



# **Drinking Water Service Annual Report**

## **Rockhampton Regional Council**

**SPID: 493**

1 July 2022 to 30 June 2023

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

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## Definitions and glossary of terms

ADWG	Australian Drinking Water Guidelines (2011). Published by the National Health and Medical Research Council of Australia
CaCO <sub>3</sub>	calcium carbonate
CCTV	closed-circuit television
DRDMW	Department of Regional Development, Manufacturing and Water
DWQMP	Drinking Water Quality Management Plan. 2021 approved version
<i>E. coli</i>	<i>Escherichia coli</i> , a microorganism that may not directly represent a hazard to human health, but indicates the presence of recent faecal contamination
Event	means anything that has happened to FRW or FRW's water service that has escalated beyond FRW's ability to control and FRW believe, or are concerned, that public health may be adversely impacted as a result
FRW	Fitzroy River Water
Glenmore WTP	water treatment plant for the Rockhampton Water Supply Scheme
Incident	means non-compliance with water quality criteria, e.g. exceeding an ADWG health guideline value and the standards in the Public Health Regulation 2005
L	litre
LOR	limit of resolution
LSC	Livingstone Shire Council
mg/L	milligrams per litre
mg/L Pt-Co	milligrams per litre Platinum Cobalt
ML/d	Megalitres per day
MPN/100ml	most probable number per 100 millilitres
Mount Morgan	
WTP	water treatment plant for the Mount Morgan Water Supply Scheme
N/A	not applicable
ND	not detected
NTU	nephelometric turbidity units
PFOA	perfluorooctanoic acid
PFHxS	perfluorohexane sulfonate
PFOS	perfluorooctane sulfonate
PRV	pressure reducing valve
Regulator	the chief executive of the DRDMW is the Regulator under the <i>Water Supply (Safety and Reliability) Act 2008</i>
RMIP	Risk Management Improvement Program
RRC	Rockhampton Regional Council
RRR	Residual Risk Rating
SPID	service provider identification
TCU	true colour units
THM	trihalomethanes
UVT	ultraviolet transmissivity
WPS	water pump station
WSS	Water Supply Scheme
WTP	Water Treatment Plant
µg/L	micrograms per litre
µS/cm	microSiemens per centimetre
<	less than
>	greater than
°C	degree Celcius

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## 1 Introduction

This is the Drinking Water Quality Management Plan (DWQMP) report for Rockhampton Regional Council (RRC) for the financial year 2022-23.

RRC thru its commercial unit Fitzroy River Water (FRW) is a registered service provider with identification (SPID) number 493. RRC is operating under an approved DWQMP to ensure consistent supply of safe, high quality drinking water in order to protect public health. This is done through the proactive identification and minimisation of public health-related risks associated with the production and supply of drinking water.

This DWQMP report includes:

- the activities undertaken over the 2022-23 financial year in operating our drinking water service;
- a drinking water quality summary;
- a summary of our performance in implementing the approved DWQMP.

This report is submitted to the Regulator to fulfil our regulatory requirement and is also made available to our customers through our website or for inspection upon request at Council offices.

## 2 Summary of schemes operated

This report relates to the drinking water supply schemes which RRC owned and operated from 1 July 2022 to 30 June 2023. Table 1 lists the water supply schemes covered in this report.

The direct physical link of localities within the Livingstone Shire Council (LSC) to the Rockhampton Water Supply Scheme (WSS) means that some LSC communities are partially or fully served by the water infrastructure operated by RRC. Only the performance of water supply schemes for which RRC has ownership, operating and maintenance responsibility, that is, drinking water supplied to RRC ratepayers during this reporting period, is detailed in this report.

**Table 1 Summary of schemes**

Scheme Name	Water Source	Treatment Process	Treatment Capacity	Serviced Population	Towns Supplied
Rockhampton (includes LSC)	Fitzroy River	Pre-oxidation (optional), coagulation, flocculation, sedimentation, filtration, pH correction and disinfection	120 ML/d	92,372 (122,994)	Rockhampton, Gracemere (Yeppoon, The Causeway, Kinka Beach, Zilzie, Emu Park, Keppel Sands, Nerimbera, The Caves, Etna Creek, Glenlee, Glendale, Rockyview, Mount Charlton)
Mount Morgan*	Dee River	Coagulation, sedimentation, filtration, pH correction and disinfection	2.6 ML/d	2,945	Mount Morgan, Baree

\*For this reporting period, Mount Morgan WSS was 100% supplied with tankered water from Gracemere (part of Rockhampton WSS). This was due to the low water levels in the Dee River (No. 7 Dam) and poor raw water quality. The tankered water is delivered to the inlet of Black Street Reservoir for rechlorination and distribution to the reticulation network.

### **3 DWQMP implementation**

The actions undertaken to implement the DWQMP are summarised below.

#### **DWQMP updates**

FRW staff meet every month to discuss water (and sewerage) issues. This provides the opportunity to refer to the DWQMP and emphasise the importance of using this plan. The monthly meetings are chaired by the Manager Fitzroy River Water.

One of the key agenda items in these monthly meetings is to report on the water quality performance of the two water supply schemes and the overall management of risks to water quality. The monthly meetings also report on the condition of the water sources (Fitzroy River and Dee River) and provide an update on projects and strategies that can directly or indirectly affect water quality.

#### **RMIP implementation**

Specific changes or improvements to the drinking water services provided by FRW have occurred via the implementation of the Risk Management Improvement Program (RMIP). Section 12 of the DWQMP details the eight (8) individual risks which were considered to be unacceptable levels of risk as they have a moderate Residual Risk Rating (RRR). It also includes components that have low residual risk ratings (risk numbers R20 and MM22) but require investigative monitoring. The significant progress that has been made during this reporting period to mitigate these risks is discussed in Table 2.

