



Drinking Water Quality Management Plan Report

Sunwater

SPID: 204

Financial Year: 2020 - 2021

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LGA covered by this plan: Mareeba Shire Council, Burdekin Shire Council, Whitsunday Regional Council, Central Highlands Regional Council

Water Supply Schemes (WSS) and Town Water Schemes (TWS) covered by this plan:

Far North Queensland

- Burdekin Haughton WSS – Burdekin Falls Dam TWS
- Burdekin Haughton WSS – Clare TWS
- Mareeba Dimbulah WSS – Mutchilba TWS

Central Queensland

- Nogoa Mackenzie WSS – Fairbairn Dam TWS

This report has been prepared in accordance with the Drinking Water Quality Management Plan Report Guidance Note.

Sunwater Limited

Document Information

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Document history and status

Revision	Date	Description	Developed By	Review	Approved
A	25/11/2021	Draft prepared by Jacobs for Sunwater review	Cilna van Wijk (Jacobs)	Kenny Liew (Jacobs)	Nicholas Stanton (Jacobs)
0	15/12/2021	Reviewed and approved by Sunwater for submission to the Regulator	Kenny Liew (Jacobs)	Neil McCabe Jason Smith David Hayes Craig Cahill Chris Delamont (Sunwater)	Colin Bendall (Sunwater)

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1 Introduction

This report documents the performance of Sunwater'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 is for the period 1 July 2020 – 30 June 2021.

Sunwater is a registered service provider with identification (SPID) number 204. Sunwater is operating under an approved DWQMP to ensure the consistent supply of safe quality drinking water to protect public health. Jacobs is engaged by Sunwater to provide specialist technical services to assist with the operation and management of drinking water plants including the preparation of this report.

The report assists the Regulator with determining 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 Summary of Schemes Operated

This DWQMP annual report applies to four (4) drinking water schemes owned and operated by Sunwater across Queensland.

A summary of the schemes is presented in Table 1 below.

Table 1 – Summary of schemes

Scheme	Water Source	Treatment processes	Treatment capacity	Towns supplied
Burdekin Falls Dam WTP	Burdekin Falls Dam	Clarification via a lamella tube settler clarifier; sand media filtration; and disinfection with chlorine dosing (sodium hypochlorite). Addition of aluminium sulphate coagulant for flocculation process (automated).	1.44 ML/d	Three houses, small caravan park and day visitor / recreational areas.
Clare WTP	Burdekin River / Burdekin Falls Dam via Clare irrigation channel system	Clarification via single clarifier, pressure media filtration; and disinfection with chlorine dosing (sodium hypochlorite). Addition of aluminium sulphate coagulant for flocculation process (automated).	0.54 ML/d	Thirty-six private residences, eight Sunwater houses, and day visitor / recreational areas.
Fairbairn Dam WTP	Fairbairn Dam	Clarification via two standard up-flow clarifiers; pressure media filtration; and disinfection with chlorine dosing (sodium hypochlorite). Addition of aluminium sulphate for flocculation process (automated).	0.43 ML/d	Five private residences, three Sunwater houses, four commercial / educational buildings, day visitor / recreational areas and the caravan park.
Mutchilba WTP	Tinaroo Dam via Mareeba Irrigation Channel System	Primary media filtration; secondary filtration (with activated carbon for organics removal; and disinfection with chlorine dosing (sodium hypochlorite). Addition of aluminium sulphate to the raw water for flocculation process (automated).	0.123 ML/d	Fifteen private residences, three Sunwater houses and three commercial / educational buildings.

3 DWQMP Implementation

The actions undertaken to implement the DWQMP are summarised below.

Sunwater has implemented the DWQMP including setting operational limits and investigation into non-compliances, as defined in the DWQMP operational and verification monitoring programmes and site specific work instructions.

Progress in implementing the risk management improvement program

Appendix D of the approved DWQMP outlines the Improvement Plan Actions. A brief status report of the progress of these actions is included in Table 2.

