0.0001	mg/L	100.0%
Lead (mg/L)	0.0007	0.0040	0.0001	23	0.0012	mg/L	100.0%
Manganese (dissolved) (mg/L)	0.0170	0.0650	0.0001	6	40.0000	mg/L	100.0%
Nickel (mg/L)	0.0009	0.0025	0.0002	23	0.0023	mg/L	100.0%
Zinc (mg/L)	0.011	0.030	0.002	36	0.019	mg/L	100.0%
pH (pH units)	7.5	7.8	7.1	9	7.8	pH units	
Total Hardness - Ext (Mg/L CaCO3)	361.1	488.0	196.0	29	457.0	Mg/L CaCO3	100.0%
Total Alkalinty - Ext (Mg/L CaCO3)	180.3	202.0	164.0	7	202.0	Mg/L CaCO3	100.0%
Silica - Ext (mg/L)	35	41	31	29	40	mg/L	100.0%
Total Dissolved Ions (mg/L)	705	881	442	29	836	mg/L	100.0%
Total Dissolved Solids (mg/L)	632	797	384	29	757	mg/L	100.0%
True Colour - Ext (HU)	1	2	1	7	2	HU	
Sodium (mg/L)	91.4	110.0	59.0	29	110.0	mg/L	100.0%
Potassium (mg/L)	1.4	1.5	1.1	29	1.5	mg/L	100.0%
Calcium (mg/L)	81.3	100.0	45.0	29	100.0	mg/L	100.0%
Magnesium (total) (mg/L)	38.4	56.0	20.0	29	52.0	mg/L	100.0%
Carbonate Alkalinity (mg/L CaCO3)	0.3	0.9	0.2	29	0.5	mg/L CaCO3	100.0%
Fluoride - Ext (mg/L)	0.13	0.14	0.10	15	0.14	mg/L	100.0%
Nitrate - external (mg/L)	6.9	13.0	0.5	29	13.0	mg/L	100.0%
Sulfate - Ext (mg/L)	33.2	41.0	24.0	29	41.0	mg/L	100.0%
Manganese (total) (mg/L)	0.02	0.07	0.00	30	0.06	mg/L	100.0%
Zinc (mg/L)	0.01	0.03	0.00	36	0.02	mg/L	100.0%
Aluminium - Ext (mg/L)	0.05	0.05	0.05	4	0.05	mg/L	100.0%
Copper - Ext (mg/L)	0.02	0.05	0.00	37	0.04	mg/L	100.0%
Chlordene-1-hydroxy (µg/L)	0.66	4.10	0.20	17	4.00	µg/L	100.0%
Chlordene-1-hydroxy-2,3-epoxide (µg/L)	0.22	0.40	0.20	17	0.40	µg/L	100.0%
Dicofol (µg/L)	2.98	3.20	2.90	17	3.20	µg/L	100.0%
Endosulfan Alpha (µg/L)	1.01	1.10	1.00	17	1.10	µg/L	100.0%
Endosulfan lactone (µg/L)	1.01	1.10	1.00	17	1.10	µg/L	100.0%
Total Endosulfan (µg/L)	1.41	1.50	1.40	17	1.50	µg/L	100.0%
1H-Benzotriazole (µg/L)	1.41	1.50	1.40	17	1.50	µg/L	100.0%
1H-Benzotriazole,5-methyl (µg/L)	0.47	1.00	0.40	17	1.00	µg/L	100.0%
Moclobemide (µg/L)	1.98	2.10	1.90	17	2.10	µg/L	100.0%
Oxadiazon (µg/L)	0.21	0.40	0.20	17	0.20	µg/L	100.0%
Total (Gross) Alpha activity (Bq/L)	0.0	0.0	0.0	9	0.0	Bq/L	100.0%
Total (Gross) Beta activity (Bq/L)	0.1	0.2	0.1	9	0.2	Bq/L	100.0%
K40-Corrected Beta Activity (Bq/L)	0.1	0.2	0.1	9	0.2	Bq/L	100.0%

Parameter	Average	Maximum	Minimum	#Samples	90th percentile	Units	Compliance
Biloela Raw Dam Water							
True Colour (HU)	14.4	76.0	0.0	560	26.0	HU	
Soluble Iron (mg/L)	0.1	1.3	0.0	558	0.2	mg/L	100.0%
Total Iron (mg/L)	0.3	3.7	0.0	557	0.6	mg/L	100.0%
Soluble Manganese (mg/L)	0.3	1.7	0.0	556	1.3	mg/L	100.0%
Manganese (total) (mg/L)	0.5	2.0	0.0	555.0	1.4	mg/L	100.0%
pH	7.5	8.6	7.0	539	7.9		
Turbidity - Ext (NTU)	6.90	38.00	1.00	210	12.60	NTU	100.0%
Turbidity (NTU)	5.45	38.00	0.32	561	11.30	NTU	100.0%
Conductivity (µS/cm)	339.37	664.00	133.00	561	399.00	µS/cm	100.0%
Phosphorus (mg/L)	0.84	3.45	0.08	555	1.36	mg/L	100.0%
Alkalinity (mg/L of CaCO3)	95	170	60	542	110	mg/L of CaCO3	100.0%
Fluoride (mg/L)	0.173	0.352	0.068	544	0.245	mg/L	100.0%
Aluminium (mg/L)	0.066	0.130	0.050	5	0.130	mg/L	100.0%
Arsenic (mg/L)	0.0025	0.0026	0.0024	3	0.0026	mg/L	100.0%
Nickel (mg/L)	0.0006	0.0007	0.0005	3	0.0007	mg/L	100.0%
Zinc (mg/L)	0.009	0.010	0.002	6	0.010	mg/L	100.0%
pH (pH units)	7.8	7.8	7.8	1	7.8	pH units	
Total Hardness - Ext (Mg/L CaCO3)	87.0	96.0	75.0	6	96.0	Mg/L CaCO3	100.0%
Total Alkalinty - Ext (Mg/L CaCO3)	102.0	102.0	102.0	1	102.0	Mg/L CaCO3	100.0%
Silica - Ext (mg/L)	11	14	4	6	14	mg/L	100.0%
