Drinking Water Quality Management Plan (DWQMP) annual report

2018-2019

Banana Shire Council

Service Provider ID: 504

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Contents

Glossary of terms

>	Greater than
<	Less than
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)
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
CSG	Coal Seam Gas
DNRME	Department of Natural Resources, Mine and Energy
DWQMP	Drinking Water Quality Management Plan – the documents summarising how water service providers manage quality risks for consumers.
E.coli	*Escherichia coli*, a bacterium which is considered to indicate the presence of faecal contamination and therefore potential health risk
HACCP	Hazard Analysis and Critical Control Points certification for protecting drinking water quality
LOR	Limit of Reporting –for chemical parameters – the minimum concentration of a substance in a sample that can reliably detected by a laboratory.
mg/L	Milligrams per litre
MPN/100mL	Most probable number per 100 millilitres
NTU	Nephelometric Turbidity Units, used to measure clearity of water
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.
PRV	Pressure Reducing Valve
SOP	Standard Operating Procedure
The Act	Water Supply (Safety and Reliability) Act 2008.
WTP	Water Treatment Plant - processes raw water (sourced from a dam or bore) to make drinking water.

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 Moura WTP, 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	8.64	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, 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 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 communities), Baralaba, Taroom and Theodore. Goovigen is a chlorinated bore supply. Council operates and maintains all water supply infrastructures in these schemes including intakes, bores, pumping stations, treatment facilities, reservoir storages and reticulation mains.

Note: The Callide Dam intake is operated and maintained by Sunwater

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 Biloela WTP which included upgrades to the filtratration system and two clarifiers. Additionally two new PRVs were installed on the trunk main ensuring the supply of water is maintained during most emergency events.
- Infrastructure upgrades to Moura WTP which included a new raw water trunk main and the replacement of the backwash pumps.
- Infrastructure upgrades to Taroom WTP; which included an upgrade to the tank 1 aerator and also a new chlorine facility.
- Administrative amendments to SOPs for water treatment processes.

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.

The amendments that were made to the DWQMP on the 5 March 2018 were submitted to the DNRME for approval. The amendments included an update to the Moura/Banana and Baralaba Scheme Schematics. The approval was issued on the 19 July 2019.

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 in 2018, a detection of Perfluorohexanesulfonic acid (PFHxS) was made in the Biloela town water supply. The detection was close to the LOR, 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. The 2019 samples were taken in May. There were minor detections of Perfluorohexanesulfonic acid (PFHxS) that did not exceed the ADWG. This was found in the Biloela water supply. The results were similar to above and no adverse health effects are anticipated.

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

This financial year there were four (4) instances where the Regulator was notified under sections 102 or 102A of the Act.

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

- **Incident description**, two incidents related to a detection of small quantities of E.coli in the reticulation system of the towns Moura and Theodore. Further sampling and testing was immediately carried out with no subsequent detections.

- **Corrective and preventive actions:** Whilst it is anticipated that occasional false positive detections are a feature of the highly sensitive testing techniques employed, further checks on water quality and mains flushing were carried out to maintain a safe residual of chlorine in the reticulation network.

- **Incident description**: The remaining two incidents relate to operations at the Baralaba WTP. In one incident, Manganese at the health limit threshold was detected, prompting additional servicing of the ultrafiltration system at the water treatment plant.

  With the second incident, an extended service was required on the same ultrafiltration system, requiring its bypass to sustain town water supply with clarified and chlorinated water only. Due to the lower level of protection, a preventative boil water alert was raised to ensure public safety. No detections of E.coli were made during this event.

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. 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	1 (3.18)	0
Biloela	2(0.347)	0	2 (0.347)	1 (0.17)
Goovigen	0	0	0	0
Moura	0	0	21 (11.73)	1 (0.56)
Taroom	0	0	0	0
Thangool	0	0	0	0
Theodore	1 (2.21)	0	0	0
TOTAL	3	0	24	2

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 2018 / 2019, there were no complaints of suspected illness arising from the water supply system.