Please refer to summary below regarding the seven improvement actions:

- Action No. 1 (commence heavy metal testing at all sites) has been completed. Heavy metals testing was completed at Burdekin, Clare and Fairbairn sites in FY2020/2021. Heavy metals testing was completed at Mutchilba in July 2021. Heavy metals testing to continue in accordance with DWQMP.
- Action No. 2 (Investigate installation of online monitoring equipment at Burdekin Falls) has been completed. Jacobs completed a WTP Replacement Investigation Report (July 2020) and recommended online measurement for specific parameters.
- Action No. 3 (Annual inspection of elevated tank by drone at Burdekin Falls, Clare and Fairbairn Dam) has not been completed. Annual inspection of elevated tank to be added to the Annual Work Instructions at these sites and completed in FY2021/2022.
- Action No. 4 (Commence annual raw water pesticide testing at Clare and Mutchilba) has not been completed. Pesticide testing to be added to the Annual Work Instructions at these sites and completed in FY2021/2022.
- Action No. 5 (Commence Trihalomethane (THM) testing at all sites) has been completed. THM testing was completed at Burdekin, Clare and Fairbairn sites in FY2020/2021. THM testing was completed at Mutchilba in July 2021. THM testing to continue in accordance with DWQMP.
- Action No. 6 (Investigate removal of bypass valve at Mutchilba) has been closed and is now complete, as it was identified that there is no current bypass at the site.
- Action No. 7 (Undertaking sampling of copper levels in the Mutchilba raw water) has been closed and is now completed, due to the current monitoring program specified (Refer Table 2).

Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria¹ in verification monitoring

No changes were made to the operational monitoring program during this reporting period.

Drinking water quality is tested in accordance with ADWG limits on a number of key parameters and monitored to test for water quality and microbiological characteristics to ensure safe drinking water for consumers. The drinking water quality tests involve routine daily or weekly testing at the WTP for water

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

chemistry (aesthetics) and residual chlorine, monthly testing of microbiology and annual testing of heavy metals and Trihalomethanes (THM's) at a NATA accredited Laboratory.

Water quality test locations (test points) are routinely sampled within each of the distribution networks to provide a high level of confidence that a representative water quality analysis has been undertaken and to provide certainty that scheme is delivering safe drinking water quality to consumers. The sampling points were selected based on providing the highest probability of finding non-compliant drinking water to prevent a worst case scenario for a public health incident. The sampling points at each scheme are located at the water treatment plant and end of the reticulation mains.

Amendments made to the DWQMP

No amendments to the DWQMP were made in the reporting period.

Table 2 – Risk management improvement program implementation status

RMIP Action No.	Scheme	Ref	Component	Hazard/Event	Improvement actions	Target date	Actions taken to date	Status and revised target date	Responsible Officer / Position
1	All	BFD01 CLA01 FBD01 MTC001	Source Water	Heavy Metal contamination of the source water	Commence annual heavy metal sampling to establish baseline and determine if there are any existing or emerging issues.	FY2019/2020	Annual heavy metals testing completed at Burdekin, Clare and Fairbairn sites in FY2020/2021. Heavy metals testing was completed at Mutchilba in July 2021. Elevated Total Lead result at Mutchilba treated water in July 2021 (suspected sampling contamination issue). Heavy metal testing undertaken monthly at Mutchilba for August - December 2021 followed by quarterly testing from January 2022 onwards in response to Total Lead result. All other locations currently require annual heavy metals testing. Heavy metal testing has been added to Annual Work Instructions at all sites to ensure completion in accordance to monitoring program.	Completed. Heavy metal testing to be continued in accordance with DWQMP.	Storage Supervisor
2	Burdekin Falls Dam	BFD02	Water Treatment Plant	Biological and Chemical Hazards from non-compliant water quality	Investigate installation of online monitoring equipment to allow real time monitoring of plant performance, alarming, and plant shutdown in the event of exceedances.	FY2019/2020	Jacobs were engaged to complete a WTP Replacement Investigation Report (July 2020) and recommended online measurement for specific parameters. Further investigation ongoing regarding timing for installation.	Completed	Operations Manager
3	Burdekin Falls Dam Clare Fairbairn Dam	BFD03 CLA03	Treated Water Storage	Biological Hazards – Algae, and Bacteria and Viruses	Annual inspection of elevated tank (reservoir) by drone.	FY2019/2020	No actions taken. Item to be added to the Annual Work Instructions.	Ongoing. FY2021/2022	Operations Manager
4	Clare Mutchilba	CLA02 MTC003	Source Water - WSS Irrigation Channel	Aerial spraying of pesticides over irrigation channel, from adjacent cane fields, can affect raw water quality and compliance with ADWG.	Commence annual raw water pesticide testing due to irrigation channel as raw water source.	FY2020/2021	No actions taken. Item to be added to the Annual Work Instructions. Ongoing testing requirement to be determined following review of pesticide results.	FY2021/2022	Storage Supervisor

