Drinking Water Quality Management Plan (DWQMP) Annual Report

2019 - 2020

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.
CFU/100mL	Colony forming units per 100 millilitres
DWQMP	Drinking Water Quality Management Plan – the documents summarising how water service providers manage quality risks for consumers.
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
PFAS/PFOS	Per- and poly-fluoroalkyl substances, a group of man-made chemicals widely used in industrial, firefighting and household applications and persistent in the environment.
<	Less than
>	Greater than
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)	Treated at the Moura WTP Pumped from Moura, re-chlorinated	transfer	Banana
Baralaba	Dawson River (Neville Hewitt Weir)	Clarifiers, ultrafiltration, chlorination	1.1	Baralaba
Biloela	Callide Dam, Callide Valley Aquifer Bores	Clarifiers, filters, fluoridation, chlorination	10.3	Biloela, Callide Dam, Thangool
Callide Dam	Callide Dam	Treated at Biloela WTP. Clarifiers, filters, chlorination	transfer	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	Treated at Biloela WTP. Pumped from Biloela, re-chlorinated	transfer	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 infrastructures 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:

- Infrastructure upgrades to the Baralaba WTP which included upgrades to the settling ponds. Additionally Ultrafiltration Membranes were replaced to ensure the supply of drinking water quality is maintained.
- Infrastructure upgrades to Biloela WTP which included major refurbishment of the Clarifiers.
- Infrastructure upgrades to Moura WTP which included the replacement of backwash pumps, air blowers and improving the outside lighting around the Clarifier. Moura Raw Water Pump major upgrade to Station and Intake providing increased water security and ability to draw water from different levels of the Dawson River.
- Infrastructure upgrades to Theodore WTP; which included intake improvements.
- Administrative amendments to SOPs for water treatment processes are ongoing.

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.
- The new Moura Raw Water Pump Station Intake allows to pump at different levels targeting the best water quality.
- The Moura WTP Operations and Maintenance Manual (O & M) was reviewed and updated. This included Operator Training by an external consultant to implement the O& M Manual.

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

This financial year there were six (6) instances where the Regulator was notified under sections 102 or 102A of the Act.

Incident 1 (22/10/19)

Routine microbiological testing at an alternative tap at Lions Park, Biloela, (due to temporary park closure) returned a result of 170 MPN/100ml for E.coli. The residual chlorine reading was also low. The corrective action taken was to re-sample both in-house and send samples to the Queensland Health Laboratory. The samples indicated no E.coli present. In the long term sustaining an acceptable chlorine limit is required at this location**.**

Incident 2 (2/12/19)

Routine weekly microbiological testing at Moura Water Treatment Plant (MOU-03), returned a result of 1 mnp/100ml for E.coli. The residual chlorine reading was also low; this was recorded at 0.19 mg/L.

The corrective action taken was to resample both in-house and samples sent to the Queensland Health Laboratory. The samples indicated no E.coli present. In addition the chlorine concentration was increased to within the range of the CCP, additional monitoring was conducted of the disinfection process.

During the investigation a faulty chlorine injector was identified. This was replaced and operators continued monitoring of the disinfection process. Additional training of the operators was provided. .

Incident 3 (4/2/2020)

Routine observation and testing at the Theodore WTP identified low chlorine levels at the reservoir tank of 1.8 mg/L. Investigation identified that this was the result of dosing equipment failure. The water was re-dosed with chlorine to the maximum of 5 mg/L.

To get the plant back on line, the plant was backwashed; the clarifiers were emptied and cleaned. The corrective action taken was to resample both in-house and send samples to the Queensland Health Laboratories. The samples indicated no E.coli present.

During the investigation it was found that the operator failed to check the dosing pump operation, chemicals had solidified in the dosing tubes and the 1 way valve so that no chemical was getting through the line. The root cause for this operational failure check was due to the plant being temporarily staffed with 1 person managing both the WTP and STP. Relief Operator support was organised.

Incident 4 (11/2/2020)

Due to the rain in the Moura catchment area, the turbidity of the incoming raw water changed notably from 5NTU to 170 NTU, resulting in dirty water pushing through the filters and entering the clear water tanks. The plant was shut down, a number of in-house E.coli tests were conducted, with initial tests indicating negative. Throughout the investigation process, samples were sent to Queensland Health Laboratories. The samples indicated no presence of E.coli.