Discoloured water

A total of twenty four (24) complaints about discoloured water were the bulk of complaints received, with two (2) unrelated complaints received from Biloela customers.

A cluster of twenty-one (21) complaints were received in Moura during the peak of hot summer weather, resulting in high reticulation mains velocity and re-suspension of pipeline manganese laden film. A mains-air scouring program was scheduled and addressed the problem.

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 two (2) taste and odour complaints were received during the period, one (1) in the Moura scheme and one (1) in the Biloela scheme.

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

Pressure

Three (3) complaints about low water pressure were received, two (2) issues related to problems on the home owner side of the meter (private infrastructure) and one (1) was within the water pressure guidelines for Councils customer service standards.

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 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. The findings, corrective actions completed and dates of completion and implementation are summarised in the table below. No audit was conducted during the current reporting year.

Auditor's Findings	Corrective Actions	Date Completed	Amended into the DWQMP	Date Approved
Some schematics and associated scheme descriptions were identified as inaccurate or incomplete.	The Moura/Banana and Baralaba Schematics have been amended	05 March 2018	05 March 2018	19 July 2018
Critical control points were not all implemented as stated	Currently being updated	In Progress	To be formally updated	
Operational Monitoring was not all implemented as stated.	Currently being updated	In Progress	To be formally updated	
Verification monitoring was not all implemented as stated.	Currently being updated	In Progress	To be formally updated	
Review CCP procedures and update to reflect the operating conditions and implement.	Currently being updated	In Progress	To be formally updated	
Review and update the monitoring plan to reflect the actual sampling taken to avoid potential miscommunication when undertaking regulatory reporting.	Currently being updated	In Progress	To be formally updated	

As per the DWQMP Review and Audit Guideline developed by the DNRME, June 2019, a new audit will be scheduled prior to 31 May 2020 to assess Banana Shire Council's compliance against the new requirements.

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

A complete review of the DWQMP was not undertaken during the reporting year. The most recent review was complete in October 2017 and related to: -

- 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.

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

This review and amendments were provided to DNRME on 05 March 2018 for approval. The approval occurred on the 19 July 2018. There were no further updates conducted in this reporting year.

Appendix A – Summary of compliance with water quality criteria

Pages 10 to 19 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.

Based on the information in the tables below, there is a significant difference in the number of samples taken for the 2018-19 report compared to the previous year, whereby the 2017-18 reports a higher number of E.coli samples taken. The difference in this instance is administrative only and is not a reflection of a decrease in the sampling regime. For the 2017-18 year, the samples taken were calculated and reported based on the tests completed. For the 2018-19 report, the total was reported based on the samples as per the sampling schedule.

Pages 19 to 21 summarise the results of samples sent to external laboratories testing for compliance to guidelines for metals, pesticide residues, trihalomethanes, radiological contamination and physical parameter testing.

Appendix D summarizes Water Quality testing in more detail.

Drinking water scheme:	**Banana**											
Year												***2019***
Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
No. of samples collected	5	5	4	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	4	4	3	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	68	67	59	52	48	45	40	39	34	25	21	21
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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The discrepancy between the number of samples collected for 2018-19 versus the number of samples collected for the previous year has been explained in Appendix A.

Drinking water scheme:	**Baralaba**											
Year												***2019***
Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
No. of samples collected	10	3	2	6	2	2	2	4	2	2	2	2
No. of samples collected - External Laboratory	2	3	2	2	2	2	2	4	2	2	2	2
No. of samples collected - Council Laboratory	8	0	0	4	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	103	101	99	86	79	62	56	53	50	48	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?	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

