Drinking Water Quality Management Plan Report

Rockhampton Regional Council

SPID: 493

1 July 2018 to 30 June 2019

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

Definitions and glossary of terms

ADWG	Australian Drinking Water Guidelines (2011). Published by the National Health and Medical Research Council of Australia
$CaCO_3$	calcium carbonate
CCTV	Closed-circuit television
DNRME	Department of Natural Resources, Mines and Energy
DWQMP	Drinking Water Quality Management Plan. 2018 approved version
E. coli	*Escherichia coli*, 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 the 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
LSC	Livingstone Shire Council
mg/L	milligrams per litre
ML/d	Megalitres per day
MPN/100ml	most probable number per 100 millilitres
Mt Morgan WTP	water treatment plant for the Mt Morgan Water Supply Scheme
NTU	Nephelometric turbidity units
PFOA	perfluorooctanoic acid
PFHxS	perfluorohexane sulfonate
PFOS	perfluorooctane sulfonate
Regulator	the chief executive of the DNRME is the regulator under the *Water Supply (Safety and Reliability) Act 2008*
RMIP	Risk Management Improvement Program
RRC	Rockhampton Regional Council
RRR	Residual Risk Rating
SPID	service provider identification
TCU	true colour units
WSS	water supply scheme
WTP	Water Treatment Plant
µg/L	micrograms per litre
µS/cm	microSiemens per centimetre
<	less than

Table of Contents

1 Introduction 1
2 Summary of schemes operated 1
3 DWQMP implementation 2
4 Verification monitoring – water quality information and summary 4
5 Incidents reported to the regulator 10
6 Customer complaints 10
7 DWQMP review outcomes 11
8 DWQMP audit findings 14

1 Introduction

This is the Drinking Water Quality Management Plan (DWQMP) report for Rockhampton Regional Council (RRC) for the financial year 2018-19.

RRC via 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 a 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 2018-19 financial year in operating our drinking water service;
- a drinking water quality summary;
- a summary of 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 2018 to 30 June 2019. Table 2.1 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 have ownership, operating and maintenance responsibility, that is, drinking water supplied to RRC ratepayers during this reporting period, is detailed in this report.

Table 2.1 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	90,753 (121,817)	Rockhampton, Gracemere (Yeppoon, The Causeway, Kinka Beach, Zilzie, Emu Park, Keppel Sands, Nerimbera, The Caves, Etna Creek, Glenlee, Glendale, Rockyview, Mt Charlton)
Mount Morgan	Dee River	Coagulation, sedimentation, filtration, pH correction and disinfection	2.6 ML/d	3,114	Mount Morgan, Baree

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 6 of the DWQMP details the three individual risks which were considered to be unacceptable levels of risk as they have a moderate Residual Risk Rating (RRR). The significant progress that has been made during this reporting period to mitigate these unacceptable risks is discussed in Table 3.1.

Table 3.1 Risk management improvement program implementation status

Scheme Name	Ref / 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	R30	Distribution	Inadequate security against deliberate act of sabotage or terrorism	Identify high risk sites and install CCTV at these sites	June 2019	CCTV was installed in one of the identified reservoirs and an additional unit at the WTP	Completed	Manager Fitzroy River Water
Mt Morgan	MM32	Distribution	Inadequate security against deliberate act of sabotage or terrorism	Identify high risk sites and install CCTV at these sites	June 2019	CCTV was installed at the WTP. Awaiting for telemetry programming to be completed.	January 2020	Process 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 2018 to 30 June 2019 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.

The drinking water verification monitoring program for this reporting period was carried out as per Section 10.1 of the DWQMP. The reported statistics 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 4.1 and 4.2 are for naturally-occurring fluoride. RRC discontinued fluoridating water on 17 June 2013 in accordance with the *Water Fluoridation Regulation*. 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*.

During this reporting period, the Mount Morgan Water Supply Scheme's alternate water source (Fletchers Creek) was not used and therefore its water quality monitoring results are not incorporated in this section.