**Table 2 Risk management improvement program implementation status**

Scheme Name	Risk No.	Component	Event/Hazard	Improvement Actions	Target Date	Actions Taken To Date	Status and Revised Target Date	Responsible Officer
Rockhampton	R08	Source	Contamination of raw water with excessive EC or TDS	Continue to lobby the Regulator for tighter water quality limits on mine water discharges	Ongoing (as required)	As this is an ongoing matter, it is anticipated that the action will continue to form part of the RMIP	Continuing as required	Manager Fitzroy River Water
Rockhampton	R20	Treatment	No available data on chlorate concentrations	Commence investigative monitoring	December 2022	Quarterly sampling commenced on 22 Nov 2021 with investigative monitoring continued until Oct 2023	Continuing with expected completion in December 2023	Senior Water Quality and Treatment Officer
Rockhampton	R24	Reservoir	Contamination due to animals accessing reservoirs (bacterial pathogen)	Repair and/or replace roof of identified high risk reservoirs: Yaamba Road Reservoir  Athelstane Range Reservoir  Installation of online chlorine analysers in all manually re-chlorinated reservoirs: Forbes Avenue Reservoir  Samuel Crescent Reservoir	June 2023  June 2023  December 2021  November 2021	Preliminary planning underway with works included in the 2022-23 capital projects budget Project scoping underway with works included in the 2022-23 capital projects budget  Equipment installed. Awaiting for connection to the new electrical switchboard. Unit commissioned and fully operational	December 2023  November 2023. Availability of materials has delayed project  In progress with expected completion in January 2023 <b>Completed</b>	Manager Fitzroy River Water  Senior Water Quality and Treatment Officer

**Table 2 Risk management improvement program implementation status (continued)**

Scheme Name	Risk No.	Component	Event/Hazard	Improvement Actions	Target Date	Actions Taken To Date	Status and Revised Target Date	Responsible Officer
Rockhampton	R26	Reservoir	Contamination due to animals accessing reservoirs (viral pathogen)	Repair and/or replace roof of identified high risk reservoirs: Yaamba Road Reservoir	June 2023	Preliminary planning underway with works included in the 2022-23 capital projects budget	December 2023	Manager Fitzroy River Water
Rockhampton	R30	Distribution	Inadequate security against deliberate act of sabotage or terrorism	Identify high risk sites and install CCT at these sites: Glenmore WTP  Yaamba Road Reservoir  Athelstane Range Reservoir	June 2024  June 2023  June 2024	Part of the scope of the Glenmore WTP electrical upgrade  Preliminary planning with works included in the 2022-23 capital projects budget  Preliminary planning with works included in the 2022-23 capital projects budget	In progress with expected completion in June 2024  In progress with expected completion in December 2023  In progress with expected completion in June 2024	Process Systems Technician

**Table 2 Risk management improvement program implementation status (continued)**

Scheme Name	Risk No.	Component	Event/Hazard	Improvement Actions	Target Date	Actions Taken To Date	Status and Revised Target Date	Responsible Officer
Mount Morgan	MM14	Treatment	Lack of effective treatment (viral pathogen)	Perform testing for viruses for further confirmation of process effectiveness	December 2022	Mount Morgan WTP was turned off in April 2021; Testing will recommence once the plant is re-commissioned	On hold pending re-commissioning of the Mount Morgan WTP	Senior Water Quality and Treatment Officer
Mount Morgan	MM22	Treatment	No available data on chlorate concentrations	Commence investigative monitoring	December 2022	Quarterly sampling commenced on 22 Nov 2021 with investigative monitoring continued until December 2023	Continuing with expected completion in December 2023	Senior Water Quality and Treatment Officer
Mount Morgan	MM27	Reservoir	Contamination due to animals accessing reservoirs (bacterial pathogen)	Roof refurbishment capital upgrade for Black Street Reservoir	June 2023	Funding included in the 2022-23 capital projects budget. Preliminary planning will start when the Mount Morgan WTP is re-commissioned.	December 2023	Manager Fitzroy River Water
Mount Morgan	MM29	Reservoir	Contamination due to animals accessing reservoirs (viral pathogen)	Roof refurbishment capital upgrade for Black Street Reservoir	June 2023	Funding included in the 2022-23 capital projects budget. Preliminary planning will start when the Mount Morgan WTP is re-commissioned.	December 2023	Manager Fitzroy River Water
Mount Morgan	MM34	Distribution	Inadequate security against deliberate act of sabotage or terrorism	Identify high risk sites and install CCTV at these sites: Mount Morgan WTP No. 7 Dam	December 2021 June 2022	Unit commissioned and fully operational Equipment purchased. Awaiting for installation schedule.	June 2023 <b>Completed</b>	Process Systems Technician



## 4 Verification monitoring – water quality information and summary

This section discusses the compliance with the water quality criteria.

The results from the drinking water verification monitoring program for the period of 1 July 2022 to 30 June 2023 have been compared against the levels of the water quality criteria specified by the Regulator in the *Water Quality and Reporting Guidelines for a Drinking Water Service*. For this reporting period, there were no samples taken that exceeded the water quality criteria, i.e. the health guideline values in the current Australian Drinking Water Guidelines (ADWG) and the standards in the Public Health Regulation 2005.

The drinking water verification monitoring program for this reporting period was carried out as per Section 10.2 of the DWQMP. The reported statistics presented in Tables 3 to 6 do not include results from repeat samples undertaken in response to an elevated result or from event-related or investigative samples. The fluoride data presented in Tables 3 and 4 are for naturally-occurring fluoride. RRC discontinued fluoridating water on 17 June 2013 in accordance with the Water Fluoridation Regulation. No radionuclides testing was conducted for this reporting period.

During this reporting period, the Mount Morgan Water Supply Scheme's water source (Dee River) was not used and therefore its water quality monitoring results are not incorporated in this section. Mount Morgan WTP was turned off on 19 April 2021 with the Mount Morgan WSS fully supplied with potable water from Gracemere (part of Rockhampton WSS) from 20 April 2021. All operational (daily, continuous and online) checks on the raw water quality ceased on 19 April 2021. Monthly external Lab testing of No 7 Dam is continuing for cyanobacteria and normal suite of water quality tests and result monitored. Mount Morgan WTP daily testing results in Table 4 were from samples collected from the outlet of the clear water reservoir (Black St Reservoir).

### **Cyanobacteria and cyanobacteria toxin**

During monthly monitoring of Fitzroy River Source Water sample point 18 raw water samples were collected over the period 19<sup>th</sup> July 2022 to 3<sup>rd</sup> July 2023, with a maximum total blue-green algae count of 3,950 cells/mL. The maximum count of potentially toxic blue-green algae count was 190 cells/mL (*A. circinalis* on 4<sup>th</sup> April 2023 and *C. raciborskii* on 2<sup>nd</sup> May 2023).