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Drinking water scheme:	**Biloela**											
Year												***2019***
Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
No. of samples collected	29	33	40	43	40	30	41	32	12	12	22	14
No. of samples collected - External Laboratory	15	15	13	15	12	10	14	12	12	12	15	14
No. of samples collected - Council Laboratory	14	18	27	28	28	20	27	20	0	0	7	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	490	478	477	456	450	449	472	457	419	391	366	346
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												***2019***
Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
No. of samples collected	2	5	9	9	9	7	8	1	2	1	3	1
No. of samples collected - External Laboratory	2	1	1	1	1	1	1	1	2	1	1	1
No. of samples collected - Council Laboratory	0	4	8	8	8	6	7	0	0	0	2	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	92	89	90	88	88	90	96	87	78	69	62	56
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												***2019***
Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
No. of samples collected	1	9	17	21	9	13	17	13	1	1	3	5
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	8	16	20	8	12	16	12	0	0	2	4
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	98	92	92	93	87	89	96	87	78	70	61	55
No. of failures for previous 12 month period	1	1	1	1	1	1	1	1	1	1	0	0
% of samples that comply	99.0%	98.9%	98.9%	98.9%	98.9%	98.9%	99.0%	98.9%	98.7%	98.6%	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:	**Moura**											
Year												***2019***
Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
No. of samples collected	21	27	12	15	18	8	14	12	12	15	12	12
No. of samples collected - External Laboratory	15	15	12	15	12	8	14	12	12	15	12	12
No. of samples collected - Council Laboratory	6	12	0	0	6	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	**1**	0	0	0	0
No. of samples collected in previous 12 month period	392	358	340	302	290	269	238	219	206	191	175	175
No. of failures for previous 12 month period	0	0	0	0	0	0	0	1	1	1	1	1
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.5%	99.5%	99.5%	99.4%	99.4%
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												***2019***
Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
No. of samples collected	7	9	6	6	2	7	6	3	2	8	6	6
No. of samples collected - External Laboratory	6	6	6	6	2	7	6	1	2	6	6	6
No. of samples collected - Council Laboratory	1	3	0	0	0	0	0	2	0	2	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	126	122	122	118	110	109	101	89	79	71	71	68
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:	**Thangool**											
Year												***2019***
Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
No. of samples collected	2	8	14	14	14	10	14	9	2	2	6	2
No. of samples collected - External Laboratory	2	2	2	2	2	2	2	0	2	2	3	2
No. of samples collected - Council Laboratory	0	6	12	12	12	8	12	9	0	0	3	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	144	134	133	128	128	130	140	134	120	106	106	98
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												***2019***
Month	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
No. of samples collected	2	6	6	6	6	7	6	4	6	6	6	6
No. of samples collected - External Laboratory	2	6	6	6	6	7	6	4	6	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	**1**	0	0	0	0
No. of samples collected in previous 12 month period	92	92	92	92	92	94	88	81	75	69	69	69
No. of failures for previous 12 month period	0	0	0	0	0	0	0	1	1	1	1	1
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.8%	98.7%	98.6%	98.6%	98.6%
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	13	13	100	QH	4
Biloela	Metals	mg/L	46	46	100	QH	4
Goovigen	Metals	mg/L	4	4	100	QH	4
Moura	Metals	mg/L	12	12	100	QH	4
Taroom	Metals	mg/L	4	4	100	QH	4
Theodore	Metals	mg/L	2	2	100	QH	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	31	31	100	QH	4
Goovigen	Physical	2	2	100	QH	4
Moura	Physical	6	6	100	QH	4
Taroom	Physical	3	3	100	QH	4
Theodore	Physical	5	5	100	QH	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	5	5	100	QH	4
Biloela	Herbicides / Pesticides	15	15	100	QH	2
Goovigen	Herbicides / Pesticides	2	2	100	QH	2
Moura	Herbicides / Pesticides	9	9	100	QH	4
Taroom	Herbicides / Pesticides	1	1	100	QH	1
Theodore	Herbicides / Pesticides	1	1	100	QH	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	7	7	100	QH	5 YEAR
Goovigen	Corrected Activity	1	1	100	QH	2 YEAR
Moura	Corrected Activity	2	2	100	QH	5 YEAR
Taroom	Corrected Activity	1	1	100	QH	2 YEAR
Theodore	Corrected Activity	2	2	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	13	13	12
Biloela	THM'S	µg/L	24	24	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	14	14	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	-	Insufficient budget allocation to progress	To be put forward for consideration again in 2020/21 draft budget.
Theodore WTP	Filter breakthrough	Automate backwash	-	Insufficient budget allocation to progress	To be put forward for consideration again in 2020/21 draft budget.
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 contamination and rectify	-	in the event of pump replacement / repair a casing inspection will take place.	
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.	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.

