



Drinking Water Quality Management Plan Report

Rockhampton Regional Council

SPID: 493

1 July 2019 to 30 June 2020

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
Bq/L	Becquerel per litre
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
<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 <i>Public Health Regulation 2005</i>
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
Mt Morgan WTP	water treatment plant for the Mount Morgan Water Supply Scheme
N/A	Not applicable
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 <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
WSS	Water Supply Scheme
WTP	Water Treatment Plant
µg/L	micrograms per litre
µS/cm	microSiemens per centimetre
<	less than
>	greater than

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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 2019-20.

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 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 2019-20 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 2019 to 30 June 2020. 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	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 2.

Table 2 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 was installed 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.	June 2021	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 2019 to 30 June 2020 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 10.2 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*. 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.

Cyanobacteria and cyanobacteria toxin

Due to the significant quantity of data associated with reporting cyanobacteria cell count and species and in consideration of the number of permutations associated with sampling events, a detailed cyanobacteria report of all test results is not presented in this report. For this reporting period, a total of 14 samples were collected from Rockhampton raw and/or potable waters with cell counts from 0 cells/mL to 102,300 cells/mL. Elevated cell counts were noted from November 2019 to January 2020. A total of 10 samples were collected from Glenmore WTP and of these, one sample had low levels of cyanobacteria. No cyanobacteria were detected in the follow-up samples.

For this reporting period, a total of 26 samples were collected from Mount Morgan water source with cell counts from 1,120 cells/ml to 127,380 cells/ml. Elevated cell counts were noted from October 2019 to May 2020. A total of 19 samples were collected from Mt Morgan WTP and of these, two samples had cyanobacteria detection. No cyanobacteria was detected on any of the follow up samples.

No cyanobacteria toxicity testing was conducted during the reporting period 1 July 2019 to 30 June 2020 due to the relatively low numbers of known toxin producing strains.

Table 3 Rockhampton Water Supply Scheme quality performance – verification monitoring