A boil water alert was issue to the township of Moura as a precautionary measure and this remained in place until the turbidity levels dropped below 0.5 NTU. As a precautionary measure the water mains were flushed throughout the town. The boil water alert was removed on 14 February 2020.

A new turbidity analyser was installed on the incoming raw water line at the Moura Water Treatment Plant. The operators attended a debrief and training session with external consultants. All existing equipment on site was calibrated by an external provider.

Incident 5 (9/3/20)

Routine microbiological sampling and free chlorine testing at Moura Rotary Park (MOU-09), conducted on (9/3/2020) indicated 4MPN/100ml for E.coli. The free chlorine residual was low; this was recorded at 0.2 mg/L.

The corrective action taken was to check the chlorine dosing and concentrations and increase the monitoring of the system. Further sampling was conducted both in house and samples sent to Queensland Health Laboratory. All sample reported no detection for E.coli or Coliforms.

During the investigation it was found that the solenoid valve for the Chlorine system failed and was by-passed. The equipment was replaced.

Incident 6 (12/5/20)

Routine microbiological sampling at Banana (BAN02) at Collins Street, Banana conducted on (12/5/2020) indicated 1 MPN/100mL for E.coli.

Due to COVID -19 restrictions there was no access to the Banana Park our normal sampling location (BAN04) and water sample was collected at BAN-02. E.coli was detected

During the investigation it was found the chlorine regulator had a fault. An alternative disinfection source, Sodium Hypochlorite was used in the short term. .

Additional sampling was conducted in a number of locations around Banana and sent to Queensland Health Laboratories. All sample reported no detection for E.coli.

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 1 – 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	0	0
Baralaba	0	0	6 (19.10)*	0
Biloela	0	0	0	1 (0.17)*
Goovigen	0	0	0	0
Moura	0	0	0	1 (0.56)*
Taroom	0	0	0	0
Thangool	0	0	0	1 (1.34)*
Theodore	0	0	0	0
TOTAL	0	0	6	3

***These bracketed figures equated to complaints per 1000 customer's equivalent.**

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 inspecting and testing the customers tap.

During 2019/2020 there were no complaints of suspected illness arising from the water supply system.

Discoloured water

A total of six (6) complaints about discoloured water were received from the Baralaba scheme. A cluster of three (3) complaints were related to a non-reportable incident in July 2019. The incident was followed up and the water mains were flushed with water.

In February 2020, three (3) complaints were received from the Baralaba scheme. The incident was investigated (non-reportable) the lines were flushed and tested. The discoloured water related to the presence of manganese.

Taste and odour

A total of three (3) taste and odour complaints were received during the reporting period, one (1) in Biloela, one in Moura (1) and one (1) in the Thangool scheme.

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

Pressure

No complaints about low water pressure were received this reporting period.

Banana Shire Council takes complaints about pressure seriously, and will investigate issues at the customer's residence, usually providing advice about plumbing / pumping problems internal to the customer's property.

7. Findings and recommendations of the DWQMP auditor

Banana Shire Council is scheduled to have its next audit conducted by end of February 2021. This external audit will cover the period from 2017 to 2020. The purpose of the audit is to verify:

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

The findings, corrective actions, and action plans will be included in the following 20/21 report.

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

The Banana Shire Council Drinking Water Quality Management Plan will be externally reviewed in 2020/21 and is due to be finalised and submitted to the regulator by 30 September 2021.

Appendix A – Summary of compliance with water quality criteria

Pages 11 to 20 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.

Drinking water scheme:	Banana											
Year												*2020*
Month	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
No. of samples collected	1	1	1	1	1	2	1	1	1	0	1	1
No. of samples collected - External Laboratory	1	1	1	1	1	1	1	1	1	0	1	1
No. of samples collected - Council Laboratory	0	0	0	0	0	1	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	1	0
No. of samples collected in previous 12 month period	19	15	12	12	12	13	13	13	13	12	12	12
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%	91.7%	91.7%
Complies with 98% annual value?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO

Report; E coli in drinking water reporting tool. Banana Shire Council, WSP 504

The discrepancy between the numbers of samples collected for 2019-20 versus the number of samples collected for the previous year has been explained in Appendix A.