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

For a number of schemes (Callide Dam village, Goovigen, Banana and Baralaba) the number of samples collected and tested for various parameters is less than the number of samples required to be collected according to the DWQMP. This was only identified while collating data for this report. These parameters are highlighted in red text in the table in Appendix D.

The reason for the non-compliance is a result of resourcing (inability to fill treatment operator vacancies) and operational changes during this period. Action is being taken to correct this issue.

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Biloela	pH	860	1149	6.5-8.5		Taken from 8 sampling locations
	Turbidity	860	1,150	C		
	Apparent Colour	248	714			
	True Colour	860	1168			
	Total Iron	860	1142	C		
	Soluble Iron	312	433			
	Conductivity	312	464	NA		
	Nitrogen	248	420	NA		
	Phosphorus	248	411	NA		
	Total Manganese	796	1124	0.5mg/L		
	Soluble Manganese	248	421	0.5mg/L		
	Alkalinity	860	911	NA		
	Fluroide	560	1021			
	E.Coli	162	348	1 mpn/100ml		

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Biloela	Total Coliforms	162	172	NA		Taken from 8 sampling location
	Trihalomethanes	24	24	0.250mg/L		
	Salinity	64	8			Only for bores
	Free Chlorine	548	590	5mg/L		Taken from 8 sampling location
	Heavy Metals	16	46	ADWG 2011 CHAPTER 10 TABLE 10.6		
	Pesticide Residue	12	15	ADWG 2011 CHAPTER 10 TABLE 10.6		
	Standard Water Analysis	18	33	ADWG 2011 CHAPTER 10 TABLE 10.6		
Thangool Reticulation	pH	52	71	6.5-8.5		Taken from 3 sampling location
	Free Chlorine	52	65	5mg/L		
	Turbidity	52	74	C		
	Total Iron	52	74	C		
	Alkalinity	52	74			
	Total Manganese	52	73	0.5mg/L		
	True Colour	52	74			
	Total Coliforms	12	23			
	E.Coli	12	97	1mpn/100ml		

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Callide Dam Village	pH	52	35	6.5-8.5		Taken from 1 sampling location
	Free Chlorine	52	38			
	Turbidity	52	43	C		
	Total Iron	52	43	C		
	Alkalinity	52	38	Na		
	Total Manganese	52	43	0.5mg/L		
	True Colour	52	43			
	Total Coliforms	12	13	Na		
	E.Coli	12	30	1 mpn/100ml		
Goovigen	pH	104	94	6.5-8.5		Taken from 4 sampling location
	Free Chlorine	52	88	5mg/L		
	Turbidity	104	97			
	Apparent Colour	104	94			
	True Colour	104	98			
	Total Iron	104	96	C		
	Conductivity	104	97			
	Alkalinity	104	89			

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Goovigen	Salinity	104	96			Taken from 2 sampling location
	Total Manganese	104	96	0.5 mg/L		
	E.coli	24	110			
	Trihalmoethanes	4	5	0.250mg/L		
	Standard Water Analysis	4	4	ADWG 2011 CHAPTER 10 TABLE 10.6		
	Heavy Metals	4	4			
	Pesticide Residue	2	2			
						Taken from 5 sampling location
Banana	pH	52	49	6.5-8.5		
	Free Chlorine	52	49	5mg/L		
	Turbidity	52	40	C		
	Total Iron	52	18	C		
	Alkalinity	52	40			
	Total Manganese	52	40	0.5 mg/L		
	True Colour	52	40			
	Ecoli	12	23	1 mpn/100ml		
	Total Coliform	12	12			

