



Drinking Water Quality Management Plan Annual Report 2021 - 2022

An appropriate citation for this paper is:

Drinking Water Quality Management Plan Annual Report 2021-2022 for Sunwater.

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LGA covered by this plan:

Mareeba Shire Council, Charters Towers Regional Council, Burdekin Shire Council, Central Highlands Regional Council

Water Supply Schemes covered by this plan:

North Queensland

- Burdekin Haughton WSS – Burdekin Falls Dam TWS
- Burdekin Haughton WSS – Clare TWS

Far North Queensland

- Mareeba Dimbulah WSS – Mutchilba TWS

Central Queensland

- Nogoa Mackenzie WSS – Fairbairn Dam TWS

This report has been prepared in accordance with the Queensland Government – Department of Regional Development, Manufacturing and Water 'Guideline for the preparation, review and audit of drinking water quality management plans, Including Supporting Information, Version 3, 1 October 2022' Drinking Water Quality Management Plan Report Guidance Note.

Delivering value through water solutions for today and tomorrow

Sunwater is Queensland's largest bulk water service provider, currently owning and managing water infrastructure assets with a replacement value of around \$13 billion and supplying approximately 40 per cent of all water used commercially in Queensland.

Sunwater owns and manages a regional network of bulk water supply infrastructure, supporting more than 5000 customers in the agriculture, local government, mining, power and industrial sectors.

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Document Information

Title	Drinking Water Quality Management Plan Annual Report
Service provider	Sunwater SPID: 204
Reporting Period	1 July 2021 to 30 June 2022

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Contents

1	Introduction	5
2	Summary of scheme operated	6
3	DWQMP Implementation	7
4	Operational and verification monitoring – water quality information and summary	14
5	Incidents Reported to the Regulator	27
6	Customer complaints	32
7	DWQMP review outcomes	33
8	DWQMP Audit findings.....	35

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 2021 – 30 June 2022.

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 scheme operated

This DWQMP annual report applies to four (4) drinking water schemes owned and operated by Sunwater across Queensland. A summary of this scheme is presented in Table 1.

Table 1: Summary of schemes

Scheme name	Water Source	Treatment processes	Treatment capacity	Towns supplied
Burdekin Falls Dam WTP	Burdekin Falls Dam	Primary sedimentation/clarification via a lamella tube settler clarifier; sand media filtration; and disinfection with chlorine dosing (sodium hypochlorite). Addition of WTS8 CC20H polymer to the raw water to assist the flocculation process.	1.44 ML/d	Two recreational facilities (non-potable), five Sunwater houses/offices, 1 caravan park.
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 WTS8 CC20H polymer to the raw water to assist the flocculation process (automated).	0.54 ML/d	One recreational facility, one Sunwater house/office, thirty-six private residences, a school, community club, a shop and a public swimming pool.
Mutchilba WTP	Tinaroo Dam via Mareeba Irrigation Channel System	Primary clarification by hydro cyclone (following flocculation/coagulation) primary media filtration; secondary filtration (with activated carbon filtration for organics removal; and disinfection with chlorine dosing (sodium hypochlorite). Addition of Aluminium sulphate coagulant to the raw water to assist the flocculation process (automated).	0.123 ML/d	Fifteen private residences and three commercial / educational buildings.
Fairbairn Dam WTP	Fairbairn Dam	Clarification via two standard up-flow clarifiers; dual pressure media filtration; and disinfection with chlorine dosing (sodium hypochlorite). Addition of All Clear 300 coagulant to the raw water to assist the flocculation process (automated).	0.43 ML/d	Two recreational facilities (non-potable), three Sunwater houses/offices, nine private residences and four commercial/educational facilities.

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 (RMIP)

Appendix D of the approved DWQMP outlines the RMIP 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 and is closed. Heavy metals testing was completed as follows:
 - Burdekin Falls Dam, Clare and Fairbairn Dam sites in FY2020/2021; and Mutchilba in July 2021.
 - All sites in FY2021/2022. Additional metals testing was undertaken at Burdekin Falls Dam during early July 2022 to include the WTP outlet. Heavy metal testing continued monthly at Mutchilba during July – December 2021 followed by quarterly testing during January – June 2022 (i.e. January and April 2022) in response to elevated Total Lead result identified in July 2021.

Heavy metals testing to be continued annually at Burdekin, Clare and Fairbairn WTP's in the interim; and quarterly at Mutchilba WTP. Heavy metal testing is proposed to be undertaken quarterly at all sites following approval of Sunwater amended DWQMP.

- Action No. 2 (Investigate installation of online monitoring equipment at Burdekin Falls Dam) has been completed but remains open. Jacobs completed a WTP Replacement Investigation Report (July 2020) and recommended online measurement for specific parameters. Further investigation ongoing regarding timing for installation.
- Action No. 3 (Annual inspection of elevated tank by drone at Burdekin Falls Dam, Clare and Fairbairn Dam) has been completed and is closed. Annual inspection of elevated tanks by drone was completed in FY2021/2022. Inspection to be continued annually.
- Action No. 4 (Commence annual raw water pesticide testing at Clare and Mutchilba) has been completed and is closed. Annual pesticide testing completed in FY2021/2022. Pesticide testing to be incorporated into the operational monitoring program as an ongoing annual testing requirement.
- Action No. 5 (Commence Trihalomethane (THM) testing at all sites) has been completed and is closed. THM testing was completed as follows:
 - Burdekin Falls Dam, Clare and Fairbairn Dam sites in FY2020/2021; and Mutchilba in July 2021.
 - Clare, Fairbairn Dam and Mutchilba during FY2021/2022; and Burdekin Falls Dam in July 2022.