**Table 3 Rockhampton Water Supply Scheme quality performance – verification monitoring\* Potable Water (Treated)**

Potable Water (TREATED) Glenmore Water Treatment Plant ROCKHAMPTON QLD																
Parameter	Data obtained from sampling July 2022 - June 2023										Data obtained from sampling July 2018-June 2023					
	ADWG			Time Period	No. of Samples	Summary of results				Time Period	No. of Samples	Summary of results				No. of exceed ADWG value
	Health	Aesthetic	Unit			Average Value	Min value	Max value	95th percentile			Average Value	Min value	Max value	95th percentile	
pH	No Value	6.5-8.5	unit	1 year	12	7.61	7.37	7.78	7.769	5 years	60	7.63967	7.08	8.16	7.9005	Nil
Colour (True)	No Value	15 HU	TCU	1 year	12	2.83	1	10.00	7.25	5 years	60	1.78333	1	10	2.05	Nil
Turbidity	<1 NTU	5 NTU	NTU	1 year	12	0.22	0.05	0.50	0.445	5 years	60	0.2	0.05	0.7	0.505	Nil
Electrical Conductivity	No Value	No Value	µS/cm	1 year	12	236.75	170	288.00	286.9	5 years	60	242.7	142	288	300.5	Nil
Total Dissolved Solids	No Value	600 mg/L	mg/L	1 year	12	136.17	100	176.00	170.5	5 years	60	141.533	83	210	180.5	Nil
Chloride	No Value	250 mg/L	mg/L	1 year	12	32.75	21	81.00	59	5 years	60	38.05	15	81	76.1	Nil
Fluoride	a 1.5 mg/L	No Value	mg/L	1 year	12	0.07	0.05	0.10	0.1	5 years	60	0.08083	0.05	0.2	0.11	Nil
Nitrate (as N)	a 50 mg/L	No Value	mg/L	1 year	12	0.02	0.005	0.12	0.1145	5 years	60	0.17088	0.005	0.6	0.372	Nil
Nitrite (as N)	a 3 mg/L	No Value	mg/L	1 year	12	0.22	0.005	0.60	0.446	5 years	60	0.04636	0.0025	0.6	0.2905	Nil
Sulphate	500 mg/L	250 mg/L	mg/L	1 year	12	4.17	2	5.00	5	5 years	60	4.5	2	12	8.05	Nil
Aluminium (Acid Soluble)	a No Value	0.20 mg/L	mg/L	1 year	12	0.01	0.0025	0.03	0.0215	5 years	60	0.00828	0.0025	0.027	0.01605	Nil
Iron (Total)	a No Value	0.30 mg/L	mg/L	1 year	9	0.09	0.0025	0.68	0.418	5 years	57	0.01642	0.0025	0.68	0.025	Nil
Manganese (Total)	a 0.50 mg/L	0.10 mg/L	mg/L	1 year	9	0.03	0.0005	0.29	0.176	5 years	57	0.00622	0.00025	0.292	0.00246	Nil
Copper (Total)	a 2 mg/L	1 mg/L	mg/L	1 year	9	0.004	0.001	0.007	0.0058	5 years	57	0.00432	0.001	0.012	0.0074	Nil
Lead (Total)	a 0.01 mg/L	No Value	mg/L	1 year	9	0.0005	0.0005	0.0005	0.0005	5 years	57	0.00054	0.00022	0.0011	0.000896	Nil
Zinc (Total)	a No Value	3 mg/L	mg/L	1 year	9	0.003	0.0025	0.006	0.0046	5 years	57	0.0026	0.0018	0.006	0.0025	Nil
Calcium (Total)	No Value	No Value	mg/L	1 year	12	14.50	8	20.00	18.35	5 years	60	13.66	8	20	17.05	Nil
Sodium (Total)	No Value	180 mg/L	mg/L	1 year	12	21.17	14	28.00	27.45	5 years	60	20.3	11	28	27	Nil
Potassium (Total)	No Value	No Value	mg/L	1 year	12	4.33	3	6.00	6	5 years	60	3.81333	2	6	6	Nil
Magnesium (Total)	No Value	No Value	mg/L	1 year	12	6.83	4	10.00	9.45	5 years	59	6.65593	3.8	14	9	Nil
Hardness (Total)	No Value	200 mg/L	mg/L	1 year	12	61.58	40	77.00	77	5 years	60	59.95	36	95	77.05	Nil
Alkalinity (Total) as CaCO3	No Value	No Value	mg/L	1 year	12	59.67	32	79.00	79	5 years	60	57.25	32	107	75.2	Nil
Total Organic Carbon	a No Value	No Value	mg/L	1 year	4	1.88	0.5	3.00	2.85	5 years	19	2.96316	0.5	7	5.83	Nil
Trihalomethanes	250 µg/L	No Value	mg/L	1 year	4	34.75	19	50.00	48.2	5 years	19	32.4526	19	51	50.1	Nil
Trihalomethanes - Retic	250 µg/L	No Value	mg/L	1 year	4	146	73	212	204.05	5 years	18	118.106	71.1	212	170.35	Nil
Arsenic	a 0.01 mg/L	No Value	mg/L	1 year	6	0.0005	0.0005	0.0005	0.0005	5 years	11	0.00044	0.00005	0.0005	0.0005	Nil
Barium	a 2 mg/L	No Value	mg/L	1 year	6	0.0365	0.032	0.0410	0.0405	5 years	11	0.03186	0.0205	0.045	0.043	Nil
Beryllium	a 0.06 mg/L	No Value	mg/L	1 year	6	0.0005	0.0005	0.0005	0.0005	5 years	11	0.00042	0.00005	0.0005	0.0005	Nil
Cadmium	a 0.002 mg/L	No Value	mg/L	1 year	6	0.00005	0.00005	0.00005	0.00005	5 years	11	0.00005	0.00005	0.00005	0.00005	Nil
Chromium	a 0.05 mg/L	No Value	mg/L	1 year	NR	NR	NR	NR	NR	5 years	2	0.00025	0.00025	0.0003	0.00025	Nil
Mercury	a 0.001 mg/L	No Value	mg/L	1 year	5	0.00005	0.00005	0.00005	0.00005	5 years	10	0.00005	0.00005	0.00005	0.00005	Nil
Nickel	a 0.02 mg/L	No Value	µg/L	1 year	6	0.0007	0.0005	0.001	0.001	5 years	11	0.00062	0.0005	0.001	0.001	Nil
Selenium	a 0.01 mg/L	No Value	µg/L	1 year	6	0.005	0.005	0.01	0.005	5 years	11	0.00414	0.00025	0.005	0.005	Nil
Perfluorooctanoic Acid	a 0.01 µg/L	No Value	µg/L	1 year	1	0.005	0.005	0.005	0.005	5 years	3.000	0.007	0.005	0.010	0.010	Nil
Sum of PFOS + PFHxS	a 0.05 µg/L	No Value	µg/L	1 year	1	0.01	0.005	0.005	0.005	5 years	3.000	0.020	0.010	0.025	0.025	Nil
Chlorate	a No Value	No Value	mg/L	1 year	7	0.02	0.001	0.102	0.0729	5 years	19	0.03375	0.001	0.132	0.1303	Nil
Chlorite	a 0.8 mg/L	No Value	mg/L	1 year	7	0.002	0.001	0.005	0.00425	5 years	20	0.00532	0.001	0.027	0.0243	Nil
Cryptosporidium	<1 organism/L	No Value	oocyst/10L	1 year	1	Nil Detected	Nil Detected	Nil Detected	0	5 years	5	Nil Detected	Nil Detected	Nil Detected	0	Nil
Giardia	<1 organism/L	No Value	oocyst/10L	1 year	1	Nil Detected	Nil Detected	Nil Detected	0	5 years	5	Nil Detected	Nil Detected	Nil Detected	0	Nil
Cyanide	0.8 mg/L	No Value	mg/L	1 year	0	NR	NR	NR	NR	5 years	2	0.002	0.002	0.002	0.002	Nil