RMIP Action No.	Scheme	Ref	Component	Hazard/Event	Improvement actions	Target date	Actions taken to date	Status and revised target date	Responsible Officer / Position
5	All	FBD02 MTC005	Water Treatment Plant – Activated Carbon Filter	Biological & chemical hazards - risk of THM's, E.coli or non-compliance with physical properties	Annual THM testing to establish a baseline and determine existing or emerging issues.	FY2019/2020	Annual THM testing completed at Burdekin, Clare and Fairbairn sites for FY2020/2021. THM testing was completed at Mutchilba in July 2021. All locations currently require Annual THM testing. THM testing has been added to Annual Work Instructions at all sites to ensure completion in accordance to monitoring program.	Completed. THM testing to be continued in accordance with DWQMP.	Storage Supervisor
6	Mutchilba	MTC004	Water Treatment Plant – Plant Bypass	Raw water diverted directly to the clear water storages.	Investigate removal of bypass valve.	FY2019/2020	This has been investigated, and no bypass currently exists.	Closed	Operations Manager
7	Mutchilba	MTC002	Source Water - WSS Irrigation Channel	High copper levels in the raw water due to copper sulphate dosing in the irrigation channel for Algal control	Undertake sampling for copper in the raw water during a high-risk period to determine baseline (i.e. concurrent with copper sulphate dosing in the WSS channel scheme).	FY2020/2021	Copper sulphate is dosed at 0.05ppm in accordance with APVMA Herbicide Product Label and DES Code of Practice. This dose rate is below the ADWG limit for copper and elevated copper levels are not expected in the raw water supply. Water quality monitoring is undertaken in the channel at the dose location during all copper sulphate treatments to monitor copper levels. The heavy metals monitoring frequency at Mutchilba will increase to a quarterly and the copper concentrations in the raw and treated water will be monitored.	Closed	Storage Supervisor

4 Verification Monitoring - Water Quality Information and Summary

The drinking water quality control parameters were developed from recommendations outlined in ADWG (2011). Key parameters for operator testing and water quality acceptance are identified in Table 3 (a): Drinking Water Quality Control Parameters. These parameters are tested at the WTP at a number of water quality sampling points.

Table 3 (a) – Drinking Water Quality Control Parameters

Parameter	Monitoring Frequency	Acceptable Limits
Residual chlorine (free) (Note 1)	Every 3 – 4 days	> 0.5 mg/L after 30 mins
Total chlorine	Every 3 – 4 days	< 5 mg/L
Raw Water pH	Every 3 – 4 days	N/A
Raw Water Turbidity	Every 3 – 4 days	N/A
Treated Water pH	Every 3 – 4 days	6.5 – 8.5
Treated Water Turbidity (Note 2)	Every 3 – 4 days	< 1 NTU
Aluminium (Note 3)	Weekly	< 0.2 mg/L

Note 1: The minimum acceptable residual chlorine (free) limit of 0.5 mg/L is not a specific requirement of the ADWG and has been applied by Sunwater as an internal operational check for disinfection performance. Although residual chlorine (free) is outlined in the DWQMP as a drinking water quality control parameter to monitor operational performance, verification of the treatment process and particularly disinfection is by the monthly micro bacteriological sampling.

Note 2: The acceptable limit of < 1 NTU for turbidity is based on effective chlorination as described in the ADWG and has been applied by Sunwater as an internal acceptable limit to verify the treatment performance and check disinfection.

Note 3: Aluminium testing only performed at sites that have Aluminium Sulfate dosing.

Microbiological control testing is also required to ensure compliance with ADWG as well as the standards in the Public Health Regulation 2005. The parameters and frequency of the monitoring is shown below in Table 3 (b): Microbiological control.