THM testing to be continued annually at all sites in the interim, however THM testing is proposed to be undertaken quarterly at all sites following approval of Sunwater amended DWQMP.

- Action No. 6 (Investigate removal of bypass valve at Mutchilba) has been completed and is closed. An investigation was completed in FY2020/2021 and 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 completed and is now closed, due to the current monitoring program specified

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	Source Water	Heavy Metal contamination of source water	Commence annual heavy metal sampling to establish baseline and determine if there are any existing or emerging issues.	FY2019/2020	Annual heavy metal testing completed as follows: All sites for FY2020/2021 and Mutchilba during July 2021 due to scheduling issue. All sites for FY2021/2022. Additional metals testing was undertaken at Burdekin Falls Dam during early July 2022 to include the WTP. Elevated Total Lead result identified at Mutchilba treated water sampling location in July 2021 however suspected sampling contamination issue. Heavy metal testing continued monthly at Mutchilba for August – December 2021 followed by quarterly testing during January – June 2022 (i.e. January and April 2022) in response to elevated Total Lead result. Total Lead concentrations were detected <0.01mg/L during all sampling events. Heavy metal testing has been added to Work Instructions at all sites to ensure completion in accordance to monitoring program. Heavy metals testing to be continued annually at	Completed in FY2020/2021 and 2021/2022. Action closed.	Storage Supervisor
		CLA01							
		FBD01							
		MTC001							

RMIP Action No.	Scheme	Ref	Component	Hazard/Event	Improvement actions	Target date	Actions taken to date	Status (and revised target date)	Responsible Officer / Position
							Burdekin, Clare and Fairbairn WTP's in the interim; and quarterly at Mutchilba WTP. Heavy metal testing is proposed to be undertaken quarterly at all sites following approval of Sunwater amended DWQMP.		
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 in FY2020/2021. Action open.	Operations Manager
3	Burdekin Falls Dam	BFD03	Treated Water Storage	Biological Hazards – Algae, and Bacteria and Viruses	Annual inspection of elevated tank (reservoir) by drone.	FY2019/2020	Annual inspection of elevated tanks by drone completed in FY2021/2022. Inspection to be continued annually.	Completed in FY2021/2022. Action closed.	Operations Manager
	Clare	CLA03							
	Fairbairn Dam	FBD02							
4	Clare	CLA02	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	FY2020/2021	Annual pesticide testing completed in FY2021/2022. Pesticide testing to be incorporated into the operational monitoring program as an ongoing annual testing requirement.	Completed in FY2021/2022. Action closed.	Storage Supervisor
	Mutchilba	MTC003							

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	BFD01	Water Treatment Plant – Activated Carbon Filter	Biological & chemical	Annual THM testing to establish a baseline and determine existing or emerging issues.	FY2019/2020	Annual THM testing completed as follows: <ul style="list-style-type: none"> Burdekin Falls Dam, Clare and Fairbairn for FY2020/2021; and Mutchilba during July 2021 due to scheduling issue. All sites for FY2021/2022 and Burdekin Falls Dam during July 2022 due to scheduling issue. THM testing has been added to Annual Work Instructions at all sites to ensure completion in accordance to monitoring program. THM testing to be continued annually at all sites in the interim, however THM testing is proposed to be undertaken quarterly at all sites following approval of Sunwater amended DWQMP.	Completed in FY2020/2021 and FY2021/2022. Action closed.	Storage Supervisor
		CLA01							
		FBD01							
		MTC001							
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.	Completed in FY2020/2021. Action closed.	Operations Manager

RMIP Action No.	Scheme	Ref	Component	Hazard/Event	Improvement actions	Target date	Actions taken to date	Status (and revised target date)	Responsible Officer / Position
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 to APVMA Herbicide Product Label and DES Code of Practice. This dose rate is below the ADWG's for copper and as a result elevated copper concentrations 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 concentrations. Monitoring of copper was tested monthly during the July – December 2021 period followed by quarterly testing during January – June 2022 period (i.e. January and April 2022). Monitoring of heavy metals (including copper) to be increased to a minimum quarterly frequency to monitor copper concentrations in the raw and treated water.	Completed. Action closed.	Storage Supervisor

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

No formal changes were made to the operational monitoring program during the FY2021/2022 reporting period, although testing of heavy metals has been increased to a quarterly frequency at Mutchilba.

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 chemistry (aesthetics) and residual chlorine, monthly testing of microbiology, testing of heavy metals (annual – Burdekin Falls Dam, Clare and Fairbairn Dam; quarterly – Mutchilba) and annual testing of 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 FY2021/2022 reporting period.

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

4 Operational and 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: Drinking Water Quality Control Parameters. These parameters are tested at the WTP at a number of water quality sampling points.

Table 3: 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 verified 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 critical limit to verify the treatment performance and check disinfection.

Note 3: Aluminium testing only performed at Mutchilba WTP as this scheme undertakes aluminium sulfate dosing.