\*Chlorate and chlorite samples were collected as part on current investigative monitoring programme.

**Table 3 Rockhampton Water Supply Scheme quality performance – verification monitoring Source Water (Raw)**

Source Water (RAW) Glenmore Water Treatment Plant ROCKHAMPTON QLD													
(a = L/2 used for < results)				Data obtained from sampling July 2022 - June 2023					Data obtained from sampling July 2018-June 2023				
Parameter	Unit	Time Period	No. of Samples	Summary of results				Time Period	No. of Samples	Summary of results			
				Average Value	Min value	Max value	95th percentile			Average Value	Min value	Max value	95th percentile
pH	Unit	1 year	12	7.44	6.70	7.86	7.76	5 years	60	7.58	6.70	8.1	8.0
Colour (True)	HU	1 year	12	59.58	30.00	140.00	126.25	5 years	59	40.14	10	140	126.3
Turbidity	NTU	1 year	12	184.08	51.30	530.00	499.2	5 years	60	178.14	5.40	1330	499.2
Electrical Conductivity	µS/cm	1 year	12	213.08	133.00	303.00	290.35	5 years	60	221.20	118	310	290.4
Total Dissolved Solids	mg/L	1 year	12	245.17	161.00	396.00	362.45	5 years	60	234.22	100	396	362.5
Chloride	mg/L	1 year	12	23.00	16.00	36.00	32.7	5 years	60	30.77	10	81	32.7
Fluoride	a mg/L	1 year	12	0.55	0.005	0.10	0.1	5 years	60	0.091	0.005	0.200	0.1
Nitrate (as N)	mg/L	1 year	12	0.21	0.10	0.59	0.43	5 years	60	0.187	0.002	0.590	0.4
Nitrite (as N)	a mg/L	1 year	12	0.005	0.005	0.005	0.005	5 years	60	0.01	0.00	0.088	0.0
Sulphate	mg/L	1 year	12	5.00	3.00	8.00	6.9	5 years	60	5.62	2	12	9.1
Aluminium (Acid Soluble)	mg/L	1 year	12	0.64	0.117	1.98	1.50	5 years	60	0.44	0.01	1.98	1.1
Iron (Total)	mg/L	1 year	9	8.22	3.38	17.70	15.54	5 years	57	4.90	0.00	17.7	12.6
Manganese (Total)	mg/L	1 year	9	0.10	0.047	0.215	0.19	5 years	57	0.10	0.00	0.723	0.3
Copper (Total)	mg/L	1 year	9	0.009	0.01	0.017	0.02	5 years	57	0.01	0.00	0.021	0.0162
Lead (Total)	a mg/L	1 year	9	0.002	0.001	0.004	0.004	5 years	57	0.00	0.00	0.0082	0.0056
Zinc (Total)	mg/L	1 year	9	0.017	0.006	0.03	0.03	5 years	57	0.01	0.00	0.091	0.0356
Calcium (Total)	mg/L	1 year	12	12.00	7.00	18.00	16.9	5 years	60	12.02	6.70	18	16.0
Sodium (Total)	mg/L	1 year	12	20.50	14.00	28.00	27.45	5 years	60	20.13	11	28	26.1
Potassium (Total)	mg/L	1 year	12	5.08	4.00	8.00	7.45	5 years	60	4.29	2	8	7.0
Magnesium (Total)	mg/L	1 year	12	7.75	5.00	11.00	9.9	5 years	60	7.39	4.10	13	9.1
Hardness (Total)	mg/L	1 year	12	51.50	31.00	72.00	70.9	5 years	59	52.81	25	75	70.2
Alkalinity (Total) as CaCO3	mg/L	1 year	12	57.33	31.00	80.00	77.8	5 years	60	56.67	30	93	77.2
Total Organic Carbon	mg/L	1 year	1	5.00	5.00	5.00	5	5 years	15	7.25	5.10	11	10.0
Arsenic	mg/L	1 year	6	0.0022	0.0020	0.0030	0.00275	5 years	11	0.0019	0.0005	0.0030	0.0028
Barium	mg/L	1 year	6	0.066	0.04	0.12	0.11	5 years	11	0.077	0.041	0.193	0.1575
Beryllium	a mg/L	1 year	6	0.001	0.001	0.001	0.0005	5 years	11	0.00	0.00	0.001	0.0008
Cadmium	a mg/L	1 year	6	0.00005	0.00005	0.00005	0.00005	5 years	11	0.00005	0.00005	0.00005	0.0001
Chromium	mg/L	1 year	0	NR	NR	NR	NR	5 years	2	0.007	0.004	0.011	0.0106
Mercury	a mg/L	1 year	5	0.00005	0.00005	0.00005	0.00005	5 years	10	0.0001	0.0001	0.00072	0.0004
Nickel	mg/L	1 year	6	0.0165	0.0050	0.0520	0.0448	5 years	11	0.01361	0.00050	0.052	0.0375
Selenium	a µg/L	1 year	6	0.005	0.005	0.005	0.005	5 years	11	0.00	0.00	0.005	0.0050
Perfluorooctanoic Acid	µg/L	1 year	2	0.45	0.01	0.89	0.85	5 years	5	0.19	0.01	0.89	0.7170
Perfluorooctane Sulphate	µg/L	1 year	0	NR	NR	NR	NR	5 years	3	0.01	0.01	0.025	0.0235
Pesticides	µg/L	1 year	1	0.10	0.10	0.10	0.1	5 years	4	0.10	0.10	0.1	0.1000
BOD	mg/L	1 year	11	2.50	1.00	4.00	4	5 years	16	2.81	1	5	4.2500
Cryptosporidium	oocyst/10L	1 year	1	0.00	0.00	0.00	0.00	5 years	6	0.00	0.00	0	0.0000
Giardia	oocyst/10L	1 year	1	0.00	0.00	0.00	0.00	5 years	6	0.00	0.00	0	0.0000
Cyanide	mg/L	1 year	0	NR	NR	NR	NR	5 years	2	0.00	0.00	0.002	0.0020