Total Dissolved Ions (mg/L)	197	210	186	6	210	mg/L	100.0%
Total Dissolved Solids (mg/L)	153	160	145	6	160	mg/L	
True Colour - Ext (HU)	7	7	7	1	7	HU	
Sodium (mg/L)	19.5	28.0	17.0	6	28.0	mg/L	
Potassium (mg/L)	3.1	3.7	2.9	6	3.7	mg/L	
Calcium (mg/L)	22.0	24.0	18.0	6	24.0	mg/L	
Magnesium (total) (mg/L)	8.0	8.8	7.2	6	8.8	mg/L	
Carbonate Alkalinity (mg/L CaCO3)	0.8	2.4	0.3	6	2.4	mg/L CaCO3	
Fluoride - Ext (mg/L)	0.12	0.17	0.07	5	0.17	mg/L	100.0%
Nitrate - external (mg/L)	0.8	1.3	0.5	6	1.3	mg/L	100.0%
Sulfate - Ext (mg/L)	3.7	4.0	3.0	6	4.0	mg/L	
Manganese (total) (mg/L)	0.48	1.95	0.01	555	1.44	mg/L	100.0%
Zinc (mg/L)	0.01	0.01	0.00	6	0.01	mg/L	
Aluminium - Ext (mg/L)	0.05	0.05	0.05	1	0.05	mg/L	
Copper - Ext (mg/L)	0.03	0.03	0.00	6	0.03	mg/L	100.0%
Colour (true) (Pt - Co)	9	16	4	4	16	Pt - Co	
Chlordene-1-hydroxy (µg/L)	1.05	1.90	0.20	2	1.90	µg/L	
1H-Benzotriazole,5-methyl (µg/L)	1.15	1.90	0.40	2	1.90	µg/L	
Total (Gross) Alpha activity (Bq/L)	0.0	0.0	0.0	1	0.0	Bq/L	100.0%
Total (Gross) Beta activity (Bq/L)	0.2	0.2	0.2	1	0.2	Bq/L	100.0%
K40-Corrected Beta Activity (Bq/L)	0.1	0.1	0.1	1	0.1	Bq/L	100.0%
Anabaenopsis spp. (cells/mL)	241	900	0	11	600	cells/mL	
Cuspidothrix issatschenkoi (cells/mL)	135	135	135	1	135	cells/mL	
Dolichospermum spp. (coiled) (cells/mL)	540	4125	0	29	1950	cells/mL	
Dolichospermum spp. (straight) (cells/mL)	396	1950	0	8	1950	cells/mL	
Unidentified Nostocales (coiled) (cells/mL)	362	2775	0	24	1140	cells/mL	
Unidentified Nostocales (straight) (cells/mL)	361	1575	0	23	1500	cells/mL	
Total number of Nostocales (cells/mL)	49069	204000	175	56	111000	cells/mL	
Geitlerinema splendidum (cells/mL)	640	3600	0	10	1500	cells/mL	
Glaucospira laxissima (cells/mL)	7165	38100	0	56	16920	cells/mL	
Planktolyngbya limnetica (cells/mL)	50507	204158	434	39	115722	cells/mL	
Planktolyngbya minor (cells/mL)	6934	27600	0	55	13000	cells/mL	
Pseudanabaena galeata (cells/mL)	363	600	125	2	600	cells/mL	
Pseudanabaena limnetica (cells/mL)	10206	139200	0	55	29997	cells/mL	
Pseudanabaena spp. (cells/mL)	5866	97200	0	32	8400	cells/mL	
Romeria spp. (cells/mL)	1895	14540	0	49	4950	cells/mL	
Unidentified Oscillatoriales and Spirulinales (cells/mL)	298	3450	0	35	750	cells/mL	
Total number of Oscillatoriales and Spirulinales (cells/mL)	74491	381000	200	55	155000	cells/mL	
Aphanocapsa spp. (< 1um) (cells/mL)	13223	72900	0	39	36002	cells/mL	
Aphanocapsa spp. (> 1um) (cells/mL)	371	1825	0	17	1675	cells/mL	
Aphanizomenon spp. (cells/mL)	138.8	390.0	0.0	4.0	390.0	cells/mL	
Aphanocapsa spp. (cells/mL)	10326	36507	0	17	33150	cells/mL	
Anathece spp. (cells/mL)	9460	50400	0	39	34200	cells/mL	
Chroococcus minimus (cells/mL)	324	1875	0	28	900	cells/mL	
Chroococcus minutus (cells/mL)	100	300	0	10	300	cells/mL	
Chroococcus spp. (cells/mL)	454	2400	0	13	1200	cells/mL	
Chrysosporum bergii (cells/mL)	435.0	435.0	435.0	1.0	435.0	cells/mL	
Chrysosporum ovalisporum (cells/mL)	210.0	300.0	120.0	2.0	300.0	cells/mL	
Cyanocatena imperfecta (cells/mL)	408	2050	0	19	1800	cells/mL	
Cyanodictyon spp. (cells/mL)	819	2525	0	8	2525	cells/mL	
Cyanogranis libera (cells/mL)	1252	29000	0	41	1050	cells/mL	
Cyanonephron spp. (cells/mL)	150	600	0	8	600	cells/mL	
Gloeocapsa spp. (cells/mL)	55	300	0	25	150	cells/mL	
Gloeothece spp. (cells/mL)	1857	10650	0	23	9000	cells/mL	
Merismopedia marsonii (cells/mL)	465	1400	0	10	1100	cells/mL	