Microbiological control testing is also required to ensure compliance with ADWG and the standards in the Public Health Regulation 2005. The parameters and frequency of the monitoring is shown in Table 4: Microbiological control.

Table 4: Microbiological Control

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

Trihalomethanes 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 5: Trihalomethanes and Heavy Metal Testing.

Table 5: Trihalomethanes and Heavy Metal

Parameter	Monitoring Frequency	Acceptable Limits
Trihalomethanes (THM)	Annually	<0.25 mg/L
Arsenic (As)	Annually (Note 1)	<0.01 mg/L
Cadmium (Cd)	Annually (Note 1)	<0.002 mg/L
Chromium (Cr)	Annually (Note 1)	<0.05 mg/L
Copper (Cu)	Annually (Note 1)	<2 mg/L

Parameter	Monitoring Frequency	Acceptable Limits
Nickel (Ni)	Annually (Note 1)	<0.02 mg/L
Lead (Pb)	Annually (Note 1)	<0.01 mg/L
Zinc (Zn)	Annually (Note 1)	<3 mg/L (Note 2)
Selenium (Se) (Note 3)	Annually	<0.01 mg/L
Uranium (U) (Note 3)	Annually	<0.017 mg/L

Note 1: Heavy metals were tested annually at Burdekin WTP, Clare WTP and Fairbairn WTP. In comparison, heavy metals were tested at Mutchilba WTP monthly during period July – December 2021 followed by quarterly testing during January – June 2022 (i.e. January and April 2022) in response to July 2021 Lead result >0.01 mg/L ADWG.

Note 2: The acceptable limit of <3 mg/L for zinc is not a health limit and is rather an Aesthetic Limit of the ADWG that has been applied by Sunwater as an internal operational check for WTP performance.

Note 3: Testing for Selenium and Uranium are applicable to Clare WTP only.

A summary of compliance with water quality criteria is displayed in **Error! Reference source not found.** – 11. 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 during the 2021/2022 financial year exceeded the recommended health limits in the ADWG on two occasions:

- Total Chlorine >5 mg/L, and
- Total Lead >0.01 mg/L

All other water quality results met the health limits in the ADWG, however there were several events where water quality characteristics exceeded the Sunwater operational critical limits/acceptable limits.

These events are outlined in Table 6. Refer to Section 5 for details on events reported to the Regulator in the reporting period.

Table 6: Summary of Events during the reporting period

Site	Parameter	Critical Limit	Result	Date	Sample Location	Event
Burdekin Falls Dam TWS	Turbidity	>1 NTU	1.5 – 4 NTU	07/02/2022 to 12/02/2022	WTP and Office	Regulator notified on 09/02/2022
	Free Chlorine	<0.2 mg/L	0.1 mg/L	10/02/2022	WTP	
	Total Chlorine	>5 mg/L	5.7 mg/L			
Clare TWS	Turbidity	>1 NTU	10 NTU	12/02/2022	WTP	Regulator notified on 12/02/2022
Fairbairn	Turbidity	>1 NTU	Twelve (12) samples with a maximum turbidity level recorded of 8.5 NTU	03/07/2021 to 11/09/2021	WTP, Caravan Park	Continuation of prior event on 03/04/2021. Regulator notified on 06/04/2021
			1.1 – 5.78 NTU	10/03/2022		Regulator notified on 10/03/2022
Mutchilba	Lead	>0.01 mg/L	0.021 mg/L	14/07/2021	WTP	Regulator notified on 21/07/2022

Table 7: Drinking water quality performance for Glenlyon Dam Scheme - 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 3-4 days	361 at 1 sampling point (361 Total)	6.5-8.5	7.1	7.8	7.5	0	
	Turbidity	WTP	NTU		358 at 1 sampling point (358 Total)	<1	0.03	3.20	0.22	3	February 2022 event: Regulator notified on 09/02/2022 regarding the turbidity >1 NTU. Refer to section 5.
	Residual chlorine (free)	WTP, Office, Caravan Park (Note 1)	mg/L		357 at 3 sampling points (1,071 Total)	<0.5 after 30 mins	0.10	5.00	1.59	1	One exceedance below critical limit (<0.2 mg/L) during February 2022 turbidity event.
	Total chlorine				357 at 3 sampling points (1,071 Total)	<5	0.30	5.70	1.85	1	One exceedance above critical limit (>5 mg/L) during February 2022 turbidity event.
	E.coli	WTP	CFU/ 100ml	Monthly	15 at 1 sampling point (15 Total) (Note 2)	<1	<1	<1	<1	0	
	Arsenic (As)	WTP Lift Pump, WTP	mg/L								