Table 4.1 Rockhampton Water Supply Scheme quality performance – verification monitoring

Scheme Component	Parameter	Unit	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non-compliant samples	Minimum	Maximum	Average
WTP	pH	unit	12 per year	12	No value	Not applicable	7.49	7.84	7.67
WTP	Colour (True)	TCU	12 per year	12	No value	Not applicable	<2	2	<2
WTP	Turbidity	NTU	12 per year	12	No value	Not applicable	0.1	0.7	0.2
WTP	Electrical Conductivity	µS/cm	12 per year	12	No value	Not applicable	150	340	257
WTP	Solids (Dissolved)	mg/L	12 per year	12	No value	Not applicable	84	210	152
WTP	Chloride	mg/L	12 per year	12	No value	Not applicable	17	65	46
WTP	Fluoride	mg/L	12 per year	12	1.5 mg/L	0	0.05	0.11	0.08
WTP	Nitrate (as N)	mg/L	12 per year	12	50 mg/L	0	0.037	0.360	0.193
WTP	Nitrite (as N)	mg/L	12 per year	12	3 mg/L	0	<0.005	0.009	<0.005
WTP	Sulphate	mg/L	12 per year	12	No value	Not applicable	<5	12	8
WTP	Chlorate	mg/L	12 per year	6*	No value	Not applicable	<0.005	<0.005	<0.005
WTP	Chlorite	mg/L	12 per year	6*	0.8 mg/L	0	<0.005	<0.005	<0.005
WTP	Aluminium (Acid Soluble)	mg/L	12 per year	12	No value	Not applicable	<0.01	0.01	0.01
WTP	Iron (Total)	mg/L	12 per year	12	No value	Not applicable	<0.005	<0.005	<0.005
WTP	Manganese (Total)	mg/L	12 per year	12	0.5 mg/L	0	0.0005	0.0027	0.0012
WTP	Copper (Total)	mg/L	12 per year	12	2 mg/L	0	0.0027	0.0067	0.0042
WTP	Lead (Total)	mg/L	12 per year	12	0.01 mg/L	0	0.0003	0.0011	0.0006
WTP	Zinc (Total)	mg/L	12 per year	12	No value	Not applicable	<0.0050	0.0052	<0.0050
WTP	Calcium (Total)	mg/L	12 per year	12	No value	Not applicable	9.7	16.0	12.6
WTP	Sodium (Total)	mg/L	12 per year	12	No value	Not applicable	11	28	21
WTP	Potassium (Total)	mg/L	12 per year	12	No value	Not applicable	2.0	3.8	3.3
WTP	Magnesium (Total)	mg/L	12 per year	12	No value	Not applicable	3.80	14.00	6.83
WTP	Hardness (Soluble)	mg/L	12 per year	12	No value	Not applicable	40	95	58
WTP	Alkalinity (Total) as CaCO3	mg/L	12 per year	12	No value	Not applicable	33	73	50
WTP	Total Organic Carbon	mg/L	4 per year	4	No value	Not applicable	2	7	4
WTP	Trihalomethanes	µg/L	4 per year	4	250 µg/L	0	20	51	32
WTP	Arsenic	mg/L	1 per year, Event related	1	0.01 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	Barium	mg/L	1 per year, Event related	1	2 mg/L	0	0.0220	0.0220	0.0220
WTP	Beryllium	mg/L	1 per year, Event related	1	0.06 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Cadmium	mg/L	1 per year, Event related	1	0.002 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Chromium	mg/L	1 per year, Event related	1	0.05 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	Mercury	mg/L	1 per year, Event related	1	0.001 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Nickel	mg/L	1 per year, Event related	1	0.02 mg/L	0	0.0006	0.0006	0.0006
WTP	Selenium	mg/L	1 per year, Event related	1	0.01 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	PFOS + PFHxS	µg/L	1 per year, Event related	1	0.56 µg/L	0	<0.05	<0.05	<0.05
WTP	PFOA	µg/L	1 per year, Event related	1	Varies	0	<0.01	<0.01	<0.01
WTP	Chlorine	mg/L	Daily	365	5 mg/L	0	0.75	1.36	1.00
WTP	pH	pH unit	Daily	365	No value	Not applicable	7.06	7.89	7.61
WTP	Electrical conductivity	µS/cm	Daily	365	No value	Not applicable	127	439	248
WTP	Turbidity	NTU	Daily	365	No value	Not applicable	0.07	0.28	0.14
WTP	Chlorine	mg/L	Continuous (online)	Not applicable	5 mg/L	0	0.78	1.25	1.01
WTP	pH	unit	Continuous (online)	Not applicable	No value	Not applicable	7.02	7.82	7.65
WTP	Electrical conductivity	µS/cm	Continuous (online)	Not applicable	No value	Not applicable	134	430	248
WTP	Turbidity	NTU	Continuous (online)	Not applicable	No value	Not applicable	0.05	0.69	0.15
Reticulation	Trihalomethanes - Gracemere	µg/L	4 per year	4	250 µg/L	0	71	107	92
Reticulation	Chlorine	mg/L	Weekly	542	5 mg/L	0	0	2.13	0.70
Reticulation	*E. coli*	MPN/100ml	Weekly	468	0 MPN/100ml	0	<1	<1	<1