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Baralaba	pH	364	198	6.5-8.5		Taken from 6 sampling location
	Alkalinity	52	139			
	Apparent Colours	208	103			
	Conductivity	104	50			
	E.coli	24	41	1 mpn/100ml		
	Free chlorine	156	164	5mg/L		
	Heavy metals	8	13			
	Nitrogen	104	4			
	Pesticide	8	5			
	Phosphorus	104	4			
	Soluble Iron	104	1	C		
	Soluble Manganese	208	103	0.5mg/L		
	Standard Water Analysis	8	8	ADWG 2011 CHAPTER 10 TABLE 10.6		
	Total Coliforms	24	25	NA		
	Total Manganese	260	172	0.5mg/L	1	
	Trihalamethanes	12	13	0.250mg/L		
	True Colour	260	168			
	Turbidity	260	188	C		

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Theodore	pH	548	1101	6.5-8.5		Taken from 6 sampling location
	Turbidity	548	1030			
	Apparent Colour	248	365			
	True Colour	548	1271			
	Total Iron	548	729			
	Soluble Iron	248	249			
	Conductivity	248	365	NA		
	Alkalinity	548	726	NA		
	Total Manganese	548	732	0.5mg/L		
	Soluble Manganese	248	255	0.5mg/L		
	Free Chlorine	300	640	5mg/L		
	E.coli	24	67	1 mpn/100ml	1	
	Total Coliforms	24	132	NA		
	Trihalomethanes	12	14	0.250mg/L		
	Standard Water Analysis	4	5	ADWG 2011 CHAPTER 10 TABLE 10.6		
	Pesticide Residue	4	1			
	Heavy Metals	4	2			
Taroom	pH	548	962	6.5-8.5		Taken from 6 sampling location
	Turbidity	548	993			

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Taroom	Apparent Colour	248	366			Taken from 6 sampling location
	True Colour	548	733			
	Total Iron	548	992	C		
	Soluble Iron	248	366	C		
	Conductivity	248	367	NA		
	Total Manganese	156	986	0.5mg/L		
	Soluble Manganese	52	366			
	Standard water Analysis	8	4	ADWG 2011 CHAPTER 10 TABLE 10.6		
	Heavy Metals	8	4			
	Pesticides	1.5	1			One monitoring point on this scheme only requires pesticides to be tested every 2 years.
	Alkalinity	104	625	NA		Taken from 2 sampling location
	E.coli	24	31	1 mpn / 100ml		
	Coliforms	24	60			
	Trihalomethanes	12	12	0.250mg/L		
	Free Chlorine	300	582	5mg/L		

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Moura	Alkalinity	548	1,077	NA		Taken from 8 sampling location
	Apparent Colour	248	665			
	Conductivity	248	321	NA		
	E.Coli	104	178	1 mpn/100ml	1	
	Fluoride	260	4			Fluoride was not dosed for a majority of reporting year, therefore sample only occurred when dosing
	Free chlorine	300	907	5mg/L		Taken from 8 sampling location
	Heavy Metals	8	12	ADWG 2011 CHAPTER 10 TABLE 10.6		
	Nitrogen	248	302	NA		
	Pesticide Residue	8	9	ADWG 2011 CHAPTER 10 TABLE 10.6		
	pH	548	1,361	6.5-8.5		
	Phosphorus	248	301	NA		
	Soluble Iron	248	260			
	Soluble manganese	248	604	0.5mg/L		
	Standard Water Analysis	8	9	ADWG 2011 CHAPTER 10 TABLE 10.6		
	Total Coliforms	104	155	NA		
	Total Iron	548	648	C		Taken from 8 sampling location
	Total Manganese	352	716	0.5mg/L		
	Trihalomethanes	12	11	0.250mg/L		

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Moura	True Colour	548	1,077			
	Turbidity	548	1,077	C		

Notes:

1. The limits for the standard water analysis, pesticides and heavy metals have not been specified in the table due to the range of parameters being tested within each category all having different limits. It is therefore advisable that this table is read in conjunction with the ADWG 2011, Chapter 9, Table 9.5.
2. Items that have not met the DWQMP have been highlighted in red.
3. “c” used in the ADWG limits means that there is insufficient data to set a guideline value based on health considerations (taken from *Monitoring for specific characteristics in Drinking Water- ADWG 2011)*
4. This data refers to analytes taken over the 18-19 FY.