Drinking water scheme:	**Baralaba**											
Year												***2020***
Month	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
No. of samples collected	1	1	1	1	1	1	1	1	1	1	1	1
No. of samples collected - External Laboratory	1	1	1	1	1	1	1	1	1	1	1	1
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	30	28	27	22	21	20	19	16	15	14	13	12
No. of failures for previous 12 month period	0	0	0	1	1	1	1	1	1	1	1	1
% of samples that comply	100.0%	100.0%	100.0%	95.5%	95.2%	98.0%	94.7%	93.8%	92.3%	92.9%	92.3%	91.7%
Complies with 98% annual value?	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO

Report ; E coli in drinking water reporting tool. Banana Shire Council, WSP 504

Drinking water scheme:	Biloela											
Year												*2020*
Month	Jul-19	Aug-1	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
No. of samples collected	9	8	13	8	18	15	14	8	19	7	7	11
No. of samples collected - External Laboratory	9	8	12	8	8	8	7	8	10	7	7	11
No. of samples collected - Council Laboratory	0	0	1	0	10	7	7	0	9	0	0	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	1	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	328	303	276	241	219	204	177	153	160	155	140	137
No. of failures for previous 12 month period	0	0	0	1	1	1	1	1	1	1	1	1
% of samples that comply	100.0%	100.0%	100.0%	99.6%	99.5%	99.5%	99.4%	99.3%	99.4%	99.4%	99.3%	99.3%
Complies with 98% annual value?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Report ; E coli in drinking water reporting tool. Banana Shire Council, WSP 504

Drinking water scheme:	Callide Dam											
Year												*2020*
Month	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
No. of samples collected	1	1	2	1	5	4	2	1	0	1	0	1
No. of samples collected - External Laboratory	1	1	2	1	1	1	1	1	0	1	0	1
No. of samples collected - Council Laboratory	0	0	0	0	4	3	1	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	56	52	45	37	33	30	24	24	22	22	19	19
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?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Report ; E coli in drinking water reporting tool. Banana Shire Council, WSP 504

Drinking water scheme:	Goovigen											
Year												*2020*
Month	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
No. of samples collected	1	1	1	1	2	3	2	1	5	2	2	3
No. of samples collected - External Laboratory	1	1	1	1	2	1	1	1	3	2	2	3
No. of samples collected - Council Laboratory	0	0	0	0	0	2	1	0	2	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	110	102	86	66	59	49	34	22	26	27	26	24
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?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Report ; E coli in drinking water reporting tool. Banana Shire Council, WSP 504

Drinking water scheme:	Moura											
Year												*2020*
Month	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
No. of samples collected	13	10	15	12	8	9	11	12	16	11	6	15
No. of samples collected - External Laboratory	13	10	15	12	8	9	11	12	16	11	6	15
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	1	0	0	1	0	0	0
No. of samples collected in previous 12 month period	170	153	156	153	143	144	141	141	145	141	135	138
No. of failures for previous 12 month period	1	1	1	1	1	2	2	1	1	1	2	2
% of samples that comply	99.4%	99.3%	99.4%	99.3%	99.3%	98.6%	98.6%	99.3%	99.3%	99.3%	98.5%	98.6%
Complies with 98% annual value?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Report ; E coli in drinking water reporting tool. Banana Shire Council, WSP 504

Drinking water scheme:	Taroom											
Year												*2020*
Month	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
No. of samples collected	10	5	8	10	9	5	5	5	5	5	5	6
No. of samples collected - External Laboratory	9	5	7	9	9	5	5	5	5	5	5	5
No. of samples collected - Council Laboratory	1	0	1	1	0	0	0	0	0	0	0	1
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	71	67	69	73	80	78	77	79	82	79	78	78
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?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Report ; E coli in drinking water reporting tool. Banana Shire Council, WSP 504

Drinking water scheme:	Thangool											
Year												*2020*
Month	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
No. of samples collected	2	2	2	2	6	5	4	1	4	8	2	2
No. of samples collected - External Laboratory	2	2	2	2	2	2	2	1	1	2	2	2
No. of samples collected - Council Laboratory	0	0	0	0	4	3	2	0	3	6	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	97	97	79	67	59	54	44	36	38	44	40	40
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?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Report ; E coli in drinking water reporting tool. Banana Shire Council, WSP 504

Drinking water scheme:	Theodore											
Year												***2020***
Month	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
No. of samples collected	11	6	11	11	6	6	6	2	7	6	6	6
No. of samples collected - External Laboratory	11	6	11	11	6	6	6	2	7	6	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	76	76	81	86	86	85	85	83	84	84	84	84
No. of failures for previous 12 month period	1	1	1	1	1	1	1	0	0	0	0	0
% of samples that comply	98.7%	98.7%	98.8%	98.8%	98.8%	98.8%	98.8%	100.0%	100.0%	100.0%	100.0%	100.0%
Complies with 98% annual value?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