**Table 4 Mount Morgan Water Supply Scheme quality performance – verification monitoring\***

Potable Water (Treated) Mount Morgan Water Treatment Plant MOUNT MORGAN QLD															
a = L/2 used for < results		Data obtained from sampling July 2022 - June 2023					Data obtained from sampling July 2022 - June 2023								
Parameter	ADWG		Units	Time Period	No. of Samples	Summary of results				Time Period	No. of Samples	Summary of results			
	Health	Aesthetic				Average Value	Minimum value	Maximum value	95th percentile			Average Value	Minimum value	Maximum value	95th percentile
pH	No Value	6.5-8.5	Unit	1 year	12	7.71	7.22	8.00	7.934	5 years	60	7.66	7.14	8.00	7.97
Colour (True)	No Value	15 HU	HU	1 year	12	2.25	2	4	3.45	5 years	60	2	1	5.00	3
Turbidity	<1 NTU	5 NTU	NTU	1 year	12	0.85	0.1	7	3.48	5 years	60	0.44	0	7.00	0.705
Electrical Conductivity	No Value	No Value	µS/cm	1 year	12	245.58	189	294	291.8	5 years	60	338	189	605.00	549.3
Total Dissolved Solids	No Value	600 mg/L	mg/L	1 year	12	143.50	107	185	184.45	5 years	60	194	107	345.00	321.5
Chloride	No Value	250 mg/L	mg/L	1 year	12	36.33	20	87	63.35	5 years	60	39	20	87.00	63.45
Fluoride	a 1.5 mg/L	No Value	mg/L	1 year	12	0.014	0.005	0.10	0.0505	5 years	60	0.0468	0.0050	0.2000	0.1
Nitrate (as N)	50 mg/L	No Value	mg/L	1 year	12	0.24	0.12	0.50	0.445	5 years	60	0.18	0.05	0.50	0.4005
Nitrite (as N)	a 3 mg/L	No Value	mg/L	1 year	12	0.005	0.005	0.01	0.005	5 years	60	0.0039	0.0025	0.0050	0.005
Sulphate	500 mg/L	250 mg/L	mg/L	1 year	12	4.25	3	7	6.45	5 years	60	33	3	84.00	78.1
Aluminium (Acid Soluble)	a No Value	0.20 mg/L	mg/L	1 year	12	0.0217	0.015	0.041	0.0355	5 years	60	0.08	0.01	0.23	0.17
Iron (Total)	a No Value	0.30 mg/L	mg/L	1 year	9	0.0250	0.025	0.025	0.025	5 years	57	0.0155	0.0025	0.0250	0.025
Manganese (Total)	a 0.50 mg/L	0.10 mg/L	mg/L	1 year	9	0.0012	0.0005	0.003	0.0026	5 years	57	0.0124	0.0005	0.1000	0.0338
Copper (Total)	2 mg/L	1 mg/L	mg/L	1 year	9	0.0023	0.001	0.004	0.0036	5 years	57	0.0017	0.0005	0.0070	0.0032
Lead (Total)	a 0.01 mg/L	No Value	mg/L	1 year	9	0.0005	0.0005	0.001	0.0005	5 years	57	0.0003	0.0001	0.0005	0.0005
Zinc (Total)	a No Value	3 mg/L	mg/L	1 year	9	0.0042	0.0025	0.009	0.0086	5 years	57	0.0082	0.0025	0.0180	0.017
Calcium (Total)	No Value	No Value	mg/L	1 year	12	14.50	11	17	16.45	5 years	60	15.37	9.20	26.00	22.1
Sodium (Total)	No Value	180 mg/L	mg/L	1 year	12	22.75	17	30	29.45	5 years	60	37	15	81.00	74.2
Potassium (Total)	No Value	No Value	mg/L	1 year	12	4.58	3	7	6.45	5 years	60	3.24	1	7.00	6
Magnesium (Total)	No Value	No Value	mg/L	1 year	12	6.58	5	9	8.45	5 years	60	8	5	15.00	14
Hardness (Total)	No Value	200 mg/L	mg/L	1 year	10	61.20	46	74	73.55	5 years	58	71	43	121.00	110
Alkalinity (Total) as CaCO3	No Value	No Value	mg/L	1 year	12	58.58	38	80	77.8	5 years	60	71	33	145.00	111.05
Total Organic Carbon	No Value	No Value	mg/L	1 year	4	3.25	2	4	4	5 years	20	6	1	12.00	12
Trihalomethanes	250 µg/L	No Value	mg/L	1 year	4	120	77	158	154.4	5 years	22	100.77	48	166.00	157
Trihalomethanes - retic	250 µg/L	No Value	mg/L	1 year	4	139.25	109	193	184.6	5 years	22	125.56	67	235.00	193
Arsenic	a 0.01 mg/L	No Value	mg/L	1 year	6	0.0005	0.0005	0.0005	0.0005	5 years	11	0.0005	0.0003	0.0005	0.0005
Barium	2 mg/L	No Value	mg/L	1 year	6	0.0363	0.032	0.0390	0.03875	5 years	11	0.0290	0.0029	0.0400	0.0395
Beryllium	a 0.06 mg/L	No Value	mg/L	1 year	6	0.0005	0.0005	0.0005	0.0005	5 years	11	0.0004	0.0001	0.0005	0.0005
Cadmium	a 0.002 mg/L	No Value	mg/L	1 year	6	0.0001	5E-05	0.0001	0.00005	5 years	11	0.0001	0.0001	0.0001	0.00005
Chromium	0.05 mg/L	No Value	mg/L	1 year	0	NR	NR	NR	NR	5 years	2	0.00025	0.00025	0.00025	0.00025
Mercury	a 0.001 mg/L	No Value	mg/L	1 year	5	0.00005	5E-05	0.00005	0.00005	5 years	10	0.00005	0.00005	0.00005	0.00005
Nickel	a 0.02 mg/L	No Value	mg/L	1 year	6	0.00058	0.0005	0.0010	0.00088	5 years	10	0.0005	0.0003	0.0010	0.00083
Selenium	a 0.01 mg/L	No Value	µg/L	1 year	5	0.0050	0.0050	0.0050	0.005	5 years	9	0.0039	0.0003	0.0050	0.005
Cryptosporidium	<1 organism/L	No Value	oocyst/10 L	1 year	1	Nil Detected	Nil Detected	Nil Detected	0.00	5 years	6	Nil Detected	Nil Detected	Nil Detected	0.00
Giardia	<1 organism/L	No Value	oocyst/10 L	1 year	1	Nil Detected	Nil Detected	Nil Detected	0.00	5 years	6	Nil Detected	Nil Detected	Nil Detected	0.00
Chlorate	0.8 mg/L	No Value	mg/L	1 year	4	0.15	0.113	0.21	0.2024	5 years	7	0.20	0.11	0.39	0.3716
Chlorite	No Value	No Value	mg/L	1 year	4	0.00	0.00	0.00	0.0025	5 years	7	0.0016	0.0010	0.0025	0.0025