Scheme Component	Parameter	Unit	No. of samples required to be collected	Total no. of samples collected this reporting period	ADWG Health Guideline Value	No. of non-compliant samples	Minimum	Maximum	Average
WTP	pH	unit	12 per year	12	No Value	N/A	7.29	7.90	7.63
WTP	Colour (True)	TCU	12 per year	12	No Value	N/A	<2	<2	<2
WTP	Turbidity	NTU	12 per year	12	No Value	N/A	<0.1	0.3	0.2
WTP	Electrical Conductivity	µS/cm	12 per year	12	No Value	N/A	190	350	257
WTP	Solids (Dissolved)	mg/L	12 per year	12	No Value	N/A	110	210	148
WTP	Chloride	mg/L	12 per year	12	No Value	N/A	25	81	50
WTP	Fluoride	mg/L	12 per year	12	1.5 mg/L	0	0.07	0.13	0.10
WTP	Nitrate (as N)	mg/L	12 per year	12	50 mg/L	0	0.029	0.600	0.223
WTP	Nitrite (as N)	mg/L	12 per year	12	3 mg/L	0	<0.005	<0.005	<0.005
WTP	Sulfate	mg/L	12 per year	12	500 mg/L	0	<5	8	6
WTP	Chlorate	mg/L	12 per year	3^	No Value	N/A	<0.005	0.130	0.068
WTP	Chlorite	mg/L	12 per year	3^	0.8 mg/L	0	<0.005	<0.005	<0.005
WTP	Aluminium (Acid Soluble)	mg/L	12 per year	12	No Value	N/A	<0.01	0.02	0.01
WTP	Iron (Total)	mg/L	12 per year	12	No Value	N/A	<0.005	0.006	<0.005
WTP	Manganese (Total)	mg/L	12 per year	12	0.50 mg/L	0	<0.0005	0.0021	0.0011
WTP	Copper (Total)	mg/L	12 per year	12	2 mg/L	0	0.002	0.012	0.004
WTP	Lead (Total)	mg/L	12 per year	12	0.01 mg/L	0	0.0002	0.0007	0.0004
WTP	Zinc (Total)	mg/L	12 per year	12	No Value	N/A	<0.005	<0.005	<0.005
WTP	Calcium (Total)	mg/L	12 per year	12	No Value	N/A	11.0	18.0	13.4
WTP	Sodium (Total)	mg/L	12 per year	12	No Value	N/A	13	26	20
WTP	Potassium (Total)	mg/L	12 per year	12	No Value	N/A	2.9	4.2	3.2
WTP	Magnesium (Total)	mg/L	12 per year	12	No Value	N/A	4.90	8.20	6.59
WTP	Hardness (as CaCO3)	mg/L	12 per year	12	No Value	N/A	50	78	60
WTP	Alkalinity (Total) as CaCO3	mg/L	12 per year	12	No Value	N/A	42	107	61
WTP	Total Organic Carbon	mg/L	1 per quarter	4	No Value	N/A	2.0	2.7	2.4
WTP	Trihalomethanes	µg/L	1 per quarter	4	250 µg/L	0	22.8	36.7	27.8
WTP	Arsenic (Total)	mg/L	1 per year; Event related	1	0.01 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	Barium (Total)	mg/L	1 per year; Event related	1	2 mg/L	0	0.0450	0.0450	0.0450