Table 3 (b) – Microbiological Control

Parameter	Monitoring Frequency	Acceptable Limits
E.Coli	Monthly	<1 CFU
Total Coliforms	Monthly	N/A – significant changes will be investigated
Total Plate Count	Monthly	N/A – significant changes will be investigated

Trihalomethanes (THMs) and heavy metals are tested annually to ensure compliance with ADWG and the standards in the Public Health Regulation 2005. The parameters and frequency of the monitoring is shown below in Table 3 (c): Trihalomethanes and Heavy Metal Testing.

Table 3 (c) – Trihalomethanes and Heavy Metal Testing

Parameter	Monitoring Frequency	Acceptable Limits
Trihalomethanes (THM)	Annual	< 0.25 mg/L
Zinc (Zn)	Annual	< 3 mg/L (Note 1)
Arsenic (As)	Annual	< 0.01 mg/L
Cadmium (Cd)	Annual	< 0.002 mg/L
Chromium (Cr)	Annual	< 0.05 mg/L
Copper (Cu)	Annual	< 2 mg/L
Nickel (Ni)	Annual	< 0.02 mg/L
Lead (Pb)	Annual	< 0.01 mg/L
Selenium (Se) (Note 2)	Annual	< 0.01 mg/L
Uranium (U) (Note 2)	Annual	< 0.017 mg/L

Note 1: The acceptable limit of <3 mg/L for zinc is not a specific requirement of the ADWG and has been applied by Sunwater as an internal operational check for WTP performance.

Note 2: Testing for Selenium and Uranium are applicable to Clare WTP only.

A summary of compliance with water quality criteria is displayed in Table 4 and 5. This includes the following information:

- parameter
- unit of measure
- total number of samples collected
- number of samples that did not meet the water quality criteria
- maximum concentration or count

The water quality results over the 2020/2021 financial year met the recommended health limits in the ADWG.

There were however several events where water quality characteristics exceeded the Sunwater acceptable limits. These events are outlined below.

Burdekin Falls TWS

- High thermotolerant coliform readings detected (1,300 CFU/100mL – Kitchen Tap (office) and 260 CFU/100mL – Lift Pump (WTP) on 03/03/2021). The event was notified to the regulator on the 09/03/2021. Refer to Section 5 for event details.

Clare TWS

- Three (3) samples where the free chlorine level was below the Sunwater acceptable limit of 0.5 mg/L, both likely related to the pipe burst on 21/10/2020. The event was notified to the regulator on the 21/10/2020. Refer to Section 5 for event details.
 - 1 free chlorine sample was below the acceptable limit at the Clare office of 0.4 mg/L on 22/10/2020.

- 2 free chlorine samples were below the acceptable limit at the Clare school of 0.4 mg/L on 22/10/2020 and 0.4 mg/L on 26/10/2020.

Fairbairn Dam TWS

- Five (5) samples where free chlorine was below the Sunwater acceptable limit of 0.5 mg/L. These results were not required to be notified to the regulator as free chlorine did not trigger acceptable limits and there were no microbiological or pathogen concerns.
 - 2 samples were recorded below the acceptable limit between 24/12/2020 to 26/12/2020, with a minimum recorded free chlorine of 0.3 mg/L.
 - 3 samples were recorded below the acceptable limit between 30/04/2021 to 5/05/2021, with a minimum recorded free chlorine of 0.2 mg/L.
- One (1) event where the treated water turbidity exceeded the Sunwater acceptable limit of 1 NTU, across 29 samples between 03/04/2021 and the end of the reporting period (30/06/2021). This event continued into the 2021/2022 reporting period. This event was notified to the regulator on the 06/04/2021. Refer to Section 5 for event details.

Mutchilba TWS

- Five (5) samples where free chlorine levels were below the Sunwater acceptable limit of 0.5mg/L. These results were not required to be notified to the regulator as chlorine did not trigger acceptable limits and there were no microbiological or pathogen concerns.
 - 1 sample was recorded below the limit on 30/09/2020 with a recorded free chlorine of 0.35 mg/L at the Mutchilba treated water tank.
 - 4 samples were recorded below the limit during the reporting period at the school, with a minimum recorded free chlorine of 0.33 mg/L.
- One (1) sample where the pH was below the Sunwater acceptable limit of 6.5, with a recorded sample of pH of 6.4 on 23/06/2021. This result was not required to be notified to the regulator as pH did not trigger acceptable limits and there were no microbiological or pathogen concerns.