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
	Cadmium (Cd)	Outlet, Kitchen Tap (Note 1)			1 at 3 sampling points (3 Total) (Note 3)	< 0.002	<0.0001	<0.0001	<0.0001	0	
	Chromium (Cr)					< 0.05	<0.001	0.018	0.006	0	
	Copper (Cu)					< 2	0.001	0.009	0.004	0	
	Lead (Pb)					< 0.01	<0.001	0.004	0.001	0	
	Nickel (Ni)					< 0.02	<0.001	0.012	0.004	0	
	Zinc (Zn)					< 3	0.022	0.034	0.023	0	
	Trihalomethanes (THM)	WTP	µg/L	Annually	1 at 1 sampling point (1 Total) (Note 4)	<250	76	76	76	0	
Clare	pH	WTP	-	Every 3-4 days	361 at 1 sampling point (361 Total)	6.5-8.5	7.0	8.4	7.7	0	
	Turbidity	WTP	NTU		361 at 1 sampling point (361 Total)	<1	0.19	2.23	0.65	1	February 2022 event: Regulator notified on 12/02/2022 regarding the turbidity >1 NTU. Refer to section 5.
	Residual chlorine (free)	WTP, Office, School, Pool (Note 1)	mg/L		361 at 4 sampling points (1,444 Total)	<0.5 after 30 mins	0.50	0.60	1.31	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
	Total chlorine				361 at 4 sampling points (1,444 Total)	<5	0.59	0.90	1.47	0	
	E.coli	WTP	CFU/100ml	Monthly	13 at 1 sampling point (13 Total) (Note 5)	<1	<1	<1	<1	0	
	Arsenic (As)	WTP (Note 6)	mg/L	Annually	1 at 1 sampling point (1 Total)	< 0.01	0.001			0	
	Cadmium (Cd)					< 0.002	<0.0001			0	
	Chromium (Cr)					< 0.05	<0.001			0	
	Copper (Cu)					< 2	0.004			0	
	Lead (Pb)					< 0.01	<0.001			0	
	Nickel (Ni)					< 0.02	<0.001			0	
	Zinc (Zn)					< 3	0.028			0	
	Selenium (Se)					< 0.01	<0.01			0	
	Uranium (U)					< 0.017	<0.001			0	
	Trihalomethanes (THM)	WTP (Note 6)	µg/L	1	1 at 1 sampling point (1 Total)	<250	65			0	
Fairbairn Dam	pH	WTP	-	Every 3-4 days	192 at 1 sampling point (192 Total)	6.5-8.5	7.0	7.8	7.5	0	
	Turbidity	WTP	NTU		192 at 1 sampling point (192 Total)	<1	0.14	8.50	0.66	13	April 2021 event: Regulator notified on

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
											03/04/2021 regarding the turbidity >1 NTU. Refer to section 5. March 2022 event: Regulator notified on 10/03/2022 regarding the turbidity >1 NTU. Refer to section 5.
	Residual chlorine (free)	WTP, Caravan Park (Note 1)	mg/L		193 Total	<0.5 after 30 mins	0.50	3.20	1.81	0	
	Total chlorine				192 Total	<5	0.80	3.60	2.19	0	
	E.coli		CFU/100ml	Monthly	29 at 2 sampling points (58 Total) (Note 7)	<1	<1	<1	<1	0	
	Arsenic (As)	WTP (Note 6)	mg/L	Annually	1 at 1 sampling point (1 Total)	< 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	

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	Zinc (Zn)					< 3	<0.005			0	
	Trihalomethanes (THM) (Note 8)	WTP, BTM Park/Rec Area, Caravan Park, Kitchen Tap (Note 1)	µg/L	Annually	1 at 4 sampling points (4 Total)	< 250	40	44.5	49	0	
	pH	WTP, Tank, School (Note 1)	-	Every 3-4 days	52 at 3 sampling points (156 Total)	6.5-8.5	6.5	7.7	6.9	0	
	Turbidity		NTU		52 at 3 sampling points (156 Total)	<1	0.00	0.63	0.06	0	
	Residual chlorine (free)		mg/L		52 at 3 sampling points (156 Total)	<0.5 after 30 mins	0.54	2.50	1.34	0	
	Total chlorine				52 at 3 sampling points (156 Total)	<5	0.73	2.90	1.67	0	
	E.coli	WTP, School (Note 1)	CFU/100ml	Monthly	13 Total	<1	<1	<1	<1	0	
	Arsenic (As)	WTP, School (Note 1)	mg/L	Annually	1 at 1 sampling point, 7 at 2 sampling points (15 Total) (Note 9)	< 0.01	0.0002	0.0008	0.0004	0	
	Cadmium (Cd)					< 0.002	<0.0001	<0.0001	<0.0001	0	
	Chromium (Cr)					< 0.05	<0.0005	<0.0005	<0.0005	0	
	Copper (Cu)					< 2	0.001	0.033	0.0045	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
	Lead (Pb)					< 0.01	0.0007	0.021	0.0014	1	July 2022 event: Regulator notified on 21/07/2022 regarding Total Lead >0.01 mg/L. Refer to section 5.
	Nickel (Ni)					< 0.02	<0.0005	0.0025	0.0002	0	
	Zinc (Zn)					< 3	<0.008	0.243	0.018	0	
	Trihalomethanes (THM)	WTP, Town Water Tank, School	µg/L	Annually	1 at 3 sampling points (3 Total)	< 250	<5	30	17	0	

Note 1: Samples from different locations at the site were combined for reporting (Refer to water quality parameters including pH, turbidity, residual chlorine (free), total chlorine, E.Coli, Heavy metals and Trihalomethanes (THM)).

Note 2: Additional Microbiological samples were collected in February 2022 due to the turbidity event at Burdekin Falls Dam WTP.

Note 3: Heavy metals results reported for Burdekin Falls Dam WTP also includes the sample result from the WTP collected in July 2022 (Refer to Section 3. Table 2 – RMIP Action No. 1).