WTP	Beryllium (Total)	mg/L	1 per year; Event related	1	0.06 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Cadmium (Total)	mg/L	1 per year; Event related	1	0.002 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Chromium (Total)	mg/L	1 per year; Event related	1	0.05 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	Mercury (Total)	mg/L	1 per year; Event related	1	0.001 mg/L	0	<0.0001	<0.0001	<0.0001
WTP	Nickel (Total)	mg/L	1 per year; Event related	1	0.02 mg/L	0	0.00074	0.00074	0.00074
WTP	Selenium (Total)	mg/L	1 per year; Event related	1	0.01 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	Sum of PFOS + PFHxS	µg/L	1 per year; Event related	1	0.07 µg/L	0	<0.05	<0.05	<0.05
WTP	PFOA	µg/L	1 per year; Event related	1	0.56 µg/L	0	<0.01	<0.01	<0.01
WTP	<i>Cryptosporidium</i>	oocyst/10L	1 per year; Event related	1	<1 organism/L	0	0	0	0
WTP	<i>Giardia</i>	cyst/10L	1 per year; Event related	1	<1 organism/L	0	0	0	0
WTP	Chlorine	mg/L	Daily	365*	5 mg/L	0	0.73	1.4	0.98
WTP	pH	unit	Daily	365*	No Value	N/A	7.15	7.94	7.61
WTP	Electrical Conductivity	µS/cm	Daily	365*	No Value	N/A	139	534	250
WTP	Turbidity	NTU	Daily	365*	No Value	N/A	0.09	0.27	0.15
WTP	Colour (True)	mg/L Pt-Co	Daily	254~	No Value	N/A	0	0	0
WTP	Chlorine	mg/L	Continuous (Online)	N/A	5 mg/L	0	0.84	1.12	1
WTP	pH	Unit	Continuous (Online)	N/A	No Value	N/A	7.12	7.78	7.62
WTP	Electrical Conductivity	µS/cm	Continuous (Online)	N/A	No Value	N/A	148	472	250
WTP	Turbidity	NTU	Continuous (Online)	N/A	No Value	N/A	0.10	0.28	0.16
Reticulation	Trihalomethanes	µg/L	1 per quarter	4	250 µg/L	0	89.0	136.0	107.4
Reticulation	Chlorine	mg/L	9 per week; Event related	477	5 mg/L	0	0.04	1.60	0.77
Reticulation	<i>E. coli</i>	MPN/100ml	9 per week; Event related	477	0 MPN/100ml	0	<1	<1	<1

* Missed one testing date (25 Dec 2019) due to multiple power outages that occurred in Rockhampton.

~ Testing was not performed daily with Operators instead using a visual check to determine if further testing was required. This testing frequency is being reviewed and the DWQMP will be updated accordingly.

^ Chlorate and chlorite samples are collected when the chlorine dioxide facility is operating. The facility is intermittently used depending on the source water quality.