* Chlorine dioxide system is used intermittently, depending on raw water quality. No sample is collected and tested for chlorate and chlorite if the chlorine dioxide system is not in use.

Table 4.1 Rockhampton Water Supply Scheme quality performance – verification monitoring (continued)

Scheme Component	Parameter	Unit	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non-compliant samples	Minimum	Maximum	Average
Source Water	pH	unit	12 per year	12	Not applicable	Not applicable	7.37	8.02	7.64
Source Water	Colour (True)	TCU	12 per year	12	Not applicable	Not applicable	25	60	44
Source Water	Turbidity	NTU	12 per year	12	Not applicable	Not applicable	5.4	240.0	89.0
Source Water	Electrical Conductivity	µS/cm	12 per year	12	Not applicable	Not applicable	120	310	235
Source Water	Solids (Dissolved)	mg/L	12 per year	12	Not applicable	Not applicable	100	320	196
Source Water	Chloride	mg/L	12 per year	12	Not applicable	Not applicable	13	55	39
Source Water	Fluoride	mg/L	12 per year	12	Not applicable	Not applicable	0.06	0.14	0.10
Source Water	Nitrate (as N)	mg/L	12 per year	12	Not applicable	Not applicable	<0.005	0.330	0.170
Source Water	Nitrite (as N)	mg/L	12 per year	12	Not applicable	Not applicable	<0.005	0.088	0.018
Source Water	Sulphate	mg/L	12 per year	12	Not applicable	Not applicable	<5	12	8
Source Water	Aluminium (Acid Soluble)	mg/L	12 per year	12	Not applicable	Not applicable	<0.01	0.43	0.19
Source Water	Iron (Total)	mg/L	12 per year	12	Not applicable	Not applicable	<0.005	4.500	1.531
Source Water	Manganese (Total)	mg/L	12 per year	12	Not applicable	Not applicable	<0.0005	0.0950	0.0415
Source Water	Copper (Total)	mg/L	12 per year	12	Not applicable	Not applicable	<0.001	0.0049	0.0034
Source Water	Lead (Total)	mg/L	12 per year	12	Not applicable	Not applicable	<0.0001	0.0016	0.0009
Source Water	Zinc (Total)	mg/L	12 per year	12	Not applicable	Not applicable	<0.0050	0.0380	0.0109
Source Water	Calcium (Total)	mg/L	12 per year	12	Not applicable	Not applicable	6.7	14.0	10.4
Source Water	Sodium (Total)	mg/L	12 per year	12	Not applicable	Not applicable	11	28	21
Source Water	Potassium (Total)	mg/L	12 per year	12	Not applicable	Not applicable	2.0	3.9	3.4
Source Water	Magnesium (Total)	mg/L	12 per year	12	Not applicable	Not applicable	4.10	13.00	6.99
Source Water	Hardness (Soluble)	mg/L	12 per year	12	Not applicable	Not applicable	28	75	51
Source Water	Alkalinity (Total) as CaCO3	mg/L	12 per year	12	Not applicable	Not applicable	30	61	49
Source Water	Total Organic Carbon	mg/L	4 per year	4	Not applicable	Not applicable	7	11	9
Source Water	Arsenic	mg/L	1 per year, Event related	1	Not applicable	Not applicable	0.0012	0.0012	0.0012
Source Water	Barium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	0.0410	0.0410	0.0410
Source Water	Beryllium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	0.0002	0.0002	0.0002
Source Water	Cadmium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.0001	<0.0001	<0.0001
Source Water	Chromium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	0.0039	0.0039	0.0039
Source Water	Mercury	mg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.0001	<0.0001	<0.0001
Source Water	Nickel	mg/L	1 per year, Event related	1	Not applicable	Not applicable	0.0072	0.0072	0.0072
Source Water	Selenium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.0005	<0.0005	<0.0005
Source Water	PFOS + PFHxS	µg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.05	<0.05	<0.05
Source Water	PFOA	µg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.01	<0.01	<0.01
Source Water	Pesticides	ug/L	1 per year, Event related	1	Not applicable	Not applicable	<0.2	<0.2	<0.2
Source Water	pH	mg/L	Daily	365	Not applicable	Not applicable	6.88	7.85	7.45
Source Water	Electrical conductivity	µS/cm	Daily	365	Not applicable	Not applicable	93	424	225
Source Water	Turbidity	NTU	Daily	365	Not applicable	Not applicable	3	746	85
Source Water	pH	unit	Continuous (online)	Not applicable	Not applicable	Not applicable	6.85	7.85	7.46
Source Water	Turbidity	NTU	Continuous (online)	Not applicable	Not applicable	Not applicable	3	918	88