Note 4: Trihalomethane result reported from sample collected in July 2022 from Burdekin Falls Dam WTP (Refer to Section 3. Table 2 – RMIP Action No. 5).

Note 5: Additional microbiological samples were collected in February 2022 due to the turbidity event at Clare WTP.

Note 6: Results are represented by an individual sample result. Minimum, maximum and average results are not applicable.

Note 7: 58 Microbiological samples were collected during the reporting period due to the turbidity events at Fairbairn Dam WTP.

Note 8: Total Trihalomethanes (THM) not specifically reported by the laboratory. 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 9: Heavy metals were tested at Mutchilba WTP monthly during period July – December 2021 followed by quarterly testing during January – June 2022 (i.e. January and April 2022) in response to July 2021 Lead result >0.01 mg/L ADWG.

Table 8: E. coli compliance**Drinking water scheme: Burdekin Falls Dam WTP**

Year 2021 – 2022												
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	1	1	1	1	1	1	1	4	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 (Note 2)	14	14	14	14	14	14	14	17	16	16	15	15
No. of failures for previous 12-month period	0											
% of samples that comply	100.0%											
Compliance with 98% annual value (Note 1)	Yes											

Note 1: The Public Health Regulation 2005 (the regulation) requires that 98 per cent of samples taken in a 12-month period should contain no E. Coli. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

Note 2: This requirement comes into effect once you have 12 months data and should be assessed every month

Table 9: E. coli compliance**Drinking water scheme: Clare WTP**

Year 2021 – 2022												
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	1	1	1	1	1	1	1	2	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 (Note 2)	12	12	12	12	12	12	12	13	13	13	13	13
No. of failures for previous 12-month period	0											
% of samples that comply	100.0%											
Compliance with 98% annual value (Note 1)	Yes											

Note 1: The Public Health Regulation 2005 (the regulation) requires that 98 per cent of samples taken in a 12-month period should contain no E. Coli. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

Note 2: This requirement comes into effect once you have 12 months data and should be assessed every month

Table 10: E. coli compliance**Drinking water scheme: Fairbairn Dam WTP**

Year 2021 – 2022												
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	18	16	4	2	2	2	2	2	3	2	2	3
No. of samples collected in which E. coli is detected (i.e., a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12-month period (Note 2)	54	69	72	73	74	75	76	77	79	70	63	58
No. of failures for previous 12-month period	0											
% of samples that comply	100.0%											
Compliance with 98% annual value (Note 1)	Yes											

Note 1: The Public Health Regulation 2005 (the regulation) requires that 98 per cent of samples taken in a 12-month period should contain no E. Coli. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

Note 2: This requirement comes into effect once you have 12 months data and should be assessed every month

Table 11: E. coli compliance**Drinking water scheme: Mutchilba WTP**

Year 2021 – 2022												
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	18	16	4	2	2	2	2	2	3	2	2	3
No. of samples collected in which E. coli is detected (i.e., a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12-month period (Note 2)	13	13	12	12	12	12	12	12	12	12	13	13
No. of failures for previous 12-month period	0											
% of samples that comply	100.0%											
Compliance with 98% annual value (Note 1)	Yes											

Note 1: The Public Health Regulation 2005 (the regulation) requires that 98 per cent of samples taken in a 12-month period should contain no E. Coli. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

Note 2: This requirement comes into effect once you have 12 months data and should be assessed every month

5 Incidents Reported to the Regulator

Four (4) notifications to the Regulator were made between 1 July 2021 and 30 June 2022. These notifications were as follows:

- 14/07/2021 – Mutchilba WTP – Metals (Lead) > 0.01 mg/L
- 07/02/2022 – Burdekin Falls Dam WTP – Turbidity >1 NTU (event)
- 12/02/2022 – Clare WTP – Turbidity >1 NTU (event)
- 10/03/2022 – Fairbairn Dam WTP – Turbidity >1 NTU (event)

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

For this reporting period, there were two (3) prescribed events (Burdekin Falls Dam WTP, Clare WTP and Fairbairn Dam WTP) reported to the regulator as displayed in Table 12.

Non-compliances with the water quality – drinking water criteria

For this reporting period, there was one (1) prescribed event (Mutchilba WTP) reported to the regulator as displayed in Table 12.