Merismopedia punctata (cells/mL)	3268	22000	0	52	10200	cells/mL	
Merismopedia spp. (cells/mL)	1036	6150	0	53	2400	cells/mL	
Microcystis spp. (cells/mL)	13	25	0	2	25	cells/mL	
Myxobaktron plankticus (cells/mL)	2378	13500	0	54	7715	cells/mL	
Rhabdoderma spp. (cells/mL)	1882	14400	0	51	3825	cells/mL	
Synechococcus spp. (cells/mL)	12650	186900	0	39	27430	cells/mL	
Unidentified Chroococcales and Synechococcales (cells/mL)	901	11475	0	33	1425	cells/mL	
Total number of Chroococcales and Synechococcales (cells/mL)	61147	871000	0	54	104000	cells/mL	
Picoplankton (cells/mL)	275	550	0	2	550	cells/mL	
Total number of Other Cyanophytes (cells/mL)	550	550	550	1	550	cells/mL	
Total number of Cyanophytes (cells/mL)	167290	553000	2230	56	331000	cells/mL	
Total cells per mL (cells/mL)	179622	553000	2600	38	341000	cells/mL	
Biloela Potable Water Supply							
Total Iron (mg/L)	0.0	0.0	0.0	31	0.0	mg/L	
pH (pH units)	7.21	7.71	6.88	31	7.42	pH units	
Manganese (total) (mg/L)	0.040	0.240	0.015	31	0.039	mg/L	100.0%
Alkalinity (mg/L of CaCO3)	131	172	100	31	160	mg/L of CaCO3	
Fluoride (mg/L)	0.239	0.313	0.198	31	0.284	mg/L	100.0%
Manganese (total) (mg/L)	0.04	0.24	0.02	31.00	0.04	mg/L	100.0%

Parameter	Average	Maximum	Minimum	#Samples	90th percentile	Units	Compliance
Biloela Water Treatment Plant							
Bromodichloromethane (µg/L)	23	37	1	25	31	µg/L	
Bromoform (µg/L)	7	51	1	25	22	µg/L	
Chloroform (µg/L)	30	73	1	25	52	µg/L	
Total Trihalomethanes (THMs) (µg/L)	74	120	4	25	100	µg/L	100.0%
True Colour (HU)	0.5	29.0	0.0	700	2.0	HU	
Dibromochloromethane (µg/L)	14	34	1	25	25	µg/L	
Total Iron (mg/L)	0.0	0.1	0.0	696	0.0	mg/L	
pH	7.2	7.9	1.2	341	7.5		
pH (pH units)	7.46	8.30	6.82	348	7.69	pH units	
Free Chlorine (mg/L)	0.90	2.61	0.00	1043	1.47	mg/L	100.0%
Turbidity - Ext (NTU)	0.37	3.06	0.09	349	0.53	NTU	
Turbidity (NTU)	0.38	3.06	0.09	355	0.56	NTU	
Conductivity (µS/cm)	430.33	892.00	250.00	9	892.00	µS/cm	
Manganese (total) (mg/L)	0.027	0.540	0.001	704	0.044	mg/L	99.7%
Alkalinity (mg/L of CaCO3)	99	191	15	684	127	mg/L of CaCO3	
Fluoride (mg/L)	0.178	0.544	0.000	686	0.245	mg/L	100.0%
Aluminium (mg/L)	0.037	0.050	0.014	10	0.050	mg/L	
Arsenic (mg/L)	0.0023	0.0060	0.0012	9	0.0060	mg/L	100.0%
Boron - Ext (mg/L)	0.0400	0.0500	0.0300	10	0.0400	mg/L	100.0%
Lead (mg/L)	0.0002	0.0003	0.0001	9	0.0003	mg/L	100.0%
Manganese (dissolved) (mg/L)	0.0288	0.2020	0.0010	182	0.0560	mg/L	100.0%
Nickel (mg/L)	0.0006	0.0020	0.0002	9	0.0020	mg/L	100.0%
Zinc (mg/L)	0.009	0.020	0.001	11	0.011	mg/L	
pH (pH units)	7.5	8.3	6.8	348	7.7	pH units	
Total Hardness - Ext (Mg/L CaCO3)	143.5	275.0	80.0	10	210.0	Mg/L CaCO3	
Total Alkalinty - Ext (Mg/L CaCO3)	129.0	129.0	129.0	1	129.0	Mg/L CaCO3	
Silica - Ext (mg/L)	18	28	11	10	23	mg/L	
Total Dissolved Ions (mg/L)	293	533	176	10	431	mg/L	
Total Dissolved Solids (mg/L)	246	473	141	10	373	mg/L	
True Colour - Ext (HU)	2	2	2	1	2	HU	
Sodium (mg/L)	31.9	66.0	16.0	10	52.0	mg/L	
Potassium (mg/L)	2.8	3.4	2.1	10	3.1	mg/L	
Calcium (mg/L)	34.2	62.0	20.0	10	49.0	mg/L	
Magnesium (total) (mg/L)	14.3	29.0	7.4	10	22.0	mg/L	
Carbonate Alkalinity (mg/L CaCO3)	0.3	0.5	0.2	10	0.4	mg/L CaCO3	
Fluoride - Ext (mg/L)	0.13	0.17	0.11	8	0.17	mg/L	100.0%
Nitrate - external (mg/L)	2.2	5.2	0.5	10	4.5	mg/L	100.0%
Sulfate - Ext (mg/L)	9.5	23.0	3.0	10	18.0	mg/L	
Manganese (total) (mg/L)	0.03	0.54	0.00	704.00	0.04	mg/L	99.7%