Table 4.2 Mount Morgan Water Supply Scheme quality performance – verification monitoring

Scheme Component	Parameter	Unit	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non-compliant samples	Minimum	Maximum	Average
WTP	pH	unit	12 per year	12	No value	Not applicable	7.31	7.69	7.56
WTP	Colour (True)	TCU	12 per year	12	No value	Not applicable	<2	2	<2
WTP	Turbidity	NTU	12 per year	12	No value	Not applicable	0.2	0.5	0.3
WTP	Electrical Conductivity	µS/cm	12 per year	12	No value	Not applicable	280	450	312
WTP	Solids (Dissolved)	mg/L	12 per year	12	No value	Not applicable	120	210	167.5
WTP	Chloride	mg/L	12 per year	12	No value	Not applicable	24	32	27
WTP	Fluoride	mg/L	12 per year	12	1.5 mg/L	0	<0.05	0.06	0.05
WTP	Nitrate (as N)	mg/L	12 per year	12	50 mg/L	0	0.047	0.240	0.103
WTP	Nitrite (as N)	mg/L	12 per year	12	3 mg/L	0	<0.005	<0.005	<0.005
WTP	Sulphate	mg/L	12 per year	12	No value	Not applicable	31	52	39
WTP	Aluminium (Acid Soluble)	mg/L	12 per year	12	No value	Not applicable	0.03	0.23	0.10
WTP	Iron (Total)	mg/L	12 per year	12	No value	Not applicable	<0.005	0.007	<0.005
WTP	Manganese (Total)	mg/L	12 per year	12	0.5 mg/L	0	0.0011	0.0410	0.0119
WTP	Copper (Total)	mg/L	12 per year	12	2 mg/L	0	<0.0010	0.0013	0.0010
WTP	Lead (Total)	mg/L	12 per year	12	0.01 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Zinc (Total)	mg/L	12 per year	12	No value	Not applicable	<0.0050	0.0084	0.0061
WTP	Calcium (Total)	mg/L	12 per year	12	No value	Not applicable	9.2	14.0	11.9
WTP	Sodium (Total)	mg/L	12 per year	12	No value	Not applicable	27	39	34
WTP	Potassium (Total)	mg/L	12 per year	12	No value	Not applicable	1.3	1.9	1.7
WTP	Magnesium (Total)	mg/L	12 per year	12	No value	Not applicable	5.40	8.60	7.07
WTP	Hardness (Soluble)	mg/L	12 per year	12	No value	Not applicable	43	65	57
WTP	Alkalinity (Total) as CaCO3	mg/L	12 per year	12	No value	Not applicable	59	68	63
WTP	Total Organic Carbon	mg/L	4 per year	4	No value	Not applicable	4	12	7
WTP	Trihalomethanes	µg/L	4 per year	4	250 µg/L	0	48	78	61
WTP	Arsenic	mg/L	1 per year, Event related	1	0.01 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	Barium	mg/L	1 per year, Event related	1	2 mg/L	0	0.0029	0.0029	0.0029
WTP	Beryllium	mg/L	1 per year, Event related	1	0.06 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Cadmium	mg/L	1 per year, Event related	1	0.002 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Chromium	mg/L	1 per year, Event related	1	0.05 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	Mercury	mg/L	1 per year, Event related	1	0.001 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Nickel	mg/L	1 per year, Event related	1	0.02 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	Selenium	mg/L	1 per year, Event related	1	0.01 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	Chlorine	mg/L	Daily	365	5 mg/L	0	0.48	1.55	1.03
WTP	pH	unit	Daily	365	No value	Not applicable	7.08	8.02	7.55
WTP	Electrical conductivity	µS/cm	Daily	365	No value	Not applicable	142	298	232
WTP	Turbidity	NTU	Daily	362^	No value	Not applicable	0.08	0.96	0.26
WTP	Chlorine	mg/L	Continuous (online)	Not applicable	5 mg/L	0	0.58	1.31	1.10
WTP	pH	unit	Continuous (online)	Not applicable	No value	Not applicable	6.15	7.90	7.51
WTP	Electrical conductivity	µS/cm	Continuous (online)	Not applicable	No value	Not applicable	159	325	242
WTP	Turbidity	NTU	Continuous (online)	Not applicable	No value	Not applicable	0.17	1.92	0.32
Reticulation	Trihalomethanes - Smalls Roa	µg/L	4 per year	4	250 µg/L	0	74	95	81
Reticulation	Chlorine	mg/L	Weekly	156	5 mg/L	0	0.01	1.40	0.68
Reticulation	*E. coli*	MPN/100ml	Weekly	156	0 MPN/100ml	0	<1	<1	<1