Table 4 – Drinking water quality performance - verification monitoring

Scheme	Treated Water Parameter	Sampling Points	Units	No. of samples required to be collected (as per approved DWQMP)	No. of samples collected and tested	Water quality criteria (i.e DWQMP or ADWG health guideline value)	Min	Max	Average (Mean)	No. of non compliant samples	Comments
Burdekin Falls Dam	pH	WTP	-	Every 2-3 days	362	6.5-8.5	7.2	7.9	7.6	0	
	Turbidity	WTP	NTU		362	<1	0	0.6	0.1	0	
	Residual chlorine (free)	WTP, Office, Caravan Park (Note 1)	mg/L		362 at 3 sampling points (1086 Total)	>0.5 after 30 mins	0.50	3.00	1.58	0	
	Total chlorine				362 at 3 sampling points (1086 Total)	<5	0.60	3.50	1.84	0	
	E.coli	WTP	Cfu/100ml	Monthly	12	<1	< 1	< 1	< 1	0	
	Total Trihalomethanes (THM)	WTP, Office, Caravan Park (Note 1)	µg/L	Annually	1 at each sample point (3 Total)	<250	75	109	95.3	0	
	Arsenic (As)	WTP (Note 3)	mg/L	Annually	1	< 0.01	0.00076		0		
	Cadmium (Cd)					< 0.002	<0.0001		0		
	Chromium (Cr)					< 0.05	<0.0005		0		
	Copper (Cu)					< 2	0.0021		0		
	Lead (Pb)					< 0.01	<0.0001		0		
	Nickel (Ni)					< 0.02	0.00066		0		
	Zinc (Zn)					< 3	0.022		0		

Scheme	Treated Water Parameter	Sampling Points	Units	No. of samples required to be collected (as per approved DWQMP)	No. of samples collected and tested	Water quality criteria (i.e DWQMP or ADWG health guideline value)	Min	Max	Average (Mean)	No. of non compliant samples	Comments
Clare	pH	WTP	-	Every 2-3 days	365	6.5-8.5	7.1	8.2	7.7	0	
	Turbidity	WTP (Sand Filter)	NTU		365	<1	0.24	0.99	0.66	0	
	Residual chlorine (free)	WTP, Office, School, Pool (Note 1)	mg/L		365 at 4 sampling points (1460 Total)	>0.5 after 30 mins	0.40	2.50	1.17	3	October 2020 event: Regulator was notified on the 22/10/2020 regarding a pipe burst. Refer to Section 5
	Total chlorine				365 at 4 sampling points (1460 Total)	<5	0.50	0	1.35	0	
	E.coli	WTP	Cfu/10 0ml	Monthly	12	<1	< 1	0	< 1	0	
	Total Trihalomethanes (THM)	WTP, Office (Note 1)	µg/L	Annually	1 at each sample point (2 Total)	<250	48.4	55.2	51.8	0	
	Arsenic (As)	WTP (Note 3)	mg/L	Annually	1	< 0.01	0.0008		0		
	Cadmium (Cd)					< 0.002	<0.0001		0		
	Chromium (Cr)					< 0.05	<0.0005		0		
	Copper (Cu)					< 2	0.0064		0		
	Lead (Pb)					< 0.01	0.0004		0		
	Nickel (Ni)					< 0.02	<0.0005		0		
	Zinc (Zn)					< 3	0.035		0		
	Selenium (Se)					< 0.01	<0.0005		0		
	Uranium (U)					< 0.017	<0.0001		0		