Zinc (mg/L)	0.01	0.02	0.00	11	0.01	mg/L	
Aluminium - Ext (mg/L)	0.05	0.05	0.05	1	0.05	mg/L	
Copper - Ext (mg/L)	0.02	0.03	0.00	12	0.03	mg/L	100.0%
Colour (true) (Pt - Co)	2	5	1	6	5	Pt - Co	
Chlordene-1-hydroxy (µg/L)	0.54	1.90	0.20	5	1.90	µg/L	
Dicofol (µg/L)	2.98	3.20	2.90	5	3.20	µg/L	100.0%
Endosulfan Alpha (µg/L)	1.02	1.10	1.00	5	1.10	µg/L	100.0%
Endosulfan lactone (µg/L)	1.02	1.10	1.00	5	1.10	µg/L	
Total Endosulfan (µg/L)	1.42	1.50	1.40	5	1.50	µg/L	100.0%
1H-Benzotriazole (µg/L)	1.42	1.50	1.40	5	1.50	µg/L	
1H-Benzotriazole,5-methyl (µg/L)	0.70	1.90	0.40	5	1.90	µg/L	
Moclobemide (µg/L)	1.98	2.10	1.90	5	2.10	µg/L	
Oxadiazon (µg/L)	0.24	0.40	0.20	5	0.40	µg/L	
Total (Gross) Alpha activity (Bq/L)	0.0	0.0	0.0	1	0.0	Bq/L	100.0%
Total (Gross) Beta activity (Bq/L)	0.1	0.1	0.1	1	0.1	Bq/L	100.0%
K40-Corrected Beta Activity (Bq/L)	0.1	0.1	0.1	1	0.1	Bq/L	100.0%
Unidentified Nostocales (straight) (cells/mL)	21	250	0	12	0	cells/mL	
Total number of Nostocales (cells/mL)	1768	4580	0	23	3950	cells/mL	
Glaucospira laxissima (cells/mL)	91	317	0	23	234	cells/mL	
Planktolyngbya limnetica (cells/mL)	140	451	0	17	418	cells/mL	
Pseudanabaena limnetica (cells/mL)	88	668	0	23	234	cells/mL	
Romeria spp. (cells/mL)	2	33	0	19	0	cells/mL	
Unidentified Oscillatoriales and Spirulinales (cells/mL)	231	1386	0	15	601	cells/mL	
Total number of Oscillatoriales and Spirulinales (cells/mL)	576	1800	0	22	852	cells/mL	
Merismopedia spp. (cells/mL)	1	33	0	23	0	cells/mL	
Unidentified Chroococcales and Synechococcales (cells/mL)	10	134	0	13	0	cells/mL	
Total number of Chroococcales and Synechococcales (cells/mL)	38	134	0	8	134	cells/mL	
Total number of Cyanophytes (cells/mL)	2332	5380	0	23	4820	cells/mL	
Total cells per mL (cells/mL)	2538	5380	302	17	4820	cells/mL	

Parameter	Average	Maximum	Minimum	#Samples	90th percentile	Units	Compliance
Biloela Reticulation							
True Colour (HU)	1.7	19.0	0.0	329	6.0	HU	
Total Iron (mg/L)	0.0	1.0	0.0	330	0.1	mg/L	
pH (pH units)	7.34	7.86	6.76	316	7.65	pH units	
Free Chlorine (mg/L)	0.53	2.78	0.00	283	1.02	mg/L	100.0%
Manganese (total) (mg/L)	0.031	0.551	0.000	330	0.041	mg/L	99.7%
Callide Dam Village							
True Colour (HU)	1.0	15.0	0.0	46	2.0	HU	
Total Iron (mg/L)	0.0	0.1	0.0	46	0.0	mg/L	
Manganese (total) (mg/L)	0.0	0.1	0.0	46	0.1	mg/L	100.0%
pH (pH units)	7.53	8.00	7.24	44	7.80	pH units	
Free Chlorine (mg/L)	0.82	1.37	0.30	22	1.18	mg/L	100.0%
Thangool Reticulation							
True Colour (HU)	1.3	13.0	0.0	142	4.0	HU	
Total Iron (mg/L)	0.0	0.2	0.0	142	0.0	mg/L	
pH (pH units)	7.43	8.20	6.83	136	7.72	pH units	
Free Chlorine (mg/L)	0.43	1.76	0.01	85	1.07	mg/L	100.0%
Manganese (total) (mg/L)	0.019	0.060	0.003	142	0.033	mg/L	100.0%

Parameter	Average	Maximum	Minimum	#Samples	90th percentile	Units	Compliance
Moura Raw Dam Water							
True Colour (HU)	80.9	594.0	0.0	360	176.0	HU	
Total Iron (mg/L)	0.3	3.2	0.0	137	0.8	mg/L	
Soluble Manganese (mg/L)	0.0	0.8	0.0	359	0.1	mg/L	100.0%
Manganese (total) (mg/L)	0.2	0.9	0.0	364.0	0.4	mg/L	100.0%
pH	7.4	8.1	0.0	360	7.7		
Turbidity (NTU)	75.73	985.00	0.00	360	138.00	NTU	
Conductivity (µS/cm)	327.91	605.00	0.00	360	465.00	µS/cm	
Phosphorus (mg/L)	0.67	5.25	-0.08	145	1.23	mg/L	
Alkalinity (mg/L of CaCO3)	78	157	0	360	96	mg/L of CaCO3	
Fluoride (mg/L)	0.180	0.270	0.130	3	0.270	mg/L	100.0%