Testing frequency is periodically reviewed and the DWQMP updated accordingly.

**Table 5 Rockhampton Water Supply Scheme – *E.coli* performance with annual value**

Drinking water scheme: <u>Rockhampton Water Supply Scheme</u>												
Year	2022 to 2023											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	36	45	36	36	36	9	52	36	36	36	45	36
No. of samples collected in which <i>E. coli</i> 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	468	468	468	468	459	432	448	438	402	366	321	285
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

**CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE**

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

**Table 6 Mount Morgan Water Supply Scheme – *E.coli* performance with annual value**

Drinking water scheme: Mount Morgan Water Supply Scheme

Year	2022 to 2023											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	12	15	12	12	12	9	15	12	12	12	15	12
No. of samples collected in which <i>E. coli</i> 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	156	156	156	156	153	144	147	144	132	120	105	93
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

**CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE**

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

## 5 Incidents reported to the Regulator

For this reporting period, there was one incident reported to the Regulator as required under Sections 102 or 102A of the *Water Supply (Safety and Reliability) Act 2008*.

A Chlorine online residual reading of >2.00mg/L at Yaamba Road Reservoir occurred at 22:30. 31<sup>st</sup> October 2022. A crew was sent to retest at the reservoir. >8.80mg/L was recorded at 23:00. It was retested onsite at 00.00 with result being 1.10mg/L. Water was flushed from all hydrants downstream. No information to suggest that Public Health was impacted. FRW received no water quality complaints or incidents during this period.

Chlorate verification sampling is currently taking place quarterly at the request of the regulator. All results have been below the Interim QLD Health Limit of 0.8mg/L. A full report on the results will be forwarded to the regulator at the end of the trial in Dec 2023.

## 6 Customer complaints

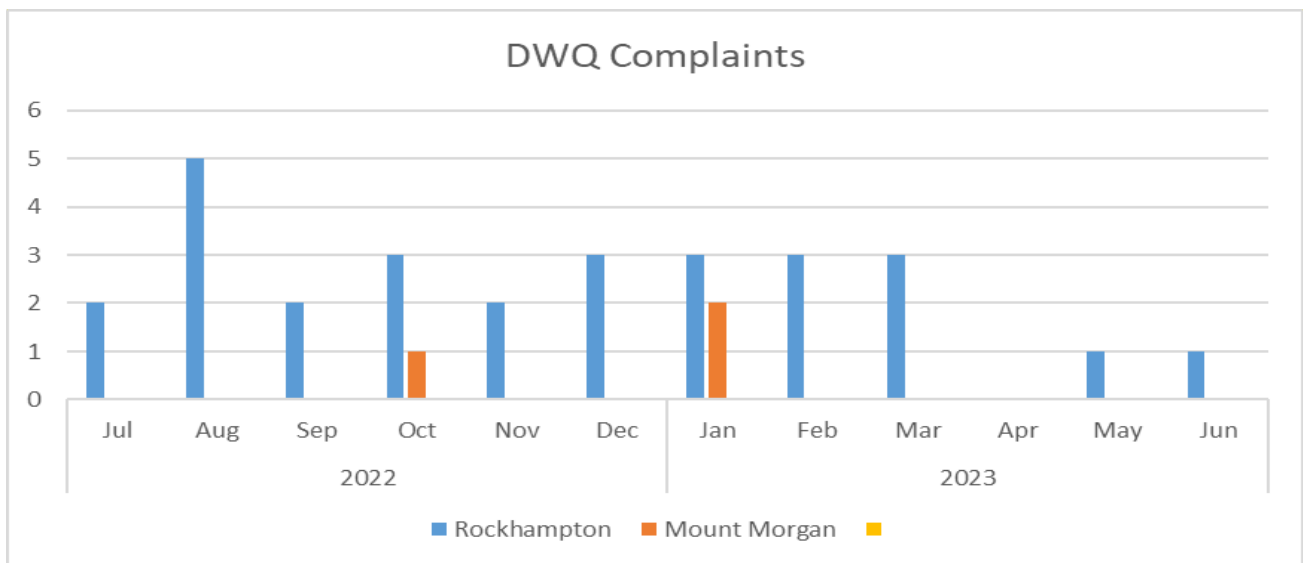
Rockhampton Regional Council is required to report on the number of drinking water quality complaints, general details of complaints and the responses undertaken.