^ Missing samples (3) were due to unavailability of the analytical testing unit

Table 4.2 Mount Morgan Water Supply Scheme quality performance – verification monitoring (continued)

Scheme Component	Parameter	Unit	No. of samples required to be collected (as per approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non-compliant samples	Minimum	Maximum	Average
Source Water	pH	unit	12 per year	12	Not applicable	Not applicable	7.62	8.53	8.02
Source Water	Colour (True)	TCU	12 per year	12	Not applicable	Not applicable	5	15	9
Source Water	Turbidity	NTU	12 per year	12	Not applicable	Not applicable	2.6	15.0	6.3
Source Water	Electrical Conductivity	µS/cm	12 per year	12	Not applicable	Not applicable	180	550	237.5
Source Water	Solids (Dissolved)	mg/L	12 per year	12	Not applicable	Not applicable	75	180	120
Source Water	Chloride	mg/L	12 per year	12	Not applicable	Not applicable	22	30	24
Source Water	Fluoride	mg/L	12 per year	12	Not applicable	Not applicable	0.07	0.10	0.09
Source Water	Nitrate (as N)	mg/L	12 per year	12	Not applicable	Not applicable	<0.005	0.170	0.005
Source Water	Nitrite (as N)	mg/L	12 per year	12	Not applicable	Not applicable	<0.005	0.006	<0.005
Source Water	Sulphate	mg/L	12 per year	12	Not applicable	Not applicable	<5	12	8
Source Water	Aluminium (Acid Soluble)	mg/L	12 per year	12	Not applicable	Not applicable	<0.01	0.03	0.01
Source Water	Iron (Total)	mg/L	12 per year	12	Not applicable	Not applicable	0.077	0.710	0.192
Source Water	Manganese (Total)	mg/L	12 per year	12	Not applicable	Not applicable	0.0270	0.3600	0.1022
Source Water	Copper (Total)	mg/L	12 per year	12	Not applicable	Not applicable	<0.0010	0.0019	0.0014
Source Water	Lead (Total)	mg/L	12 per year	12	Not applicable	Not applicable	<0.0001	0.0004	0.0001
Source Water	Zinc (Total)	mg/L	12 per year	12	Not applicable	Not applicable	<0.0050	0.0063	0.0048
Source Water	Calcium (Total)	mg/L	12 per year	12	Not applicable	Not applicable	9.3	14.0	12.2
Source Water	Sodium (Total)	mg/L	12 per year	12	Not applicable	Not applicable	12	20	16
Source Water	Potassium (Total)	mg/L	12 per year	12	Not applicable	Not applicable	1.2	1.8	1.6
Source Water	Magnesium (Total)	mg/L	12 per year	12	Not applicable	Not applicable	5.50	9.30	7.27
Source Water	Hardness (Soluble)	mg/L	12 per year	12	Not applicable	Not applicable	44	67	58
Source Water	Alkalinity (Total) as CaCO3	mg/L	12 per year	12	Not applicable	Not applicable	55	73	63
Source Water	Total Organic Carbon	mg/L	4 per year	4	Not applicable	Not applicable	8	14	10
Source Water	Arsenic	mg/L	1 per year, Event related	1	Not applicable	Not applicable	0.0005	0.0005	0.0005
Source Water	Barium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	0.0045	0.0045	0.0045