Table 3 Rockhampton Water Supply Scheme quality performance – verification monitoring (continued)

Scheme Component	Parameter	Unit	No. of samples required to be collected	Total no. of samples collected this reporting period	ADWG Health Guideline Value	No. of non-compliant samples	Minimum	Maximum	Average
Source Water	pH	unit	12 per year	12	N/A	N/A	7.15	8.10	7.68
Source Water	Colour (True)	TCU	12 per year	12	N/A	N/A	<2	55	25
Source Water	Turbidity	NTU	12 per year	12	N/A	N/A	6.1	540.0	154.4
Source Water	Electrical Conductivity	µS/cm	12 per year	12	N/A	N/A	130	290	233
Source Water	Solids (Dissolved)	mg/L	12 per year	12	N/A	N/A	160	310	225
Source Water	Chloride	mg/L	12 per year	12	N/A	N/A	15	81	44
Source Water	Fluoride	mg/L	12 per year	12	N/A	N/A	0.07	0.16	0.12
Source Water	Nitrate (as N)	mg/L	12 per year	12	N/A	N/A	<0.005	0.520	0.1717
Source Water	Nitrite (as N)	mg/L	12 per year	12	N/A	N/A	<0.005	0.007	<0.005
Source Water	Sulphate	mg/L	12 per year	12	N/A	N/A	<5	9	7
Source Water	Aluminium (Acid Soluble)	mg/L	12 per year	12	N/A	N/A	<0.01	0.70	0.31
Source Water	Iron (Total)	mg/L	12 per year	12	N/A	N/A	0.087	12.000	2.886
Source Water	Manganese (Total)	mg/L	12 per year	12	N/A	N/A	0.0120	0.2500	0.0745
Source Water	Copper (Total)	mg/L	12 per year	12	N/A	N/A	0.001	0.018	0.005
Source Water	Lead (Total)	mg/L	12 per year	12	N/A	N/A	<0.0001	0.0082	0.0021
Source Water	Zinc (Total)	mg/L	12 per year	12	N/A	N/A	<0.005	0.091	0.015
Source Water	Calcium (Total)	mg/L	12 per year	12	N/A	N/A	9.5	14.0	12.5
Source Water	Sodium (Total)	mg/L	12 per year	12	N/A	N/A	11	26	20
Source Water	Potassium (Total)	mg/L	12 per year	12	N/A	N/A	2.4	4.3	3.2
Source Water	Magnesium (Total)	mg/L	12 per year	12	N/A	N/A	5.70	9.60	7.17
Source Water	Hardness (Soluble)	mg/L	12 per year	12	N/A	N/A	44	74	57
Source Water	Alkalinity (Total) as CaCO ₃	mg/L	12 per year	12	N/A	N/A	33	93	60
Source Water	Total Organic Carbon	mg/L	1 per quarter	4	N/A	N/A	5.1	7.5	6.1
Source Water	Arsenic	mg/L	1 per year; Event related	1	N/A	N/A	0.0025	0.0025	0.0025
Source Water	Barium	mg/L	1 per year; Event related	1	N/A	N/A	0.1100	0.1100	0.1100
Source Water	Beryllium	mg/L	1 per year; Event related	1	N/A	N/A	0.00061	0.00061	0.00061
Source Water	Cadmium	mg/L	1 per year; Event related	0	N/A	N/A	<0.0001	<0.0001	<0.0001
Source Water	Chromium	mg/L	1 per year; Event related	1	N/A	N/A	0.0110	0.0110	0.0110
Source Water	Mercury	mg/L	1 per year; Event related	1	N/A	N/A	0.00072	0.00072	0.00072
Source Water	Nickel	mg/L	1 per year; Event related	1	N/A	N/A	0.0150	0.0150	0.0150
Source Water	Selenium	mg/L	1 per year; Event related	1	N/A	N/A	0.00053	0.00053	0.00053
Source Water	PFOS + PFHxS	µg/L	1 per year; Event related	1	N/A	N/A	<0.05	<0.05	<0.05
Source Water	PFOA	µg/L	1 per year; Event related	1	N/A	N/A	<0.01	<0.01	<0.01
Source Water	Pesticides	ug/L	1 per year; Event related	1	N/A	N/A	<0.2	<0.2	<0.2
Source Water	Sum of PFOS + PFHxS	µg/L	1 per year; Event related	1	N/A	N/A	<0.05	<0.05	<0.05
Source Water	PFOA	µg/L	1 per year; Event related	1	N/A	N/A	<0.01	<0.01	<0.01
Source Water	Radionuclides - Gross Alpha	Bq/L	1 per year; Event related	1	N/A	N/A	<0.033	<0.033	<0.033
Source Water	Radionuclides - Gross Beta	Bq/L	1 per year; Event related	1	N/A	N/A	<0.070	<0.070	<0.070
Source Water	<i>Cryptosporidium</i>	oocyst/10L	1 per year; Event related	1	N/A	N/A	0	0	0
Source Water	<i>Giardia</i>	cyst/10L	1 per year; Event related	1	N/A	N/A	0	0	0
Source Water	pH	unit	Daily	365*	N/A	N/A	6.81	8.50	7.61
Source Water	Electrical Conductivity	µS/cm	Daily	365*	N/A	N/A	100	500	230
Source Water	Turbidity	NTU	Daily	362*^	N/A	N/A	4.5	1684	178
Source Water	Colour (True)	mg/L Pt-Co	Daily	254*~	N/A	N/A	0	152	45
Source Water	pH	Unit	Continuous (Online)	N/A	N/A	N/A	6.88	8.31	7.59
Source Water	Turbidity	NTU	Continuous (Online)	N/A	N/A	N/A	5.89	1655	191