Table 12: Incidents / Events reported to the regulator

Incident / Event date	Scheme / location	Parameter / issue	Summary and Preventive actions
Event 14/07//2021	Mutchilba WTP	Lead > 0.01 mg/L	<p>Treated water sample collected at Mutchilba WTP on 14/07/2021 returned a total lead result of 0.021mg/L on the 21/07/2021 which was above the ADWG health limits (Total lead limit <=0.01mg/L). Verbal notification was provided to the Water Supply Regulator on 21/07/2021 seeking health advice from QLD Health. A meeting was held on 22/07/2021 between Sunwater, Water Supply Regulator and QLD Health (Tropic Public Health Department) to review the NATA laboratory results and discuss potential risk to public health due to lead detection. It was noted by QLD Health that there was insufficient data at this point to determine risk and based on this advice, a public health advisory was not issued at this time. The following actions were subsequently completed regarding this event.</p> <p><u>Corrective actions</u></p> <ul style="list-style-type: none"> Collection of additional samples on the 22/07/2021 (raw water, treated water and reticulation supply) and verification testing for total lead at a NATA laboratory. The re-test results indicated that the Total Lead levels were below the ADWG guideline health limit and were compliant (potentially indicating suspected sampling contamination for the previous sample collected on 14/07/2021). Determination of any point sources of potential lead contamination at the WTP or at the treated water sample collection point <p><u>Preventative actions</u></p> <ul style="list-style-type: none"> Upon further investigation, it was identified by the operator that the sample line for treated water sample collection was comprised of PVC poly line with a brass tap. The brass tap was identified as a possible source of lead, and as a result the brass tap was replaced with a stainless-steel tap week ending 6 August 2021. Update to the operational protocol and associated documentation to include flushing of sample lines for a sufficient period of time (i.e. 5 mins) prior to collection of total metal samples at treated water and reticulation supply sample locations. Update to the heavy metals sampling program which comprised of monthly sampling for period August – December 2021 followed by quarterly sampling thereafter. <p>This event was subsequently resolved, and the event closed on the 04/08/2021.</p>
Event 07/02/2022	Burdekin Falls Dam WTP	Turbidity >1 NTU	<p>High turbidity was detected at the Clear Water Storage Tank 1 (2.5 NTU) and at the Office (1.5 NTU) on the 07/02/2022 and 4 NTU at the Clear Water Storage Tank 1 on the 09/02/2022. The elevated turbidity results were identified to have been caused by a build-up of fine silt and debris in the clear water storage tank. The Water Supply Regulator was notified of this event on the 09/02/2022. The following actions were subsequently completed regarding this event.</p>

Incident / Event date	Scheme / location	Parameter / issue	Summary and Preventive actions
			<p><u>Corrective actions</u></p> <ul style="list-style-type: none"> As a precaution, a boil water notice was issued on the 10/02/2022 to the residents who received drinking water from the Burdekin Falls Dam water supply. The boil water notice advised all residents and visitors to boil their tap water used for drinking following an issue at the Burdekin Falls dam water supply which resulted in elevated turbidity. The clear water storage tank were cleaned, and additional scouring and flushing occurred of the treated water tank reservoirs and reticulation network Microbiological samples were collected on the 16/02/2022 and 17/02/2022 and sent to a NATA laboratory for microbiological analysis. The results indicated nil detection of E.coli. Operational monitoring of pH, turbidity total and free chlorine in the treated water and reticulation supply. Turbidity was recorded <1 NTU since the 12/02/2022 and the free chlorine >0.5 mg/L indicating sufficient disinfection. <p><u>Preventative actions</u></p> <ul style="list-style-type: none"> Review and update to the Maintenance Program to ensure that the clear water storage tanks are drained and cleaned more frequently – i.e. annually (12 monthly). Internal training and increased awareness to ensure that new operators are aware of the maintenance requirements associated with the clear water storage tanks <p>This event was subsequently resolved, and the event closed on the 02/03/2022.</p>
Event 12/02/2022	Clare WTP	Turbidity >1 NTU	<p>Clare township residents reported cloudiness in the tap water on the 12/02/2022. Turbidity was measured at 10 NTU at the Treated Water Storage Tank. The cause was identified as a faulty flow switch used to start the Clare WTP treatment process upon detection of flow from the raw water pumps. Since the flow switch faulted, raw water was allowed to pass through the clarifiers (without coagulant dosing), the sand filters and to the Treated Water Storage Tank (without chlorine dosing). The Water Supply Regulator was notified of this event on the 12/02/2022.</p> <p>The following actions were subsequently completed regarding this event.</p> <p><u>Corrective actions</u></p> <ul style="list-style-type: none"> As a precaution, a boil water notice was issued on the 12/02/2022 to the residents who received drinking water from the Clare water supply. The boil water notice advised all residents and visitors to boil their tap water used for drinking following an issue at the Clare water supply which resulted in water being produced with elevated turbidity. The treated water storage tank was cleaned, and the reticulation town water mains were flushed.

Incident / Event date	Scheme / location	Parameter / issue	Summary and Preventive actions
			<ul style="list-style-type: none"> Microbiological samples were collected on the 15/02/2022 and 16/02/2022 and sent to a NATA laboratory for microbiological analysis. The results indicated nil detection of E.coli. Operational monitoring of pH, turbidity total and free chlorine in the treated water and reticulation supply. Turbidity was recorded <1 NTU since the 15/02/2022 and the free chlorine >0.5 mg/L indicating sufficient disinfection. <p><u>Preventative actions</u></p> <ul style="list-style-type: none"> The flow switch was replaced on the 12/02/2022. Procurement of a secondary flow switch as a backup and investigation of telemetry to issue an alarm to the operations team. <p>This event was subsequently resolved, and the event closed on the 02/03/2022.</p>
Event 10/03/2022	Fairbairn Dam WTP	Turbidity >1 NTU	<p>Turbidity detected at the Elevated Water Storage Tank (5.78 NTU) on the 10/03/2022. The cause of the turbidity issue was because of low water storage levels in the treated water storage tank and the elevated storage tank due to the raw water pumps undergoing maintenance. Once the WTP was restarted it produced compliant turbidity readings, however the sediment located at the bottom of the tanks was potentially disturbed during restart of the WTP resulting in an increase in turbidity. The following actions were subsequently completed regarding this event.</p> <p><u>Corrective actions</u></p> <ul style="list-style-type: none"> The treated water storage tank and elevated storage tank were cleaned, and the reticulation pipework to the Caravan Park was flushed. Raw water supply was provided via a backup raw water pump whilst the raw water pumps were undergoing final repairs and the WTP continued to produce compliant turbidity readings. Microbiological samples were collected on the 15/03/2022 and sent to a NATA laboratory for microbiological analysis. The results indicated nil detection of E.coli. Operational monitoring of pH, turbidity total and free chlorine in the treated water and reticulation supply. WTP and Caravan Park turbidity was recorded <1 NTU since 12/03/2022 and 11/03/2022 respectively. The free chlorine >0.5 mg/L at both the WTP and Caravan Park indicating sufficient disinfection. <p><u>Preventative Actions</u></p> <ul style="list-style-type: none"> Raw water pumps sent for repairs to ensure duty/standby pumps are available.