Source Water	Beryllium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.0001	<0.0001	<0.0001
Source Water	Cadmium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.0001	<0.0001	<0.0001
Source Water	Chromium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.0005	<0.0005	<0.0005
Source Water	Mercury	mg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.0001	<0.0001	<0.0001
Source Water	Nickel	mg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.0005	<0.0005	<0.0005
Source Water	Selenium	mg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.0005	<0.0005	<0.0005
Source Water	Pesticides	µg/L	1 per year, Event related	1	Not applicable	Not applicable	<0.2	<0.2	<0.2
Source Water	pH	unit	Daily	365	Not applicable	Not applicable	7.15	8.44	7.84
Source Water	Turbidity	NTU	Daily	362^	Not applicable	Not applicable	0.27	11.6	2.88
Source Water	pH	unit	Continuous (online)	Not applicable	Not applicable	Not applicable	6.79	8.60	7.80
Source Water	Electrical conductivity	µS/cm	Continuous (online)	Not applicable	Not applicable	Not applicable	75	231	188
Source Water	Turbidity	NTU	Continuous (online)	Not applicable	Not applicable	Not applicable	1.09	36.31	3.43

^ Missing samples (3) were due to unavailability of the analytical testing unit

Table 4.3 Rockhampton Water Supply Scheme – *E.coli* performance with annual value

Year	1 July 2018 to 30 June 2019											
Month	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
No. of samples collected	45	36	36	45	36	45	36	36	36	45	36	36
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	468	468	468	468	468	477	468	468	468	468	468	468
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4.4 Mount Morgan Water Supply Scheme – *E.coli* performance with annual value

Year	1 July 2018 to 30 June 2019											
Month	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
No. of samples collected	15	12	12	15	12	15	12	12	12	15	12	12
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	156	156	156	159	156	159	156	156	156	156	156	156
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

5 Incidents reported to the regulator

For this reporting period, there were no incidents or events reported to the Regulator as required under Sections 102 or 102A of the *Water Supply (Safety and Reliability) Act 2008*.

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 6.1 and Figure 6.1 provide a breakdown of the customer complaints relating to drinking water quality during this period.

Table 6.1 Customer complaints about water quality

Scheme	Health concern	Taste and/or odour	Appearance and/or Discoloured water	Total
Rockhampton	0	7	23	**30**
Mt Morgan	0	1	13	**14**
Total	**0**	**8**	**36**	**44**