Aluminium (mg/L)	0.904	1.900	0.050	5	1.900	mg/L	
Arsenic (mg/L)	0.0022	0.0031	0.0017	5	0.0031	mg/L	100.0%
Boron - Ext (mg/L)	0.0420	0.0500	0.0400	5	0.0500	mg/L	100.0%
Chromium (mg/L)	0.0006	0.0010	0.0001	5	0.0010	mg/L	100.0%
Lead (mg/L)	0.0008	0.0014	0.0002	5	0.0014	mg/L	100.0%
Nickel (mg/L)	0.0021	0.0034	0.0015	5	0.0034	mg/L	100.0%
Zinc (mg/L)	0.009	0.010	0.004	5	0.010	mg/L	
Total Hardness - Ext (Mg/L CaCO3)	65.8	72.0	49.0	5	72.0	Mg/L CaCO3	
Silica - Ext (mg/L)	14	18	10	5	18	mg/L	
Total Dissolved Ions (mg/L)	199	229	130	5	229	mg/L	
Total Dissolved Solids (mg/L)	165	188	110	5	188	mg/L	
Sodium (mg/L)	30.0	38.0	13.0	5	38.0	mg/L	
Potassium (mg/L)	6.9	7.2	6.4	5	7.2	mg/L	
Calcium (mg/L)	16.4	18.0	13.0	5	18.0	mg/L	
Magnesium (total) (mg/L)	6.0	7.1	3.9	5	7.1	mg/L	
Carbonate Alkalinity (mg/L CaCO3)	0.2	0.3	0.1	5	0.3	mg/L CaCO3	
Fluoride - Ext (mg/L)	0.17	0.27	0.13	4	0.27	mg/L	100.0%
Nitrate - external (mg/L)	2.1	3.7	0.5	5	3.7	mg/L	100.0%
Sulfate - Ext (mg/L)	6.8	8.0	4.0	5	8.0	mg/L	
Manganese (total) (mg/L)	0.16	0.93	0.00	364	0.37	mg/L	100.0%
Copper - Ext (mg/L)	0.02	0.03	0.00	5	0.03	mg/L	100.0%
Colour (true) (Pt - Co)	68	116	19	27	97	Pt - Co	
Azinphos-ethyl (µg/L)	0.27	0.40	0.20	3	0.40	µg/L	
Total (Gross) Alpha activity (Bq/L)	0.1	0.1	0.1	1	0.1	Bq/L	100.0%
Total (Gross) Beta activity (Bq/L)	0.7	0.7	0.7	1	0.7	Bq/L	100.0%
K40-Corrected Beta Activity (Bq/L)	0.5	0.5	0.5	1	0.5	Bq/L	100.0%
Total number of Nostocales (cells/mL)	9113	29200	270	7	29200	cells/mL	
Glaucospira laxissima (cells/mL)	5675	12139	384	7	12139	cells/mL	
Planktolyngbya minor (cells/mL)	6375	19343	167	7	19343	cells/mL	
Pseudanabaena limnetica (cells/mL)	89	334	0	6	334	cells/mL	
Aphanocapsa spp. (cells/mL)	51544	100500	2588	2	100500	cells/mL	
Merismopedia punctata (cells/mL)	1869	8700	0	7	8700	cells/mL	
Merismopedia spp. (cells/mL)	9031	27250	468	7	27250	cells/mL	
Myxobaktron plankticus (cells/mL)	76	167	0	7	167	cells/mL	
Rhabdoderma spp. (cells/mL)	1999	7400	234	7	7400	cells/mL	
Total number of Chroococcales and Synechococcales (cells/mL)	98834	175000	3820	7	175000	cells/mL	
Total number of Cyanophytes (cells/mL)	122011	226000	5040	7	226000	cells/mL	

Parameter	Average	Maximum	Minimum	#Samples	90th percentile	Units	Compliance
Moura Water Treatment Plant							
Bromodichloromethane (µg/L)	35	62	16	11	53	µg/L	
Bromoform (µg/L)	2	4	1	11	3	µg/L	
Chloroform (µg/L)	93	140	50	11	140	µg/L	
Total Trihalomethanes (THMs) (µg/L)	143	170	98	11	170	µg/L	100.0%
True Colour (HU)	0.3	15.0	0.0	362	0.0	HU	
Dibromochloromethane (µg/L)	13	36	1	11	33	µg/L	
Total Iron (mg/L)	0.0	3.0	0.0	140	0.0	mg/L	
Soluble Manganese (mg/L)	0.0	0.0	0.0	360	0.0	mg/L	100.0%
pH	7.3	7.4	7.2	5	7.4		
pH (pH units)	7.40	7.92	7.01	361	7.66	pH units	
Turbidity (NTU)	1.00	1.00	1.00	10	1.00	NTU	
Conductivity (µS/cm)	241.35	339.00	2.74	5	339.00	µS/cm	
Phosphorus (mg/L)	0.89	1.82	0.07	31	1.14	mg/L	
Manganese (total) (mg/L)	0.017	0.280	-0.005	365	0.027	mg/L	100.0%
Alkalinity (mg/L of CaCO3)	72	99	34	362	89	mg/L of CaCO3	
Fluoride (mg/L)	0.236	0.849	0.000	348	0.495	mg/L	100.0%
Nitrate (NO3) (mg/L)	1.84	3.30	1.10	31	2.40	mg/L	100.0%
Aluminium (mg/L)	0.037	0.050	0.013	5	0.050	mg/L	
Arsenic (mg/L)	0.0012	0.0017	0.0010	5	0.0017	mg/L	100.0%
Boron - Ext (mg/L)	0.0400	0.0500	0.0300	5	0.0500	mg/L	100.0%
Chromium (mg/L)	0.0002	0.0005	0.0001	5	0.0005	mg/L	100.0%