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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	9	9	100	QH	4
Biloela	Metals	mg/L	24	24	100	QH	24
Goovigen*	Metals	mg/L	3	3	100	QH	4
Moura*	Metals	mg/L	3	3	100	QH	4
Taroom**	Metals	mg/L	Not monitored				4
Theodore**	Metals	mg/L	Not monitored				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.
* 4 samples were collected over the calendar year, however only 3 sampled in the financial year. 1 sample collected in July 2020.
** The sampling for metals was not conducted at Taroom and Theodore as it was an oversight by the operator, the situation has now been rectified.

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	8	8	100	QH	4
Biloela	Physical	4	100	100	QH	4
Goovigen	Physical	4	100	100	QH	4
Moura	Physical	3*	100	100	QH	4
Taroom	Physical	Not monitored				4
Theodore	Physical	Not monitored				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.
*At Moura, 3 samples were collected over the financial year; however 4 samples were collected in the calendar year.
** The sampling for physicals was not conducted at Taroom and Theodore as it was an oversight by the operator, the situation has now been rectified.

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	3**	100	100	QH	4
Biloela	Herbicides / Pesticides	26***	100	100	QH	2
Goovigen	Herbicides / Pesticides	1****	100	100	QH	2
Moura	Herbicides / Pesticides	4	100	100	QH	4
Taroom	Herbicides / Pesticides	4	100	100	QH	1
Theodore	Herbicides / Pesticides	9	100	100	QH	4

*Includes non-recordable detections of analytes. Biloela also covers Thangool & Callide. Moura also cover Banana.
**At Moura, 3 samples were collected over the financial year, however 4 samples were collected in the calendar year, with 1 sample collected in July, rather than June
*** At Biloela each bore was sampled for herbicides and pesticides during the reporting period.
****At Goovigen 1 sample was collected over the financial year; however 2 samples were collected in the calendar year, with 1 sample collected in July, rather than June

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	0	Not required in this reporting period	100	QH	5 YEAR
Biloela	Corrected Activity	3	100	100	QH	5 YEAR
Goovigen	Corrected Activity	2	100	100	QH	2 YEAR
Moura	Corrected Activity	2	100	100	QH	5 YEAR
Taroom	Corrected Activity	0	Not required in this reporting period	100	QH	2 YEAR
Theodore	Corrected Activity	0	Not required in this reporting period	100	QH	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	11*	100	12
Biloela	THM'S	µg/L	13	100	12
Goovigen	THM'S	µg/L	3*	100	4
Moura	THM'S	µg/L	12	100	12
Taroom	THM'S	µg/L	11*	100	12
Theodore	THM'S	µg/L	11*	100	12

*sampling requirements were met over the calendar year, rather than the financial year

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	-	Budget unavailable.	2021 - 22
Theodore WTP	Filter breakthrough	Automate backwash	-	Budget unavailable	2023 - 24
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	-	In the event of pump replacement / repair a casing inspection will take place.	2021 - 22
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	On Monday 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.	Y	Inspection included in normal routines
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. The reason for the non-compliance is a result of resourcing (inability to fill operator roles) and operational changes during this period. We are working on actioning the resourcing issue.

Scheme name	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY19/20	Water quality criteria (i.e. ASWG health guideline value)	No. of non-compliant samples	Comments
Biloela	pH	860	713	6.5-8.5		Taken from 8 sampling locations
	Turbidity	860	708	5 NTU		
	Apparent Colour	248	50			
	True Colour	860	659	15 HU		
	Total Iron	860	696	No health guidelines set		
	Soluble Iron	312	117			
	Conductivity	312	117	NA		
	Nitrogen	248	50	NA		
	Phosphorus	248	50	NA		This reflects a shortfall in available operators.
	Total Manganese	796	620	0.5 mg/l	1	Only determined when analysing data for annual report.
	Soluble Manganese	248	50	0.5 mg/l		Only recorded at pump station
	Alkalinity	860	612	NA		
	Fluoride	560	483	1.5 mg/L		
	E.coli	162	137	0 MNP/100ml	1	