Incident / Event date	Scheme / location	Parameter / issue	Summary and Preventive actions
			<ul style="list-style-type: none">Increased internal awareness of operational protocol to ensure that Treated Water Tank levels are maintained above a minimum low operating level (approx. 30%) to prevent potential future events of stirring sediment in the tanks.Review and update to the Maintenance Program to ensure that the treated water storage tanks are drained and cleaned more frequently – i.e. annually (12 monthly). <p>This event was subsequently resolved, and the event closed on the 24/03/2022.</p>

6 Customer complaints

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

Throughout the 2021/2022 reporting period, no complaints were received.

During 2021/2022 reporting period, there were no suspected or confirmed cases of illness arising from the water supply system.

7 DWQMP review outcomes

During the reporting period (01/07/2021 to 30/06/2022), a DWQMP review was completed by Jacobs and Sunwater during June 2022, and a finalised report submitted to regulator on the 30 June 2022. The review considered four categories of the DWQMP and identified areas where the DWQMP requires update to remain relevant for the safe management of the drinking water supply. There were several review outcomes and subsequent actions identified following the completion of this review. A summary of these review outcomes and actions are referenced in Table 13.

Table 13: DWQMP Review - Summary of review outcomes and actions

Item No.	Description	Category	DWQMP Reference	Action <small>(Note 1)</small>	Due Date
1	Implementation of key recommendation items from the Sunwater DWQMP Audit Report 2021	DWQMP Audit Report	Section 5.21, Appendix B	Update the DWQMP and associated documents or processes (as referenced in Table 14 based on the Audit recommendation items)	Variable - Refer Table 14
2	Raw water quality data is included up to the end of 2018 when the DWQMP was developed.	Details of Infrastructure	Section 2.1, 2.2, 2.3, 2.4	Update the DWQMP to include additional raw water quality data from 2018-2022	12/08/2022
3	WTP Infrastructure updates & Key Stakeholder List to be updated	Details of Infrastructure	Section 2.1, 2.3 and 2.5	Update the DWQMP to include updates to infrastructure: -Burdekin Falls Dam WTP (new chlorine recirculation system) -Clare WTP (filter replacement) -Fairbairn Dam WTP (new control valve, filter sample points and SCADA trending of turbidity analyser and chlorine analyser) Update Stakeholders List & contact details	12/08/2022
4	The current DWQMP does not accurately describe the incident management process undertaken by Sunwater.	Management of Incidents	Section 5.3	Update the DWQMP to include the updated incident management process & updated water quality monitoring wall chart	12/08/2022

Item No.	Description	Category	DWQMP Reference	Action (Note 1)	Due Date
5	The operational and verification monitoring program has been updated since the DWQMP was approved.	Operational and Verification Monitoring Programs	Section 5.2	Update the DWMP to include the updated operational and verification monitoring program (re: THM, Chlorate, heavy metal and pesticide monitoring).	12/08/2022
6	Of the 7 actions on the RMIP, two actions have been closed, three actions have been completed and 2 items are still ongoing	Risk Management Improvement Plan	Appendix C, RMIP	Actions 3 and 4 have been completed. Update the RMIP to reflect completion of actions 3 and 4 and include additional actions for continual improvement.	12/08/2022

The DWQMP Annual Report for the 2022-2023 reporting year will include an update regarding the actions taken to address the review items.

Note 1: All review items identified were addressed by updating the DWQMP and an amended DWQMP was submitted to the regulator on the 11 August 2022 (during the FY2022-2023 reporting period).

8 DWQMP Audit findings

An independent auditor conducted the regular audit of Sunwater's approved Drinking Water Quality Management Plan (DWQMP) in 2021. The audit comprised of a system assessment and site inspection at all sites. A system assessment was undertaken on 26 July 2021. The auditor attended site and inspected Sunwater's four drinking water treatment systems from 13 to 16 September 2021 to conduct the audit. The audit included inspection of the four supply schemes, interviews with relevant staff and observation of documentation and records. A summary of these actions are included in Table 14.