Table 7 and Figure 1 provide a breakdown of the customer complaints relating to drinking water quality during this reporting period.

**Table 7 Customer complaints about water quality**

Scheme	Health concern	Taste and/or odour	Appearance and/or discoloured water	Total
Rockhampton	0	6	22	28
Mount Morgan	0	0	3	3
<b>Total</b>	<b>0</b>	<b>6</b>	<b>25</b>	<b>31</b>

**Figure 1 Drinking water quality complaints received between 1 July 2022 and 30 June 2023 for the Rockhampton and Mount Morgan water supply schemes**



### Possible health concern

Complaints are sometimes received from customers who suspect their water may be associated with an illness they are experiencing. FRW investigates each complaint relating

to alleged illness from the drinking water, typically by testing the customers tap and closest reticulation sampling for the presence of *E. coli* as well as general physico-chemical testing. In addition, FRW liaises periodically with local Queensland Health Officers in order to receive updates on any reports of suspected waterborne disease.

During this reporting period, FRW was not aware of any confirmed cases of illness arising from drinking water supplied from Rockhampton and Mount Morgan water supply schemes.

### **Taste and/or odour**

A total number of six customer complaints associated with unfavourable taste and/or odour were received during this reporting period customer complaints were received from the Rockhampton WSS and nil customer complaint was received from the Mount Morgan WSS.

FRW responded to each complaint by flushing the water mains to clear or refresh the water provided to the customer. Water quality testing was also conducted to ensure that water quality was within the expected range for key water quality parameters or to confirm the return to normal high quality water.

### **Appearance and/or discoloured water**

A total of twenty five customer complaints associated with appearance and/or discoloured water were received during this reporting period. Twenty two customer complaints were received from the Rockhampton WSS. These were due to the presence of air in the water or due to mains/pipework repair work in area. Three customer complaints were received from Mount Morgan WSS and all are associated with discoloured water.

FRW responded to each complaint by flushing the water mains to clear or refresh the water provided to the customer. Water quality testing was also conducted as appropriate to adjust treatment processes if required and to ensure that water quality was within the expected range for key water quality parameters or to confirm the return to normal high quality water.

## **7 DWQMP review outcomes**

A review of the DWQMP was completed in July 2023. 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 was conducted by:

- John Stevens, Acting Water Quality Officer
- Dan Toon, Manager Fitzroy River Water

Amendments to the DWQMP were approved by the Regulator in December 2023.

A summary of the outcomes of the review and how issues or changes raised in the review were actioned is provided in this section.



**Table 8 DWQMP review outcomes**

DWQMP Section	Findings	Outcomes	Status of actions	Responsible Officer
<p><b>1 Registered service details</b></p>	<p>All water schemes under LSC that is either fully or partially with drinking water from RRC are not specified. New information is available for populations, connections and average daily demand.</p>	<p>LSC’s water supply schemes described or referred to in the DWQMP needs to be specified. Tables on current and anticipated service details need to be updated.</p>	<p>Nerimbera Water Supply Scheme and The Caves Water Supply Scheme have been briefly described Tables on current and anticipated population, number of connections and average daily demand have been updated</p>	<p>Senior Water Quality and Treatment Officer</p>
<p><b>2 Details of drinking water scheme infrastructure</b></p>	<p>Provide a brief overview of direct physical link of LSC’s water supply schemes to Rockhampton WSS.</p> <p>Minor changes to the summary of infrastructure for the Rockhampton WSS.</p> <p>New information is available on LSC’s infrastructure.</p> <p>Minor changes to the schematic and infrastructure for the Mount Morgan WSS including the decommissioning of some WPSs and PRVs.</p> <p>New data on the number of licensed water allocation holders. New emergency or alternative water source for Mount Morgan WSS.</p> <p>Option to dose magnesium oxide at Glenmore WTP.</p> <p>Minor changes to Glenmore WTP process and systems control.</p>	<p>Schematic of Rockhampton WSS needs to be updated to reflect bulk water supply points for LSC’s The Caves, Nerimbera and Capricorn Coast Water Supply Schemes. Information needs to be amended.</p> <p>Information needs to be amended.</p> <p>Information needs to be amended.</p> <p>Data needs to be updated.</p> <p>Information needs to be added.</p> <p>Information needs to be added.</p> <p>Information needs to be amended.</p>	<p>Schematic of Rockhampton WSS has been updated.</p> <p>Table on the summary of infrastructure for the Rockhampton WSS has been updated. Existing 2 clear water reservoirs has been added to the table. Capricorn Coast WSS schematic and infrastructure information has been updated. Infrastructure information for The Caves and Nerimbera Water Supply Schemes have been added. The schematic and infrastructure information have been updated. Information has been amended to reflect only one re-chlorination site for this scheme. Data has been updated.</p> <p>Added tankered potable water as an emergency or alternative water source. Process description and schematic representation of the Glenmore WTP have been updated. Process and systems control description of the Glenmore WTP has</p>	<p>Senior Water Quality and Treatment Officer</p>