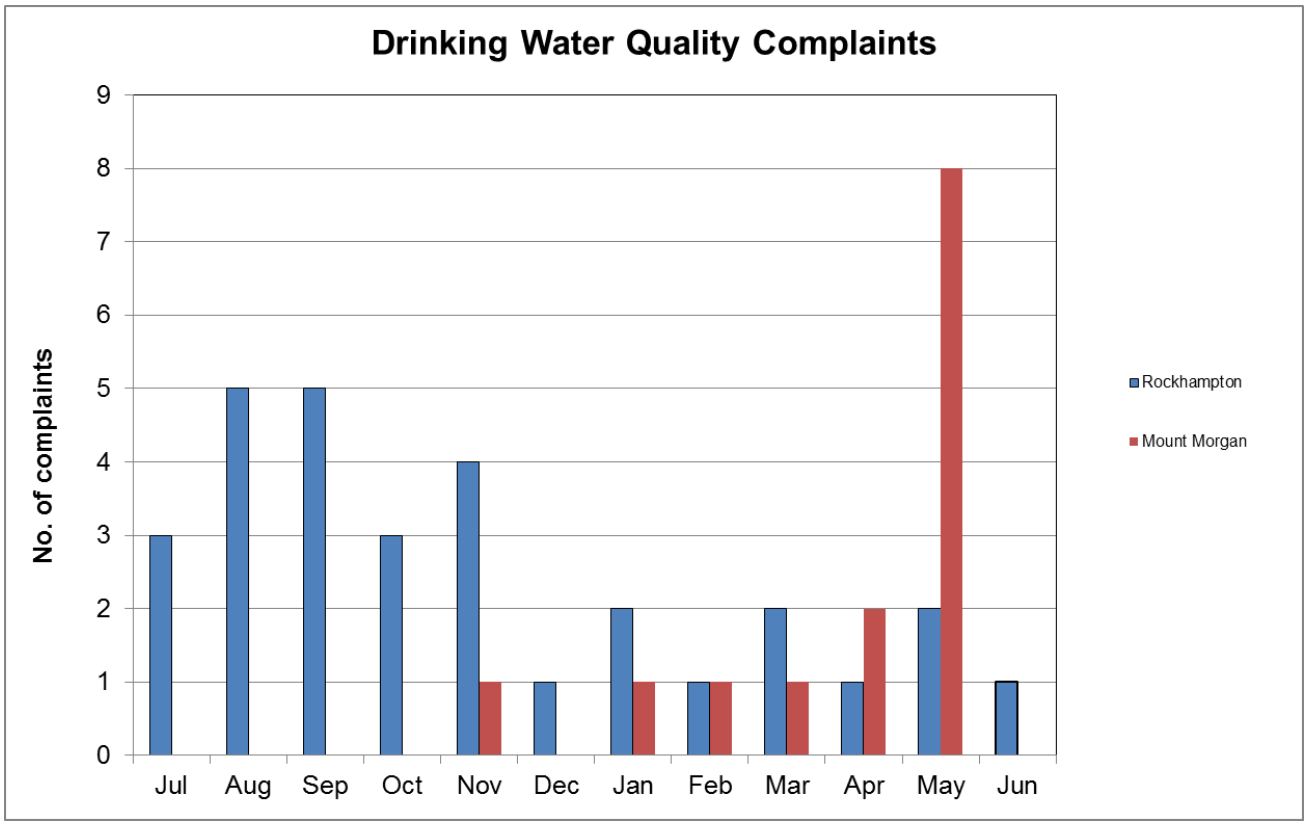

Figure 6.1 Drinking water quality complaints received between 1 July 2018 and 30 June 2019 for the Rockhampton and Mt Morgan water supply schemes

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 Mt Morgan water supply schemes.

Taste and/or odour

A total number of 8 customer complaints associated with unfavourable taste and/or odour were received during this reporting period. Seven (7) customer complaints were received from the Rockhampton WSS and 1 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 36 customer complaints associated with appearance and/or discoloured water were received during this reporting period. Twenty-three (23) customer complaints were received from the Rockhampton WSS and of these, four (4) were due to the presence of air in the water. Thirteen (13) customer complaints were received from Mount Morgan WSS all 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 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 August 2018. 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:

- Dr Jason Plumb, Manager Fitzroy River Water
- Ariane Leyden, Senior Water Quality and Treatment Officer.

Amendments made to the DWQMP were approved by the Regulator on 21 November 2018.