Scheme	Treated Water Parameter	Sampling Points	Units	No. of samples required to be collected (as per approved DWQMP)	No. of samples collected and tested	Water quality criteria (i.e DWQMP or ADWG health guideline value)	Min	Max	Average (Mean)	No. of non compliant samples	Comments
Fairbairn Dam	pH	WTP	-	Every 2-3 days	201	6.5-8.5	6.89	7.98	7.63	0	
	Turbidity	WTP	NTU		209	<1	0.28	78.5	1.15	29	April 2021 event: Regulator was notified on the 06/04/2021 regarding turbidity levels > 1 NTU. Refer to Section 5.
	Residual chlorine (free)	WTP, Caravan Park (Note 1)	mg/L		210	>0.5 after 30 mins	0.20	3.00	1.47	5	No regulator notification required.
	Total chlorine				210	<5	0.50	3.50	1.94	0	
	E.coli	WTP, Caravan Park (Note 1)	Cfu/10 0ml	Monthly	12 at 2 sampling points (24 Total)	<1	< 1	< 1	< 1	0	
	Total Trihalomethanes (THM) (Note 2)	WTP, Caravan Park (Note 1)	µg/L	Annually	1 at each sample point (2 Total)	< 250	45	93	69	0	
	Arsenic (As)	WTP (Note 3)	mg/L	Annually	1	< 0.01	<0.001		0		
	Cadmium (Cd)					< 0.002	<0.0001		0		
	Chromium (Cr)					< 0.05	<0.001		0		
	Copper (Cu)					< 2	0.002		0		
	Lead (Pb)					< 0.01	<0.001		0		
	Nickel (Ni)					< 0.02	<0.001		0		
	Zinc (Zn)					< 3	0.002		0		

Scheme	Treated Water Parameter	Sampling Points	Units	No. of samples required to be collected (as per approved DWQMP)	No. of samples collected and tested	Water quality criteria (i.e DWQMP or ADWG health guideline value)	Min	Max	Average (Mean)	No. of non compliant samples	Comments
Mutchilba	pH	WTP, Town Water Tank, School (Note 1)	-	Every 2-3 days	57 at 3 sampling points (171 Total)	6.5-8.5	6.4	7.4	6.8	1	No regulator notification required.
	Turbidity		NTU		57 at 3 sampling points (171 Total)	<1	0	0	0	0	
	Residual chlorine (free)		mg/L		57 at 3 sampling points (171 Total)	>0.5 after 30 mins	0.33	2.70	1.40	5	No regulator notification required.
	Total chlorine				57 at 3 sampling points (171 Total)	<5	0.66	3.10	1.81	0	
	E.coli	WTP, School (Note 1)	Cfu/10 0ml	Monthly	12 at 2 sampling points (24 Total)	<1	< 1	0	< 1	0	
	Total Trihalomethanes (THM)	WTP, School (Note 1)	µg/L	Annually	1 at each sample point (2 Total)	< 250	21	22	21.5	0	
	Arsenic (As)	WTP (Note 3) (Note 4)	mg/L	Annually	1	< 0.01	0.0004		0		
	Cadmium (Cd)					< 0.002	<0.0001		0		
	Chromium (Cr)					< 0.05	<0.0002		0		
	Copper (Cu)					< 2	0.046		0		
	Lead (Pb)					< 0.01	0.0049		0		
	Nickel (Ni)					< 0.02	0.0015		0		
	Zinc (Zn)					< 3	0.106		0		

Notes:

- Note 1 - Samples from different locations of the site were combined for reporting (Refer to water quality parameters including pH, residual chlorine (free), total chlorine, turbidity, E.Coli and Trihalomethanes (THM)).
- Note 2 - Total Trihalomethanes (THM) not specifically reported by the laboratory for Fairbairn Dam WTP. THM measurement has been calculated from the sum of the individual THM constituents reported by the laboratory (i.e Chloroform, Bromodichloromethane, Dibromochloromethane and Bromoform).
- Note 3 - Heavy metal results are specific to the WTP sampling point. This is an individual sample result and minimum / maximum / average results are not applicable.
- Note 4 - Heavy metal results reported from sample collected in July 2021 at Mutchilba WTP (Refer to Section 3. Table 2 – RMIP Action No. 1).