	<p>Scope of the Glenmore WTP electrical upgrade has been finalised.</p> <p>Potassium permanganate dosing has been decommissioned at Mount Morgan WTP.</p> <p>Minor changes to Mount Morgan WTP process and systems control including the new filling point of tankered potable water.</p> <p>New information on water distribution in the Rockhampton WSS including description of the physical link of LSC's water supply schemes is available.</p> <p>New data is available for water supplied from Rockhampton WSS to Capricorn Coast WSS.</p> <p>New information is available for details of pipeline infrastructure in the Rockhampton and Mount Morgan WSSs.</p> <p>Existing clear water reservoirs at Glenmore WTP must be added to include all potable water storage facilities.</p> <p>New roofing material for North Street Reservoir.</p> <p>Minor changes to target residual chlorine.</p> <p>New information is available on water pump stations including the decommissioning of Ramsay Creek WPS.</p> <p>Minor changes to the stakeholder information.</p>	<p>Overview of the project scope needs to be added.</p> <p>Information needs to be amended.</p> <p>Information needs to be updated.</p> <p>Overview of water distribution in the Rockhampton WSS needs to be updated.</p> <p>Data needs to be updated.</p> <p>Table needs to be updated.</p> <p>Table needs to be updated.</p> <p>Table needs to be updated.</p> <p>Table needs to be updated.</p> <p>Table needs to be updated.</p> <p>Table needs to be updated.</p> <p>Stakeholder information table needs to be updated.</p>	<p>been updated to reflect these changes.</p> <p>Brief overview of the Glenmore WTP electrical upgrade has been added.</p> <p>Process description and schematic representation of the Mount Morgan WTP have been updated.</p> <p>Process and systems control description of the Mount Morgan WTP has been updated to reflect these changes.</p> <p>Water distribution information in the Rockhampton WSS has been updated.</p> <p>Average water supplied from Rockhampton WSS to Capricorn Coast WSS has been updated.</p> <p>Table on the details of pipeline infrastructure has been updated.</p> <p>Table on the details of drinking water reservoirs has been updated.</p> <p>Table on the details of drinking water reservoirs has been updated.</p> <p>Table on reservoir re-chlorination facilities and details of the disinfection system at each site has been updated.</p> <p>Table on details of water pump stations within Drinking Water Supply Schemes has been updated.</p> <p>Table on stakeholder information has been updated.</p>	
<p><b>3 Catchment and water quality information</b></p>	<p>New set of data for raw and drinking water quality is available.</p>	<p>Water quality data table, figures and description need to be updated.</p>	<p>New data has been collated. Relevant tables, figures and description have been updated.</p>	<p>Senior Water Quality and Treatment Officer</p>

	<p>New set of data for drinking water quality notifications is available.</p> <p>New set of data for drinking water quality complaints is available.</p>	<p>Drinking water quality notifications description and table need to be updated.</p> <p>Drinking water quality complaints description and table need to be updated.</p>	<p>Description and table have been updated.</p> <p>Description and table have been updated.</p>	
<b>4 Hazard identification</b>	<p>Minor amendment to hazard frequency and critical controls.</p>	<p>Information needs to be updated.</p>	<p>Table has been updated.</p>	<p>Senior Water Quality and Treatment Officer</p>
<b>5 Assessment of risks</b>	<p>Re-assessment of risks were completed. A number of residual risk ratings were updated to moderate and some site-specific risk mitigation measures have been identified including repairing and/or replacement of reservoir roofs, installation of online chlorine monitoring systems, and virus testing.</p> <p>New set of water quality data is available to establish overtime detected concentrations of various water quality parameters.</p> <p>Delivery of tankered water at MMWTP commenced in March 2021. This hazardous event should be assessed for risk and preventative measures identified and implemented.</p> <p>No data is available on chlorate concentrations. Investigative monitoring has been identified as an action to determine concentrations.</p>	<p>The risk assessment tables need to be updated.</p> <p>The risk assessment tables need to be updated.</p> <p>Risk assessment table needs to be revised to include tankered water delivery as a hazardous event.</p> <p>Commence investigative monitoring in the reticulation system to confirm chlorite concentrations.</p>	<p>Risk assessment tables have been updated.</p> <p>Risk assessment tables have been updated.</p> <p>Risk assessment of this hazardous event has been completed and the table has been updated.</p> <p>Investigative monitoring commenced in November 2021 and is expected to be completed by the end of 2023.</p>	<p>Manager FRW / Senior Water Quality and Treatment Officer</p>
<b>6 Managing risks</b>	<p>Some existing risks were re-assessed to have moderate risk residual ratings and proposed actions were identified.</p>	<p>Information needs to be updated.</p>	<p>Table has been updated.</p>	<p>Senior Water Quality and Treatment Officer</p>
<b>7 Operation and maintenance procedure</b>	<p>New operation and maintenance manuals and relevant procedures are available.</p> <p>Minor amendments on the preventative maintenance program.</p>	<p>The operation and maintenance manuals and relevant procedures table needs to be updated.</p> <p>Details on the preventative maintenance program needs to be updated.</p>	<p>Operation and maintenance manuals and relevant procedures table has been updated.</p> <p>Table has been updated.</p>	<p>Manager FRW / Senior Water Quality and Treatment Officer</p>

<b>8 Management of emergencies, incidents or excursions from normal operations</b>	Minor changes to the drinking water incident management description and flow chart. Minor amendments to the emergency contact information.	Description and flow chart need to be updated.  Emergency contact information needs to be updated.	Description and flow chart were updated.  Information has been updated.	Senior Water Quality and Treatment Officer
<b>9 Service wide support – information management</b>	Addition of new information management systems.	New software system needs to be added.	New software system has been added to the table.	Senior Water Quality and Treatment Officer
<b>10 Operational and verification monitoring programs</b>	Minor amendments to the water quality program. Operational monitoring schedule is not current.  There are new water quality sampling sites in the distribution system.	Table needs to be updated. Table needs to be amended to reflect the current operational monitoring schedule. New water quality sampling sites need to be added to the list.	Table has been updated. Changes were made and table has been updated.  Table has been updated.	Senior Water Quality and Treatment Officer
<b>11 Best practice initiatives</b>	There is an ongoing collaborative work between FRW and CSIRO and DES to better understand the lower Fitzroy River catchment water quality.	This information needs to be added.	Description of collaborative works has been added in the Research and Development Activities section.	Senior Water Quality and Treatment Officer
<b>12 Risk management improvement program</b>	There are new site-specific actions to prevent contamination in reservoirs. Testing for viruses to be scheduled to confirm MMWTP process effectiveness. Chlorate investigative monitoring commenced to determine chlorate concentrations in the distribution system.	Site specific actions need to be added in the RMIP table.  Testing schedule as an action needs to be added in the RMIP table. Investigative monitoring as an action needs to be added in the RMIP table.	RMIP table has been updated.  RMIP table has been updated.  RMIP table has been updated.	Senior Water Quality and Treatment Officer
<b>Appendices</b>	An overview of reservoir water supply zones and sampling points is available. Operating protocol between FRW and LSC for the supply of water services has been amended.	Appendix to be updated to reflect this new information.  Appendix needs to be updated to include the amended operating protocol.	Added as new appendix (Appendix D).  Appendix E has been updated to reflect the amended operating protocol.	Senior Water Quality and Treatment Officer

## 8 DWQMP audit findings

No audit was conducted during the reporting period 1 July 2022 to 30 June 2023.

The next regular audit of the DWQMP is scheduled for completion by 31 August 2024. Once completed, these audit findings will be incorporated as appropriate in future revisions of the DWQMP.