Nickel (mg/L)	0.0010	0.0017	0.0008	5	0.0017	mg/L	100.0%
Zinc (mg/L)	0.008	0.010	0.003	5	0.010	mg/L	
Total Hardness - Ext (Mg/L CaCO3)	65.2	71.0	50.0	5	71.0	Mg/L CaCO3	
Silica - Ext (mg/L)	13	17	11	5	17	mg/L	
Total Dissolved Ions (mg/L)	193	222	129	5	222	mg/L	
Total Dissolved Solids (mg/L)	165	187	112	5	187	mg/L	
Sodium (mg/L)	29.6	38.0	13.0	5	38.0	mg/L	
Potassium (mg/L)	6.8	7.2	6.3	5	7.2	mg/L	
Calcium (mg/L)	16.6	18.0	14.0	5	18.0	mg/L	
Magnesium (total) (mg/L)	5.8	6.8	3.8	5	6.8	mg/L	
Fluoride - Ext (mg/L)	0.43	1.10	0.19	11	0.48	mg/L	100.0%
Nitrate - external (mg/L)	1.8	2.4	0.5	5	2.4	mg/L	100.0%
Sulfate - Ext (mg/L)	6.8	8.0	4.0	5	8.0	mg/L	
Manganese (total) (mg/L)	0.02	0.28	-0.01	365.00	0.03	mg/L	100.0%
Copper - Ext (mg/L)	0.02	0.03	0.01	5	0.03	mg/L	100.0%
Colour (true) (Pt - Co)	2	4	1	4	4	Pt - Co	
Azinphos-ethyl (µg/L)	0.27	0.40	0.20	3	0.40	µg/L	
Moura Reticulation							
True Colour (HU)	0.4	8.0	0.0	288	2.0	HU	
Total Iron (mg/L)	0.0	0.0	0.0	9	0.0	mg/L	
pH (pH units)	7.41	7.92	6.85	288	7.66	pH units	
Free Chlorine (mg/L)	0.47	1.44	0.00	236	0.99	mg/L	100.0%
Manganese (total) (mg/L)	0.017	0.140	0.000	275	0.027	mg/L	100.0%
Alkalinity (mg/L of CaCO3)	73	98	32	287	90	mg/L of CaCO3	
Fluoride (mg/L)	0.273	0.524	0.000	129	0.465	mg/L	100.0%
Banana Reticulation							
True Colour (HU)	0.3	9.0	0.0	168	0.0	HU	
pH (pH units)	7.31	7.93	0.00	125	7.79	pH units	
Manganese (total) (mg/L)	0.016	0.037	0.000	168	0.026	mg/L	100.0%

Parameter	Average	Maximum	Minimum	#Samples	90th percentile	Units	Compliance
Taroom Bore Water Source							
True Colour (HU)	2.3	17.0	0.0	360	7.0	HU	
Soluble Iron (mg/L)	1.1	2.0	0.0	360	1.6	mg/L	
Total Iron (mg/L)	1.2	7.4	0.0	360	1.7	mg/L	
Soluble Manganese (mg/L)	0.0	0.3	0.0	360	0.1	mg/L	100.0%
Manganese (total) (mg/L)	0.1	0.5	0.0	360	0.2	mg/L	100.0%
pH	6.6	7.3	6.2	360	6.9		
Turbidity (NTU)	0.32	4.35	0.06	360	0.48	NTU	
Conductivity (µS/cm)	144.09	207.00	87.70	360	173.00	µS/cm	
Taroom Water Treatment Plant							
True Colour (HU)	10.2	34.0	0.0	359	16.0	HU	
Total Iron (mg/L)	0.0	0.1	0.0	359	0.0	mg/L	
pH	7.5	7.8	7.2	9	7.8		
pH (pH units)	7.44	8.02	6.91	360	7.72	pH units	
Turbidity (NTU)	0.24	1.96	0.09	360	0.33	NTU	
Manganese (total) (mg/L)	0.015	0.240	0.000	359	0.039	mg/L	100.0%
Alkalinity (mg/L of CaCO3)	62	70	50	360	67	mg/L of CaCO3	
Taroom Reticulation							
Total Iron (mg/L)	0.0	0.1	0.0	255	0.0	mg/L	
pH	7.4	7.7	7.2	45	7.6		
pH (pH units)	7.43	8.08	7.00	255	7.60	pH units	
Turbidity (NTU)	0.47	2.90	0.03	255	0.94	NTU	
Manganese (total) (mg/L)	0.020	0.430	0.000	252	0.070	mg/L	100.0%
Alkalinity (mg/L of CaCO3)	60	80	50	252	66	mg/L of CaCO3	
Theodore Raw Dam Water							
True Colour (HU)	70.8	262.0	0.0	353	171.0	HU	
Soluble Iron (mg/L)	0.0	0.2	0.0	343	0.0	mg/L	
Total Iron (mg/L)	0.2	0.8	0.0	343	0.4	mg/L	
Soluble Manganese (mg/L)	0.0	0.2	0.0	261	0.1	mg/L	100.0%
Manganese (total) (mg/L)	0.3	2.3	0.0	262	0.6	mg/L	100.0%
pH	7.4	8.2	7.0	351	7.8		
Turbidity (NTU)	92.32	552.00	6.22	353	210.00	NTU	
Conductivity (µS/cm)	263.23	422.00	104.00	349	359.00	µS/cm	
Alkalinity (mg/L of CaCO3)	67	95	39	353	80	mg/L of CaCO3	
Theodore Water Treatment Plant							
Bromodichloromethane (µg/L)	26	42	11	12	38	µg/L	
Chloroform (µg/L)	75	110	42	12	110	µg/L	
Total Trihalomethanes (THMs) (µg/L)	109	140	78	12	140	µg/L	100.0%
Dibromochloromethane (µg/L)	7	16	1	12	12	µg/L	
Total Iron (mg/L)	0.0	0.0	0.0	351	0.0	mg/L	