* Missed one testing date (25 Dec 2019) due to multiple power outages that occurred in Rockhampton.

~ Testing was not performed daily with Operators instead using a visual check to determine if further testing was required. This testing frequency is being reviewed and the DWQMP will be updated accordingly.

^ Turbidity levels were outside the operating range (>1000 NTU) of the analytical unit on 3 occasions and in-house testing was not performed on these days. A sample dilution procedure has since been established to measure turbidity levels above 1000 NTU.

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

Scheme Component	Parameter	Unit	No. of samples required to be collected	Total no. of samples collected this reporting period	ADWG Health Guideline Value	No. of non-compliant samples	Minimum	Maximum	Average
WTP	pH	unit	12 per year	12	No Value	N/A	7.14	7.87	7.48
WTP	Colour (True)	TCU	12 per year	12	No Value	N/A	<2	<2	<2
WTP	Turbidity	NTU	12 per year	12	No Value	N/A	0.2	0.9	0.4
WTP	Electrical Conductivity	µS/cm	12 per year	12	No Value	N/A	320	500	401
WTP	Solids (Dissolved)	mg/L	12 per year	12	No Value	N/A	160	290	228
WTP	Chloride	mg/L	12 per year	12	No Value	N/A	37	79	48
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	0.051	0.360	0.133
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	500 mg/L	0	39	69	56
WTP	Aluminium (Acid Soluble)	mg/L	12 per year	12	No Value	N/A	0.06	0.17	0.13
WTP	Iron (Total)	mg/L	12 per year	12	No Value	N/A	<0.005	0.017	0.007
WTP	Manganese (Total)	mg/L	12 per year	12	0.50 mg/L	0	0.0120	0.1000	0.0260
WTP	Copper (Total)	mg/L	12 per year	12	2 mg/L	0	<0.001	0.003	0.002
WTP	Lead (Total)	mg/L	12 per year	12	0.01 mg/L	0	<0.0001	0.0002	<0.0001
WTP	Zinc (Total)	mg/L	12 per year	12	No Value	N/A	<0.005	0.018	0.011
WTP	Calcium (Total)	mg/L	12 per year	12	No Value	N/A	13.0	17.0	15.3
WTP	Sodium (Total)	mg/L	12 per year	12	No Value	N/A	28	64	44
WTP	Potassium (Total)	mg/L	12 per year	12	No Value	N/A	1.5	2.7	2.2
WTP	Magnesium (Total)	mg/L	12 per year	12	No Value	N/A	7.90	11.00	9.54
WTP	Hardness (Soluble)	mg/L	12 per year	12	No Value	N/A	63	85	77
WTP	Alkalinity (Total) as CaCO3	mg/L	12 per year	12	No Value	N/A	44	145	77
WTP	Total Organic Carbon	mg/L	1 per quarter	4	No Value	N/A	5.6	12.0	10.2
WTP	Trihalomethanes	µg/L	1 per quarter	4	250 µg/L	0	47.6	114.0	78.6
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	0.0057	0.0057	0.0057
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	0.00062	0.00062	0.00062
WTP	Selenium	mg/L	1 per year; Event related	1	0.01 mg/L	0	<0.0005	<0.0005	<0.0005
WTP	<i>Cryptosporidium</i>	oocyst/10L	1 per year; Event related	1	<1 organism/L	0	0	0	0
WTP	<i>Giardia</i>	cyst/10L	1 per year; Event related	1	<1 organism/L	0	0	0	0
WTP	Chlorine	mg/L	Daily	366	5 mg/L	0	0.47	1.46	1.00
WTP	pH	unit	Daily	366	No Value	N/A	6.82	8.13	7.37
WTP	Electrical Conductivity	µS/cm	Daily	366	No Value	N/A	153	804	366
WTP	Turbidity	NTU	Daily	366	No Value	N/A	0.14	1.52	0.40
WTP	Colour (True)	mg/L Pt-Co	Daily	366	No Value	N/A	0	8	1.62
WTP	Chlorine	mg/L	Continuous (Online)	N/A	5 mg/L	0	0.61	1.16	1.06
WTP	pH	Unit	Continuous (Online)	N/A	No Value	N/A	7.03	8.15	7.4
WTP	Electrical Conductivity	µS/cm	Continuous (Online)	N/A	No Value	N/A	180	536	359
WTP	Turbidity	NTU	Continuous (Online)	N/A	No Value	N/A	0.17	1.34	0.41
Reticulation	Trihalomethanes	µg/L	1 per quarter	4	250 µg/L	0	67.3	127.0	95.4
Reticulation	Chlorine	mg/L	3 per week; Event related	159	5 mg/L	0	0	1.52	0.65
Reticulation	<i>E. coli</i>	MPN/100ml	3 per week; Event related	159	0 MPN/100ml	0	<1	<1	<1