Table 5 (a) - E. coli compliance at Burdekin Falls Dam WTP

Drinking water scheme: Burdekin Falls Dam WTP

Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	1	1	1	1	1	1	1	1	2	1	2	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	30	27	26	25	24	23	21	20	20	19	15	14
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 5 (b) - E. coli compliance at Clare WTP

Drinking water scheme: Clare WTP

Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	1	1	1	1	1	1	1	1	1	1	1	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	12	12	12	12	12	12	12	12	12	12	12	12
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 5 (c) - E. coli compliance at Fairbairn Dam WTP

Drinking water scheme: Fairbairn Dam WTP

Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	1	1	1	1	1	1	1	1	1	11	9	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	68	66	64	62	60	58	56	49	31	26	32	37
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 5 (d) - E. coli compliance at Mutchilba WTP

Drinking water scheme: Mutchilba WTP

Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	1	1	2	1	1	1	1	1	1	1	1	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	23	22	22	21	20	19	18	17	16	15	14	13
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

5 Incidents Reported to the Regulator

Three (3) notifications to the regulator were made between 1 July 2020 and 30 June 2021. These notifications were as follows:

- 21/10/2020 – Clare WTP – Pipe burst
- 03/04/2021 – Fairbairn Dam WTP – Turbidity > 1 NTU (event)
- 03/03/2021 – Burdekin Falls WTP – Significant change in thermotolerant coliform results

All microbiological testing undertaken during the financial year revealed that there were no instances where *Escherichia coli* (*E. Coli*) exceeded the acceptable limit of <1 CFU/100ml.

Event or detection of a parameter with no water quality criteria and corrective and preventive actions undertaken

For this reporting period, there were two (2) prescribed events (Clare WTP and Fairbairn Dam WTP) reported to the regulator as displayed in Table 6.

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

For this reporting period there was one (1) prescribed event (Burdekin Falls Dam WTP) reported to the regulator, as displayed in Table 6.

Table 6 – Incidents / Events reported to the regulator

Incident / Event date	Scheme / location	Parameter / issue	Preventive actions
Event 21 October 2020	Clare TWS	Pipe burst	<p>Water supply to the Clare township was interrupted on 21/10/2020 – 22/10/2020 due to a pipe burst between the WTP and town treated water storage tank. A failure of the town water supply rising main was identified as the cause of the loss of supply to the town due to the circumferential failure of a section of pipe. The water supply system was isolated to allow for pipe repairs whilst the WTP continued to operate, and treated water transferred via tanker to the water storage tank. The Regulator was notified of this event on the 21/10/2020.</p> <p>Corrective actions:</p> <ul style="list-style-type: none"> As a precaution, a boil water notice was issued on the 22/10/2020 to the residents who received drinking water from the Clare water supply. In addition, bottled drinking water was offered to residents and made available at the Sunwater office located in the township. The location of the pipe burst was identified, and the water supply pipeline was isolated to allow repairs to be undertaken to the pipe. Immediate corrective actions involved the installation of a pipe sleeve (clamp) to repair the section of cracked pipe and restore the water supply on the 22/10/2021. Permanent repairs were then undertaken by replacing the section of pipe on the 27/10/2020. The water supply was re-established, flushing was completed, and field testing verified that water quality results were acceptable allowing the re-supply of water to the township. <p>Preventative actions:</p> <ul style="list-style-type: none"> A risk assessment of the existing pipeline was undertaken to determine the risk of other pipe failures and identify preventative actions to minimise the reoccurrence of the incident. <p>Endorsement was received from the regulator on the 26/10/2020 to rescind the Boil water notice. This event was subsequently closed out on the 05/11/2020.</p>
Event 03 March 2021	Burdekin Falls Dam TWS	Significant change in thermotolerant coliform results	<p>Bacteriological sample results were received for Burdekin Falls Dam WTP indicating a sudden change in thermotolerant coliform results (detection of 1,300 CFU/100mL (Kitchen Tap - Office) and 260 CFU/100mL (Lift Pump - WTP)). The Water Supply Regulator & QLD Health were notified on the 09/03/2021 seeking advice as to whether there was an immediate risk to public health. QLD Health advised that consumers of the water should be advised of the high thermotolerant coliform results and recommend to boil water for consumption until further notice. The cause of the elevated thermotolerant coliform results were suspected to have been attributed to sample contamination as verification samples did not detect any microbiological parameters.</p>