pH	7.1	7.6	6.7	9	7.6		
Free Chlorine (mg/L)	0.93	2.99	0.00	1066	1.87	mg/L	100.0%
Manganese (total) (mg/L)	0.009	0.126	0.000	260	0.014	mg/L	100.0%
Alkalinity (mg/L of CaCO3)	62	85	30	361	74	mg/L of CaCO3	
Theodore Reticulation							
Total Iron (mg/L)	0.0	0.0	0.0	224	0.0	mg/L	
pH	9.7	74.4	7.2	45	7.4		
Free Chlorine (mg/L)	0.71	1.85	0.11	358	1.14	mg/L	100.0%
Manganese (total) (mg/L)	0.013	0.100	0.000	170	0.023	mg/L	100.0%

Parameter	Average	Maximum	Minimum	#Samples	90th percentile	Units	Compliance
Baralaba Raw Dam Water							
True Colour (HU)	72.1	233.0	0.0	167	144.0	HU	
Soluble Iron (mg/L)	0.1	0.3	0.0	23	0.1	mg/L	
Total Iron (mg/L)	0.3	2.4	0.0	95	1.2	mg/L	
Soluble Manganese (mg/L)	0.3	1.0	0.0	110	0.6	mg/L	100.0%
Manganese (total) (mg/L)	0.4	1.6	0.0	161.0	0.8	mg/L	100.0%
pH	7.3	10.8	6.7	165	7.7		
Turbidity (NTU)	70.55	745.00	0.07	168	152.00	NTU	
Conductivity (µS/cm)	372.13	992.00	0.00	163	755.00	µS/cm	
Phosphorus (mg/L)	2.10	9.55	0.00	12	4.09	mg/L	
Alkalinity (mg/L of CaCO3)	90	204	32	162	158	mg/L of CaCO3	
Fluoride (mg/L)	0.125	0.190	0.070	4	0.190	mg/L	100.0%
Aluminium (mg/L)	1.553	7.100	0.050	6	7.100	mg/L	
Arsenic (mg/L)	0.0027	0.0042	0.0010	6	0.0042	mg/L	100.0%
Boron - Ext (mg/L)	0.0367	0.0500	0.0300	6	0.0500	mg/L	100.0%
Chromium (mg/L)	0.0029	0.0075	0.0014	6	0.0075	mg/L	100.0%
Lead (mg/L)	0.0025	0.0053	0.0015	6	0.0053	mg/L	100.0%
Nickel (mg/L)	0.0056	0.0130	0.0040	6	0.0130	mg/L	100.0%
Zinc (mg/L)	0.026	0.068	0.008	6	0.068	mg/L	
Total Hardness - Ext (Mg/L CaCO3)	39.3	44.0	24.0	6	44.0	Mg/L CaCO3	
Silica - Ext (mg/L)	13	16	9	6	16	mg/L	
Total Dissolved Ions (mg/L)	116	128	78	6	128	mg/L	
Total Dissolved Solids (mg/L)	97	108	68	6	108	mg/L	
Sodium (mg/L)	15.0	18.0	11.0	6	18.0	mg/L	
Potassium (mg/L)	5.5	6.7	4.8	6	6.7	mg/L	
Calcium (mg/L)	9.4	11.0	5.3	6	11.0	mg/L	
Magnesium (total) (mg/L)	3.7	3.9	2.5	6	3.9	mg/L	
Fluoride - Ext (mg/L)	0.13	0.19	0.07	4	0.19	mg/L	100.0%
Nitrate - external (mg/L)	1.5	3.2	0.7	6	3.2	mg/L	100.0%
Sulfate - Ext (mg/L)	3.2	4.0	2.0	6	4.0	mg/L	
Manganese (total) (mg/L)	0.39	1.58	0.00	161	0.82	mg/L	100.0%
Copper - Ext (mg/L)	0.03	0.03	0.00	6	0.03	mg/L	100.0%
Colour (true) (Pt - Co)	82	140	37	11	135	Pt - Co	
Total (Gross) Alpha activity (Bq/L)	0.1	0.1	0.1	1	0.1	Bq/L	100.0%
Total (Gross) Beta activity (Bq/L)	0.5	0.5	0.5	1	0.5	Bq/L	100.0%
K40-Corrected Beta Activity (Bq/L)	0.3	0.3	0.3	1	0.3	Bq/L	100.0%
Baralaba Water Treatment Plant							
Bromodichloromethane (µg/L)	18	24	6	13	21	µg/L	
Chloroform (µg/L)	82	180	19	13	140	µg/L	
Total Trihalomethanes (THMs) (µg/L)	103	200	27	13	150	µg/L	100.0%
True Colour (HU)	0.7	12.0	0.0	126	3.0	HU	
Dibromochloromethane (µg/L)	3	5	1	13	4	µg/L	
Total Iron (mg/L)	0.0	0.0	0.0	68	0.0	mg/L	
Soluble Manganese (mg/L)	0.2	1.3	0.0	114	0.8	mg/L	75.4%
pH	7.5	9.4	7.1	6	9.4		
pH (pH units)	7.44	8.71	0.00	135	7.94	pH units	
Turbidity (NTU)	1.00	1.00	1.00	12	1.00	NTU	
Conductivity (µS/cm)	203.50	254.00	187.00	6	254.00	µS/cm	
Manganese (total) (mg/L)	0.303	1.620	0.000	120.000	0.940	mg/L	72.5%
Alkalinity (mg/L of CaCO3)	64	98	45	123	77	mg/L of CaCO3	
Fluoride (mg/L)	0.118	0.140	0.080	4	0.140	mg/L	100.0%
Aluminium (mg/L)	0.043	0.050	0.007	6	0.050	mg/L	
Arsenic (mg/L)	0.0009	0.0024	0.0002	6	0.0024	mg/L	100.0%
Chromium (mg/L)	0.0013	0.0023	0.0007	6	0.0023	mg/L	100.0%
Nickel (mg/L)	0.0024	0.0033	0.0014	6	0.0033	mg/L	100.0%