Table 4 Mount Morgan Water Supply Scheme quality performance – verification monitoring (continued)

Scheme Component	Parameter	Unit	No. of samples required to be collected	Total no. of samples collected this reporting period	ADWG Health Guideline Value	No. of non-compliant samples	Minimum	Maximum	Average
Source Water	pH	unit	12 per year	12	N/A	N/A	7.59	8.73	8.13
Source Water	Colour (True)	TCU	12 per year	12	N/A	N/A	<2	10	6
Source Water	Turbidity	NTU	12 per year	12	N/A	N/A	1.6	18	9.9
Source Water	Electrical Conductivity	µS/cm	12 per year	12	N/A	N/A	250	330	289
Source Water	Solids (Dissolved)	mg/L	12 per year	12	N/A	N/A	66	210	166
Source Water	Chloride	mg/L	12 per year	12	N/A	N/A	34	85	52
Source Water	Fluoride	mg/L	12 per year	12	N/A	N/A	0.08	0.15	0.11
Source Water	Nitrate (as N)	mg/L	12 per year	12	N/A	N/A	<0.005	0.26	0.039
Source Water	Nitrite (as N)	mg/L	12 per year	12	N/A	N/A	<0.005	0.015	<0.005
Source Water	Sulphate	mg/L	12 per year	12	N/A	N/A	6	19	9
Source Water	Aluminium (Acid Soluble)	mg/L	12 per year	12	N/A	N/A	0.01	1.70	0.18
Source Water	Iron (Total)	mg/L	12 per year	12	N/A	N/A	0.077	0.770	0.277
Source Water	Manganese (Total)	mg/L	12 per year	12	N/A	N/A	0.0560	0.4200	0.1501
Source Water	Copper (Total)	mg/L	12 per year	12	N/A	N/A	<0.001	0.004	0.002
Source Water	Lead (Total)	mg/L	12 per year	12	N/A	N/A	<0.0010	0.0007	0.0002
Source Water	Zinc (Total)	mg/L	12 per year	12	N/A	N/A	<0.005	0.020	0.006
Source Water	Calcium (Total)	mg/L	12 per year	12	N/A	N/A	13.0	18.0	15.7
Source Water	Sodium (Total)	mg/L	12 per year	12	N/A	N/A	16	25	22
Source Water	Potassium (Total)	mg/L	12 per year	12	N/A	N/A	1.7	2.5	2.0
Source Water	Magnesium (Total)	mg/L	12 per year	12	N/A	N/A	8.50	12.00	10.05
Source Water	Hardness (Soluble)	mg/L	12 per year	12	N/A	N/A	63	86	77
Source Water	Alkalinity (Total) as CaCO ₃	mg/L	12 per year	12	N/A	N/A	73	124	84
Source Water	Total Organic Carbon	mg/L	1 per quarter	4	N/A	N/A	9.8	14.0	11.2
Source Water	Arsenic	mg/L	1 per year; Event related	1	N/A	N/A	0.0007	0.0007	0.0007
Source Water	Barium	mg/L	1 per year; Event related	1	N/A	N/A	0.0073	0.0073	0.0073
Source Water	Beryllium	mg/L	1 per year; Event related	1	N/A	N/A	<0.0001	<0.0001	<0.0001
Source Water	Cadmium	mg/L	1 per year; Event related	1	N/A	N/A	<0.0001	<0.0001	<0.0001
Source Water	Chromium	mg/L	1 per year; Event related	1	N/A	N/A	<0.0005	<0.0005	<0.0005
Source Water	Mercury	mg/L	1 per year; Event related	1	N/A	N/A	<0.0001	<0.0001	<0.0001
Source Water	Nickel	mg/L	1 per year; Event related	1	N/A	N/A	<0.0005	<0.0005	<0.0005
Source Water	Selenium	mg/L	1 per year; Event related	1	N/A	N/A	<0.0005	<0.0005	<0.0005
Source Water	Pesticides	µg/L	1 per year; Event related	1	N/A	N/A	<0.2	<0.2	<0.2
Source Water	Radionuclides - Gross Alpha	Bq/L	1 per year; Event related	1	N/A	N/A	<0.032	<0.032	<0.032
Source Water	Radionuclides - Gross Beta	Bq/L	1 per year; Event related	1	N/A	N/A	<0.070	<0.070	<0.070
Source Water	<i>Cryptosporidium</i>	oocyst/10L	1 per year; Event related	1	N/A	N/A	0	0	0
Source Water	<i>Giardia</i>	cyst/10L	1 per year; Event related	1	N/A	N/A	0	0	0
Source Water	pH	unit	Daily	365*	N/A	N/A	6.98	8.68	7.69
Source Water	Electrical Conductivity	µS/cm	Daily	365*	N/A	N/A	121	437	263
Source Water	Turbidity	NTU	Daily	365*	N/A	N/A	0.37	13	4.75
Source Water	Colour (True)	mg/L Pt-Co	Daily	365*	N/A	N/A	1	33	13.82
Source Water	pH	Unit	Continuous (Online)	N/A	N/A	N/A	6.85	8.54	7.78
Source Water	Electrical Conductivity	µS/cm	Continuous (Online)	N/A	N/A	N/A	93	380	258
Source Water	Turbidity	NTU	Continuous (Online)	N/A	N/A	N/A	2.08	22.82	5.38

* Missed one testing date (19 Nov 2019) as the WTP did not operate while shutdown for maintenance.

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

Drinking water scheme: <u>Rockhampton Water Supply Scheme</u>												
Year	2019 to 2020											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	45	36	45	36	36	36	45	36	45	36	36	45
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	477	468	468	459	468	468	477	468	468	477
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: <u>Mount Morgan Water Supply Scheme</u>												
Year	2019 to 2020											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	15	12	15	12	12	12	15	12	15	12	12	15
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	159	156	156	153	156	156	159	156	156	159
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 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 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	11	17	28
Mt Morgan	0	5	18	23
Total	0	16	35	51