Incident / Event date	Scheme / location	Parameter / issue	Preventive actions
			<p>Corrective actions:</p> <ul style="list-style-type: none"> The operator undertook external visual inspection of the plant and ground-level tanks (there were no signs of any large gaps, missing overflow mesh or open lids). Visual inspection of the elevated storage tanks was conducted by binoculars - no signs of open lids or large gaps. The filter modules were backwashed to produce freshly chlorinated water following the power outage in the morning and turned-on sprinklers to assist with raising the chlorine levels in the reticulation network. The customers, residents and visitors at the Caravan Park were notified on the 09/03/2021, regarding the water being non-potable and to boil the water until further notice. The operator also provided bottled water. Operator collected sample on 10/03/2021 and delivered sample to Symbio Labs in Townsville for retesting. Boil Water Alert Notice was issued on the 10/03/2021 to residents and visitors who received drinking water from the Burdekin Dam water supply. Verification sample results were received on the 12/03/2021 which indicated no thermotolerant coliform or E. coli being detected. <p>Preventative actions:</p> <ul style="list-style-type: none"> Operators attended a Training Refresher Course conducted by Water Treatment Services (Townsville, QLD) on 24/03/2021 to ensure operators are reminded on the sample collection process with due regard to QA/QC and decontamination measures. <p>Endorsement was received from the regulator on the 12/03/2021 to rescind the Boil water notice. This event was subsequently closed out on the 22/03/2021.</p>
Event 03 April 2021	Fairbairn Dam TWS	Turbidity > 1 NTU	<p>Elevated turbidity in the treated water was detected at Fairbairn Dam WTP on the 03/04/2021. The Incident Management Team deemed the high turbidity levels in the treated water at Fairbairn Dam WTP as an event and notified the Regulator on the 06/04/2021. The operator also drained water from the ground level tank and elevated storage tank (to remove the turbid water) and replenished it with new treated water. However, this turnover of treated water likely stirred up sediment in the tanks, resulting in a turbidity result of 5.54 NTU (recorded on 06/04/2021).</p> <p>Corrective actions:</p> <ul style="list-style-type: none"> Boil Water Alert Notice was issued on the 06/04/2021 to customers and residents who receive drinking water from the Fairbairn Dam water supply.

Incident / Event date	Scheme / location	Parameter / issue	Preventive actions
			<ul style="list-style-type: none"> Completed daily testing at the WTP and Caravan Park for pH, turbidity, Total and Free Chlorine. Backwashed filters and flushed lines as required. Completed a service kit seal replacement on the coagulant dosing pump on the 05/04/2021 Drained water from the ground level tank and elevated storage tank (to remove the turbid water) and replenished it with new treated water on the 06/04/2021. Existing coagulant dosing pump was replaced with a new dosing pump (installed 7/05/2021) Existing filter backwash pump was replaced with a new filter backwash pump (installed 25/05/2021) Filter-to-waste sequence implemented at start-up of treatment plant (until treated water turbidity below 1 NTU) then directed to round treated water storage tank <p>Preventative actions:</p> <ul style="list-style-type: none"> An engineering control valve to be installed to enable consistent flow of raw feed water (6 L/sec) into the treatment plant Clarifier be allowed to build up a solids contact sludge blanket to improve flocculation and reduce solids load on filters Sample points be added to each filter to enable samples to be collected (to monitor filter performance) Add trending on SCADA from the output of Filtered Water Turbidity Analyser and Chlorine Analyser <p>Endorsement was received from the regulator on the 07/09/2021 to rescind the Boil water notice as the water quality parameters were within Sunwater acceptable limits.</p>

6 Customer Complaints

Sunwater is required to report on the number of complaints, general details of complaints, and the responses undertaken.

Throughout the 2020/2021 reporting period, 1 complaint was received as follows:

- 23/10/2020 – Clare WTP: Customer advised of water pressure issues being experienced at the premises. Sunwater were requested to rectify. Sunwater responded confirming that Sunwater are responsible to address water supply issues up to the water meter and advised the customer to contact a local plumber to inspect/rectify the water pressure issues being experienced at the premises.

During 2020/2021 reporting period, there were no suspected or confirmed cases of illness arising from the water supply system.

7 DWQMP Review Outcomes

No review was conducted during the reporting period 01/07/2020 to 30/06/2021.

8 DWQMP Audit Findings

No audit was conducted during the reporting period 01/07/2020 to 30/06/2021.