Scheme name	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY19/20	Water quality criteria (i.e. ASWG health guideline value)	No. of non-compliant samples	Comments
Biloela	Total Coliforms	162	137		1	Taken from 8 sampling locations
	Trihalomethanes	24	13	0.250mg/l		
	Salinity	64	63			Only for bores
	Free Chlorine	548	413	5mg/l		
	Heavy Metals	16	24	ADWG 2011 Chapter 10 Table 10.6		
	Pesticide Residue	12	26	ADWG 2011 Chapter 10 Table 10.6		
	Standard Water Analysis	18	39	ADWG 2011 Chapter 10 Table 10.6		
Thangool Reticulation	pH	52	53	6.5-8.5		Taken from 3 sampling locations
	Free Chlorine	52	50	5mg/l		
	Turbidity	52	53	5 NTU		
	Total Iron	52	53	No health guidelines set		
	Alkalinity	52	29	NA		
	Total Manganese	52	53	0.5 mg/l		
	True Colour	52	53	15 HU		
	Total Coliforms	12	22			
	E.coli	12	22	0mpn/100ml		

Scheme name	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY19/20	Water quality criteria (i.e. ASWG health guideline value)	No. of non-compliant samples	Comments
Callide Dam Village	pH	52	38	6.5-8.5		Taken from 1 sampling location
	Free Chlorine	52	33	5mg/l		
	Turbidity	52	38	5 NTU		
	Total Iron	52	38	No health guidelines set		
	Alkalinity	52	20	NA		
	Total Manganese	52	38	0.5 mg/l		
	True Colour	52	20	15 HU		
	Total Coliforms	12	12	NA		
	E.coli	12	12	0mpn/100ml		
Goovigen	pH	104	91	6.5-8.5		Taken from 4 sampling locations
	Free Chlorine	52	26	5mg/l	2	
	Turbidity	104	92	5 NTU		
	Apparent Colour	104	106			
	True Colour	104	93	15 HU		
	Total Iron	104	92	No health guidelines set		
	Conductivity	104	93			
	Alkalinity	104	93	NA		
	Salinity	104	86			
	Total Manganese	104	92	0.5mg/l		
	E.coli	24	19	0mpn/100ml		
	Trihalomethanes	4	3	0.250mg/l		
	Standard Water Analysis	4	4	ADWG 2011 Chapter 10 Table 10.6		

Scheme name	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY19/20	Water quality criteria (i.e. ASWG health guideline value)	No. of non-compliant samples	Comments
Goovigen	Heavy Metals	4	3	ADWG 2011 Chapter 10 Table 10.6		
	Pesticide Residue	2	1	ADWG 2011 Chapter 10 Table 10.6		
Banana	pH	52	74	6.5-8.5		Taken from 5 sampling locations
	Free Chlorine	52	71	5mg/l		
	Turbidity	52	71	5 NTU		
	Total Iron	52	70	No health guidelines set		
	Alkalinity	52	NR	NA		No Alkalinity was monitored at Banana.
	Total Manganese	52	63	0.5 mg/l		
	True Colour	52	71	15 HU		
	E.coli	12	11	0mpn/100ml	1	
	Total Coliforms	12	11	NA	1	

Scheme name	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY19/20	Water quality criteria (i.e. ASWG health guideline value)	No. of non-compliant samples	Comments
Baralaba	pH	364	94	6.5-8.5		
	Alkalinity	52	75			
	Apparent Colours	208	91			
	Conductivity	104	33			
	E.coli	24	13	0 mpn/100ml		
	Free Chlorine	156	51	5mg/l		Taken from 6 sampling locations
	Heavy Metals	8	8	ADWG 2011 Chapter 10 Table 10.6		
	Nitrogen	104	21			
	Pesticide	8	7	ADWG 2011 Chapter 10 Table 10.6		
	Phosphorus	104	22			
	Soluble Iron	104	22			
	Soluble Manganese	208	90	0.5 mg/l		
	Standard Water Analysis	8	8	ADWG 2011 Chapter 10 Table 10.6	5	Identified only when annual report was conducted
	Total Coliforms	24	13			
	Total Manganese	260	90	0.5mg/l	2	
	Trihalomethanes	12	12	0.250mg/l		
	True Colour	260	114	15HU		
	Turbidity	260	114	5 NTU		