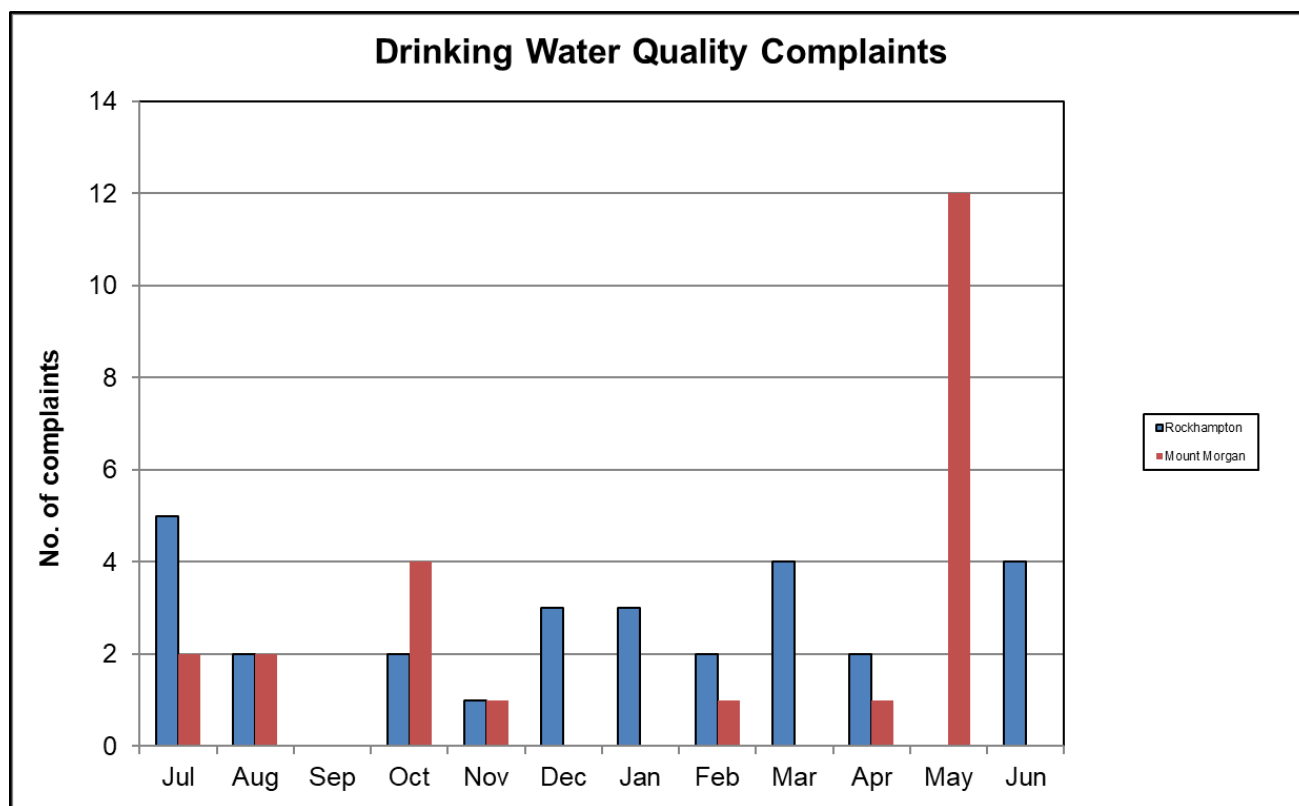


Figure 1 Drinking water quality complaints received between 1 July 2019 and 30 June 2020 for the Rockhampton and Mount Morgan water supply schemes

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 16 customer complaints associated with unfavourable taste and/or odour were received during this reporting period. Eleven (11) customer complaints were received from the Rockhampton WSS and 5 customer complaints were 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 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.

Appearance and/or discoloured water

A total of 35 customer complaints associated with appearance and/or discoloured water were received during this reporting period. Seventeen (17) customer complaints were received from the Rockhampton WSS and of these, 4 were due to the presence of air in the water. Eighteen (18) customer complaints were received from Mount Morgan WSS and of these, 11 were associated with discoloured water due to a brief cold weather period in May that resulted to a slight increase in iron and manganese levels in the drinking 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

No review was conducted during the reporting period 1 July 2019 to 30 June 2020.

The next internal review of the DWMQP is due by 31 August 2021.

8 DWQMP audit findings

No audit was conducted during the reporting period 1 July 2019 to 30 June 2020.

The second regular audit of the DWQMP was completed on 4 August 2020 and the audit report was submitted to the Regulator on 5 August 2020. A summary of the audit findings and status will be incorporated as appropriate in the next reporting period and future revisions of the DWQMP.