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

Table 7.1 DWQMP review outcomes

Review component	Findings	Outcomes	Status of actions	Responsible Officer
Service description	No changes in service description. New information is available for population, connections and average daily demand.	Current service details table needs to be updated.	The population, number of connections and average daily demand has been updated.	Senior Water Quality and Treatment Officer
Details of infrastructure	A re-chlorination facility was installed in an existing reservoir in the Rockhampton WSS. New chlorine dioxide system has been installed at the Glenmore WTP. Minor changes to Glenmore WTP systems control. New UV disinfection system has been installed at the Mt Morgan WTP. Minor changes to Mt Morgan WTP process and systems control.	Schematic and infrastructure information needs to be updated. Glenmore WTP process description needs to be revised. Information needs to be amended. Schematic and infrastructure description needs to be updated. Information needs to be amended.	The schematic and infrastructure information has been updated. Process description and schematic representation of the Glenmore WTP has been updated. Process description of the Glenmore WTP has been updated to reflect these minor changes. Process description and schematic representation of the Mt Morgan WTP has been updated. Process and systems control description of the Mt Morgan WTP has been updated to reflect these changes.	Manager Fitzroy River Water; Senior Water Quality and Treatment Officer
Water quality and catchment characteristics	No changes	Not applicable	Not applicable	
Risk assessment	Minor amendments to risk assessment information to reflect the new chlorine dioxide system at Glenmore WTP. There is a risk of overdosing and potentially exceeding the chlorite guideline limit. This hazard should be assessed for risk and preventative measures identified and implemented. Minor amendments to risk assessment information to reflect the upgrade of chemical dosing and systems control at Mt Morgan WTP.	The same preventative and risk mitigation measures as chlorine overdosing which is identified as a hazard in DWQMP. Risk assessment table needs to be updated to reflect chlorite as a hazard. Risk assessment table details needs to be updated.	The risk assessment table will be updated at the next DWQMP review in 2021 to reflect chlorite as a hazard. The risk assessment table has been updated and approved.	Manager Fitzroy River Water; Senior Water Quality and Treatment Officer

Table 7.1 DWQMP review outcomes (continued)

Review component	Findings	Outcomes	Status of actions	Responsible Officer
Risk assessment (continued)	Cyberattack has been identified as a hazardous event.	Risk assessment from cyberattack needs to be incorporated in the DWQMP.	The risk assessment table has been updated and approved.	Manager Fitzroy River Water
Operations and maintenance schedule	The maintenance schedule should include the new chlorine dioxide system at Glenmore WTP, UV disinfection system at Mt Morgan WTP and re-chlorination facility at Rogar Avenue reservoir. Critical control point operating limits for the chlorine dioxide system and the new re-chlorination facility are needed for the new treatment configuration.	The maintenance schedule needs to be revised to include these new assets. The critical control point operating limits needs to be defined for these new assets.	The maintenance schedule has been revised. Operation and maintenance manuals specific to the new assets are available. Critical control point operating limits has been configured.	Senior Assets and Maintenance Planner Process Technician
Management of incidents and emergencies	Minor changes to the emergency contact information. Minor updates to information relating to stakeholders involved in drinking water infrastructure	Emergency contact information table needs to be updated. Stakeholders information table needs to be updated.	Amendments made and approved. Amendments made and approved.	Senior Water Quality and Treatment Officer
Risk management improvement program	A number of improvement actions have been implemented and a few in progress.	The risk management improvement program needs to be revised.	Amendments made and approved.	Manager Fitzroy River Water; Senior Water Quality and Treatment Officer
Service wide information management	No changes	Not applicable	Not applicable	
Operational monitoring	There should be a daily and online monitoring and regular inspections of the new chlorine dioxide system and re-chlorination facility.	The operational monitoring program needs to be revised.	Amendments made and approved.	Manager Fitzroy River Water; Senior Water Quality and Treatment Officer
Verification monitoring	Minor changes to the sampling sites for weekly verification program.	Sampling sites for verification monitoring table needs to be updated.	Amendments made and approved.	Senior Water Quality and Treatment Officer

8 DWQMP audit findings

No audit was conducted during this reporting period.

The next regular audit of the DWQMP is scheduled for completion by 31 August 2020. Once completed, these audit findings will be incorporated as appropriate in future revisions of the DWQMP.