Scheme name	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY19/20	Water quality criteria (i.e. ASWG health guideline value)	No. of non-compliant samples	Comments
Theodore	pH	548	1481	6.5-8.5		
	Turbidity	548	1251	5NTU		
	Apparent Colour	248	359			
	True Colour	548	1266	15HU		
	Total Iron	548	275	No guideline set		
	Soluble Iron	248	296			
	Conductivity	248	359	NA		
	Alkalinity	548	716	NA		
	Total Manganese	548	750	0.5mg/L		
	Soluble Manganese	248	274	0.5mg/L		
	Free Chlorine	300	925	5mg/L		
	E.coli	24	84	0 MPN/100ml		
	Total Coliforms	24	84			
	Trihalomethanes	12	11	0.250mg/l		
	Standard Water Analysis	4	4	ADWG 2011 Chapter 10 Table 10.6		No sampling for heavy metals. This was not identified until the analysis of the data was conducted for this report.
	Pesticide Residue	4	9	ADWG 2011 Chapter 10 Table 10.6		Limited sampling only conducted. This was not identified until the analysis of the data was conducted for this report.
	Heavy Metals	4	0	ADWG 2011 Chapter 10 Table 10.6		No sampling for heavy metals. This was not identified until the analysis of the data was conducted for this report.

Scheme name	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY19/20	Water quality criteria (i.e. ASWG health guideline value)	No. of non-compliant samples	Comments
Taroom	pH	548	924	6.5-8.5		
	Turbidity	548	914	5 NTU	4	This was only identified during analysis of data when generating the report.
	Apparent Colour	248	357			
	True Colour	548	710	15 HU		
	Total Iron	548	914	No health guideline set		
	Soluble Iron	248	357			
	Conductivity	248	357	NA		
	Total Manganese	156	914	0.5 mg/l	2	This was only identified during analysis of data when generating the report.
	Soluble Manganese	52	357			
	Standard Water Analysis	8	0	ADWG 2011 Chapter 10 Table 10.6		No sampling conducted at these sites.
	Heavy Metals	8	0	ADWG 2011 Chapter 10 Table 10.6		No sampling conducted at these sites
	Pesticides	1.5	5	ADWG 2011 Chapter 10 Table 10.6		One monitoring point on this scheme only requires to be tested every 2 years. However additional sampling was conducted for pesticides.
	Alkalinity	104	557	NA		Taken from 2 sampling locations
	E.coli	24	74	0mpn/100ml		Additional sampling conducted at the reticulated water locations.
	Coliforms	24	74			Additional sampling conducted at the reticulated water locations.
	Trihalomethanes	12	11	0.250mg/l		12 samples conducted during the calendar year.
	Free Chlorine	300	557	5mg/l		

Scheme name	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY19/20	Water quality criteria (i.e. ASWG health guideline value)	No. of non-compliant samples	Comments
Moura	Alkalinity	548	759	NA		
	Apparent Colour	248	488			
	Conductivity	248	314	NA		
	E.coli	104	138	0mpn/100ml	2	
	Fluoride	260	251			
	Free Chlorine	300	323	5mg/l		
	Heavy Metals	8	6	ADWG 2011 Chapter 10 Table 10.6		2 samples collected in July 2020. Therefore 8 samples collected in calendar year and 6 samples in financial year.
	Nitrogen	248	307			
	Pesticide Residue	8	6	ADWG 2011 Chapter 10 Table 10.6		2 samples were collected in July 2020. Therefore 8 samples collected in calendar year and 6 samples in financial year.
	pH	548	1103	6.5-8.5		Sampling at Moura was reviewed in March 2020 and same locations were streamlined to monitor from 7 sites to 2 sites and monitoring was reduced to microbiological only.
	Phosphorus	248	312			
	Soluble Iron	248	NR			
	Soluble Manganese	248	299			
	Standard Water Analysis	8	6	ADWG 2011 Chapter 10 Table 10.6		2 samples were collected in July 2020. Therefore 8 samples collected in calendar year and 6 samples in financial year.
	Total Coliforms	104	138		2	

Scheme name	Parameter	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested in FY19/20	Water quality criteria (i.e. ASWG health guideline value)	No. of non-compliant samples	Comments
Moura	Total Iron	548	466	No health guidelines set		Slight drop in Total Iron reporting due to only monitoring MOU-09 Rotary Park and MOU-11 Standpipe.
	Total Manganese	352	682	0.5 mg/l		Taken from 8 sampling locations.
	Trihalomethanes	12	12	0.250 mg/l		
	True Colour	548	625	15HU	1	Was not identified when data was reviewed for the report
	Turbidity	548	940	5 NTU	1	Was not identified when data was reviewed for the report