Zinc (mg/L)	0.011	0.020	0.006	6	0.020	mg/L	
Total Hardness - Ext (Mg/L CaCO3)	43.7	46.0	37.0	6	46.0	Mg/L CaCO3	
Silica - Ext (mg/L)	12	15	10	6	15	mg/L	
Total Dissolved Ions (mg/L)	135	173	124	6	173	mg/L	
Total Dissolved Solids (mg/L)	116	150	104	6	150	mg/L	
Sodium (mg/L)	21.2	37.0	16.0	6	37.0	mg/L	
Potassium (mg/L)	5.9	6.7	5.5	6	6.7	mg/L	
Calcium (mg/L)	10.8	11.0	10.0	6	11.0	mg/L	
Magnesium (total) (mg/L)	4.0	4.5	2.6	6	4.5	mg/L	
Carbonate Alkalinity (mg/L CaCO3)	1.9	11.0	0.0	6	11.0	mg/L CaCO3	
Fluoride - Ext (mg/L)	0.12	0.14	0.08	4	0.14	mg/L	100.0%
Sulfate - Ext (mg/L)	2.8	3.0	2.0	6	3.0	mg/L	
Manganese (total) (mg/L)	0.30	1.62	0.00	120	0.94	mg/L	72.5%
Copper - Ext (mg/L)	0.03	0.03	0.02	6	0.03	mg/L	100.0%
Colour (true) (Pt - Co)	1	2	1	4	2	Pt - Co	

Parameter	Average	Maximum	Minimum	#Samples	90th percentile	Units	Compliance
Baralaba Reticulation							
True Colour (HU)	3.1	120.0	0.0	161	7.0	HU	
Total Iron (mg/L)	0.1	7.0	0.0	82	0.0	mg/L	
pH (pH units)	7.46	8.31	7.07	161	7.76	pH units	
Manganese (total) (mg/L)	0.202	1.255	0.000	155	0.729	mg/L	81.3%
Alkalinity (mg/L of CaCO3)	62	80	41	159	74	mg/L of CaCO3	
Goovigen Bore Water Source							
True Colour (HU)	2.1	51.0	0.0	84	5.0	HU	
Total Iron (mg/L)	0.1	0.7	0.0	76	0.1	mg/L	
Manganese (total) (mg/L)	0.1	0.1	0.0	84	0.1	mg/L	100.0%
pH	6.9	7.7	6.4	81	7.2		
Turbidity (NTU)	0.32	5.81	0.08	84	0.49	NTU	
Conductivity (µS/cm)	714.02	996.00	64.00	84	809.00	µS/cm	
Alkalinity (mg/L of CaCO3)	152	195	120	78	175	mg/L of CaCO3	
Goovigen Reticulation							
Bromodichloromethane (µg/L)	2	3	1	5	3	µg/L	
Bromoform (µg/L)	12	17	9	5	17	µg/L	
Total Trihalomethanes (THMs) (µg/L)	20	32	15	5	32	µg/L	100.0%
True Colour (HU)	1.6	13.0	0.0	46	7.0	HU	
Dibromochloromethane (µg/L)	6	12	3	5	12	µg/L	
Total Iron (mg/L)	0.1	2.0	0.0	41	0.1	mg/L	
Manganese (total) (mg/L)	0.0	0.3	0.0	49.0	0.1	mg/L	100.0%
pH	7.0	8.2	6.4	47	7.3		
Turbidity (NTU)	0.33	1.61	0.11	49	1.00	NTU	
Conductivity (µS/cm)	706.58	954.00	156.00	49	805.00	µS/cm	
Alkalinity (mg/L of CaCO3)	156	265	130	45	175	mg/L of CaCO3	
Fluoride (mg/L)	0.135	0.150	0.120	2	0.150	mg/L	100.0%
E. Coli (cfu/100mL)	1	11	0	48	11	cfu/100mL	97.9%
E. Coli (cfu/100mL)	1	11	0	48	11	cfu/100mL	97.9%
E. Coli (mpn/100mL)	1	12	0	17	12	mpn/100mL	88.2%
Aluminium (mg/L)	0.041	0.050	0.003	5	0.050	mg/L	
Arsenic (mg/L)	0.0005	0.0006	0.0004	4	0.0006	mg/L	100.0%
Boron - Ext (mg/L)	0.0600	0.0600	0.0600	4	0.0600	mg/L	100.0%
Lead (mg/L)	0.0006	0.0009	0.0003	4	0.0009	mg/L	100.0%
Nickel (mg/L)	0.0007	0.0009	0.0005	4	0.0009	mg/L	100.0%
Zinc (mg/L)	0.009	0.010	0.007	5	0.010	mg/L	
Total Hardness - Ext (Mg/L CaCO3)	201.3	208.0	189.0	4	208.0	Mg/L CaCO3	
Silica - Ext (mg/L)	33	33	33	4	33	mg/L	
Total Dissolved Ions (mg/L)	434	442	420	4	442	mg/L	
Total Dissolved Solids (mg/L)	366	375	349	4	375	mg/L	
Sodium (mg/L)	52.0	53.0	50.0	4	53.0	mg/L	
Potassium (mg/L)	2.3	2.4	2.2	4	2.4	mg/L	
Calcium (mg/L)	46.3	48.0	43.0	4	48.0	mg/L	
Magnesium (total) (mg/L)	21.3	22.0	20.0	4	22.0	mg/L	
Carbonate Alkalinity (mg/L CaCO3)	0.5	0.7	0.4	4	0.7	mg/L CaCO3	
Fluoride - Ext (mg/L)	0.13	0.15	0.12	3	0.15	mg/L	100.0%
Nitrate - external (mg/L)	0.8	1.7	0.5	4	1.7	mg/L	100.0%
Sulfate - Ext (mg/L)	20.0	20.0	20.0	4	20.0	mg/L	
Manganese (total) (mg/L)	0.04	0.27	0.00	49	0.05	mg/L	100.0%
Copper - Ext (mg/L)	0.03	0.03	0.02	5	0.03	mg/L	100.0%
Colour (true) (Pt - Co)	2	3	1	3	3	Pt - Co	