Table 14: DWQMP Audit - Summary of Recommendations and Actions

Item No.	Description	Recommendation /Opportunity for Improvement (OFI)	Action (Note 1)	Due Date
REC-21-001	When preparing annual reports, implement a robust review process to ensure that the data reported in annual reports is accurate.	Recommendation	Recommend that DWQMP be updated to document the review process for developing annual reports (including data verification).	12/08/2022
REC-21-002	Review the monitoring wall chart to ensure it accurately reflects the monitoring for each scheme.	Recommendation	Wall chart reviewed and updated. Wallchart will be included as an Appendix in the DWQMP.	12/08/2022
REC-21-003	Update the process flow charts to clearly note the CCP monitoring locations and numbering them on the diagram.	Recommendation	Review and update the Process Flow Chart/schematic drawings for each site (via onsite validation with operations) and provide updated drawings in the DWQMP.	12/08/2022
REC-21-004	Review the CCP monitoring locations at Mutchilba WTP to ensure a filtered water turbidity sample is taken that is representative of filter performance, with consideration given to monitoring individual filter performance rather than combined.	Recommendation	Review and update the CCP monitoring locations (via onsite validation with operations at Mutchilba WTP) and provide an updated drawing in the DWQMP.	12/08/2022
REC-21-005	Ensure a process to review compliance with the water quality	Recommendation	A water quality criteria compliance process shall be detailed in the DWQMP	12/08/2022

Item No.	Description	Recommendation /Opportunity for Improvement (OFI)	Action (Note 1)	Due Date
	criteria is implemented and any failure to take a sample is notified to the regulator as a non-compliance with the water quality criteria.		(including if monthly sample is not taken, it shall be noted as non-compliance and notified to the regulator).	
REC-21-006	Review the risk assessment to include assessment of protozoan risk and the adequacy of the current controls and critical limits. Where the risk is unacceptable, raise an improvement item to reduce the risk.	Recommendation	Review and update risk assessment to include assessment of protozoan risk utilising desktop catchment assessments already undertaken and raise an improvement item to reduce the risk if required for each site. To be updated in the DWQMP.	12/08/2022
REC-21-007	Investigate options for improving filter performance where filtered water turbidity is regularly above 0.5 NTU.	Recommendation	Investigation to improve filter performance at all sites (where filtered water turbidity is regularly above 0.5 NTU) and to be included as an item in the Risk Improvement Management Plan (RMIP).	FY2022-2023
REC-21-008	Document the procedures for calibration of monitoring equipment and ensure the program includes internal and external calibrations at appropriate intervals.	Recommendation	Calibration procedure and associated requirements to be documented in the appropriate work instructions for all sites and made available to appropriate operations staff.	12/08/2022
REC-21-009	Document the chemical procurement process to ensure there is a quality assurance process to confirm that chemicals used in drinking water are suitable and do not introduce a hazard.	Recommendation	Chemical procurement process to be documented in DWQMP to ensure chemical quality assurance.	12/08/2022
REC-21-010	Assess the risk of mains breaks and the potential for contamination from works on the treated water mains.	Recommendation	Risk of main breaks to be assessed as part of the Risk Assessment and documented in the DWQMP.	12/08/2022

Item No.	Description	Recommendation /Opportunity for Improvement (OFI)	Action (Note 1)	Due Date
	Establish a documented procedure or standard for working on mains that includes hygienic practices, flushing, and verifying the adequacy of the practices through taking a chlorine residual reading.			
OFI-21-001	Consider implementing a risk based internal inspection and cleaning program for tanks.	Opportunity for Improvement	Consult operations team to confirm suitable frequency of internal inspection and cleaning program for tanks with due regard to risk. Document outcome in the risk assessment of the DWQMP.	12/08/2022
OFI-21-002	Review the alerts in the Sunwater database management system to ensure that emails are sent in response to all results that are out of specification.	Opportunity for Improvement	Review and update the email alerts in the database management system to ensure notifications are submitted to internal stakeholders for results that exceed action and critical limits	FY2022-2023
OFI-21-003	Consider implementing a program for refresher training on sampling and equipment calibration to ensure monitoring results are reliable.	Opportunity for Improvement	Implement refresher training (on sampling and equipment calibration for each site).	FY2022-2023
OFI-21-004	Consider documenting the results of the jar testing on a spreadsheet to allow for the data to be analysed and a dose curve created to assist in identifying the best dose for a range of raw water turbidity values.	Opportunity for Improvement	Not identified as a requirement (not proposing to proceed due to inherent risk).	N/A
OFI-21-005	Consider converting the Risk Management Improvement Plan into a living document that is kept up to date throughout the year and includes actions from processes such as incidents, reviews, audits and risk assessments.	Opportunity for Improvement	Convert the Risk Management Improvement Plan into a live document.	12/08/2022

Item No.	Description	Recommendation /Opportunity for Improvement (OFI)	Action (Note 1)	Due Date
OFI-21-006	Review and update the schematics to accurately reflect the scheme circumstances including the CCP monitoring points.	Opportunity for Improvement	Review and update the process flow charts/schematic drawings including CCP locations for each site (via onsite validation with operations) and provide updated drawings in the DWQMP (Refer Item No. REC-21-003).	12/08/2022

The DWQMP Annual Report for the 2022-2023 reporting year will include an update regarding the actions taken to address the audit items identified by the auditor.

Note 1: The following audit items (REC-21-001 – REC-21-006; REC-21-008 – REC-21-010; OFI-21-001, OFI-21-005 and OFI-21-006) were addressed by updating the DWQMP and an amended DWQMP was submitted to the regulator on the 11 August 2022 (during the FY2022-2023 reporting period).